

FIG. 1

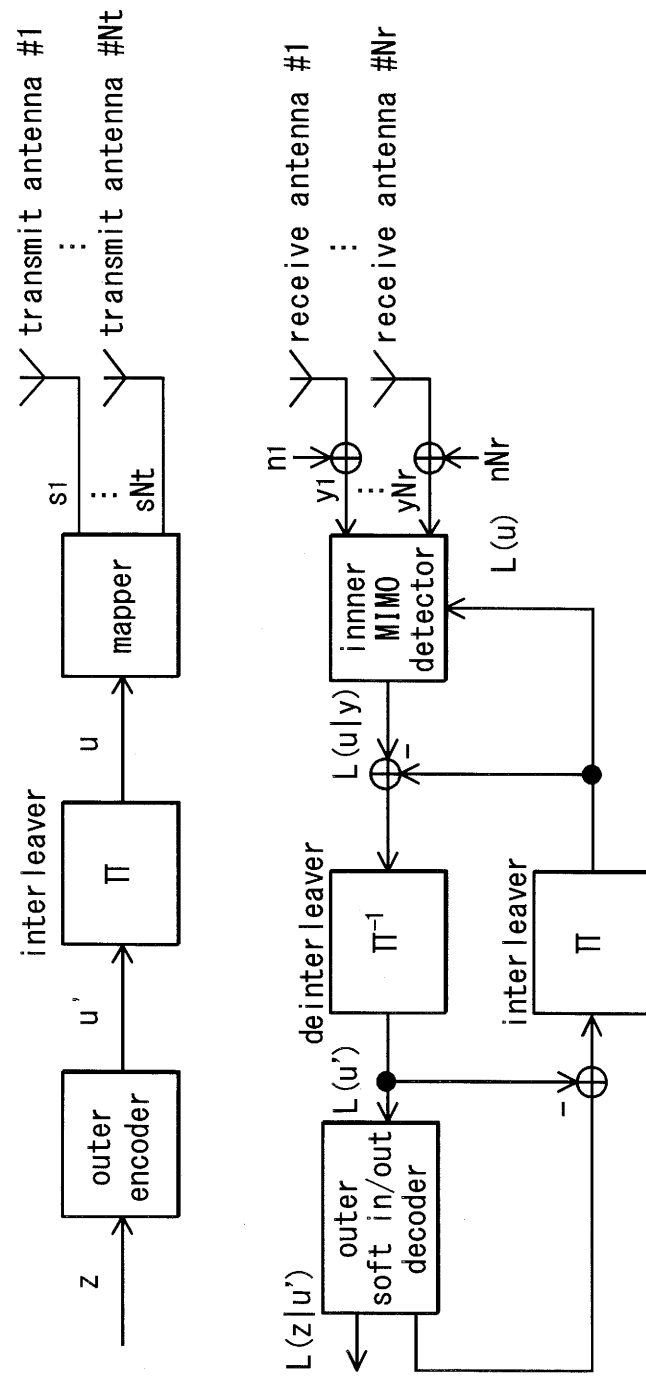


FIG. 2

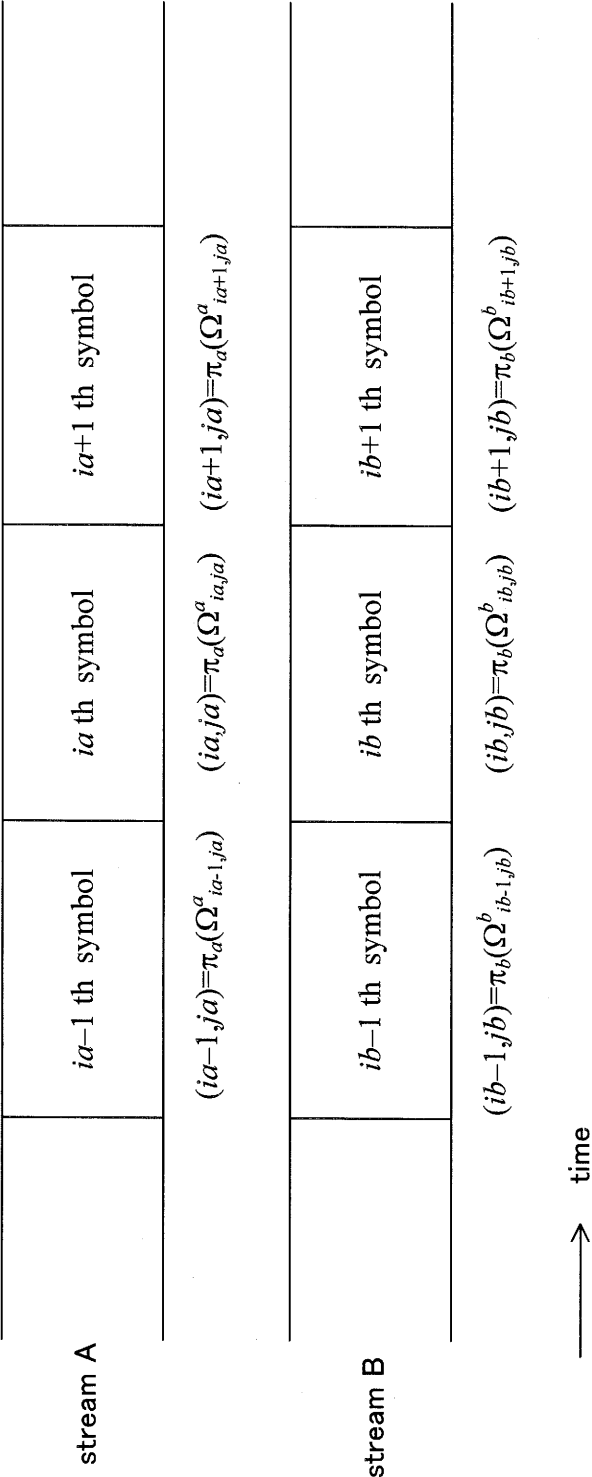
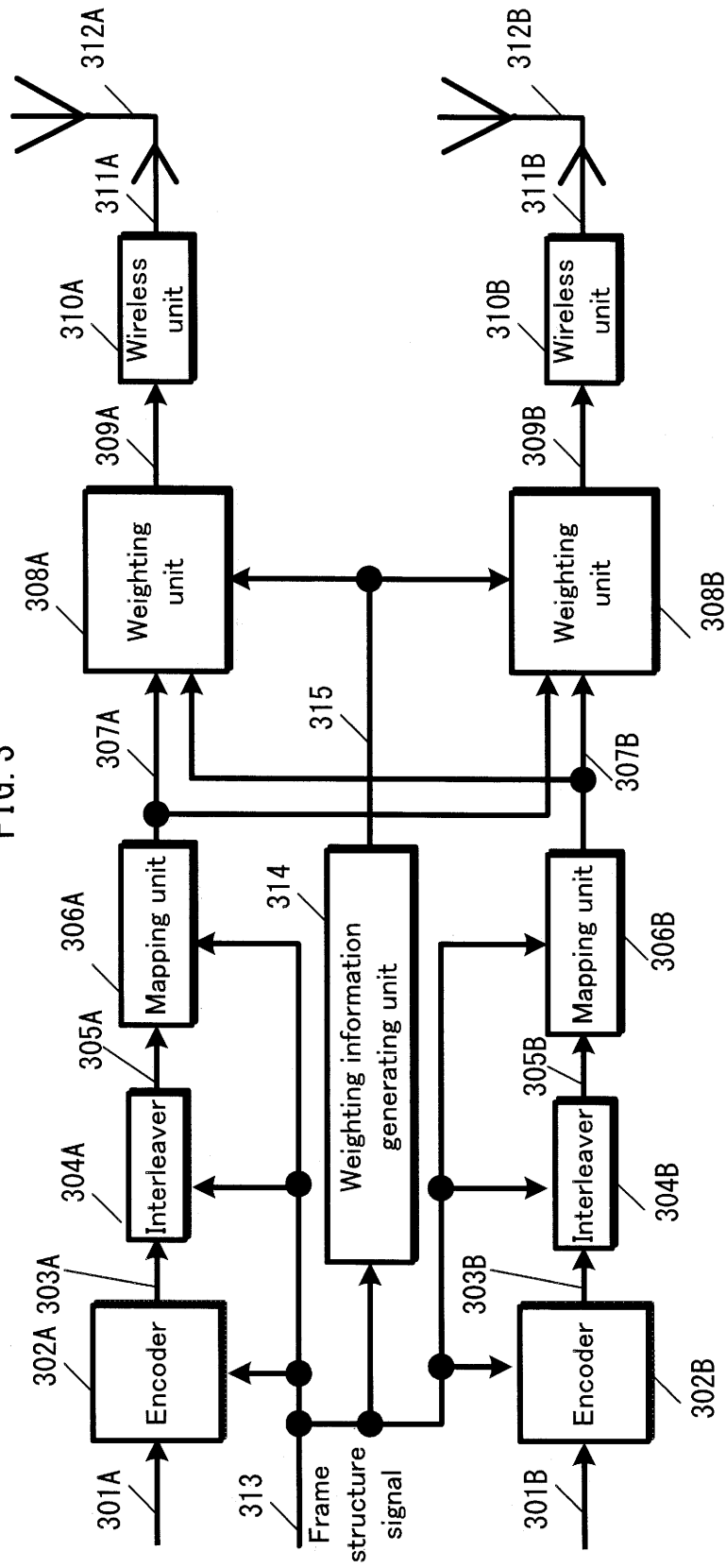


FIG. 3



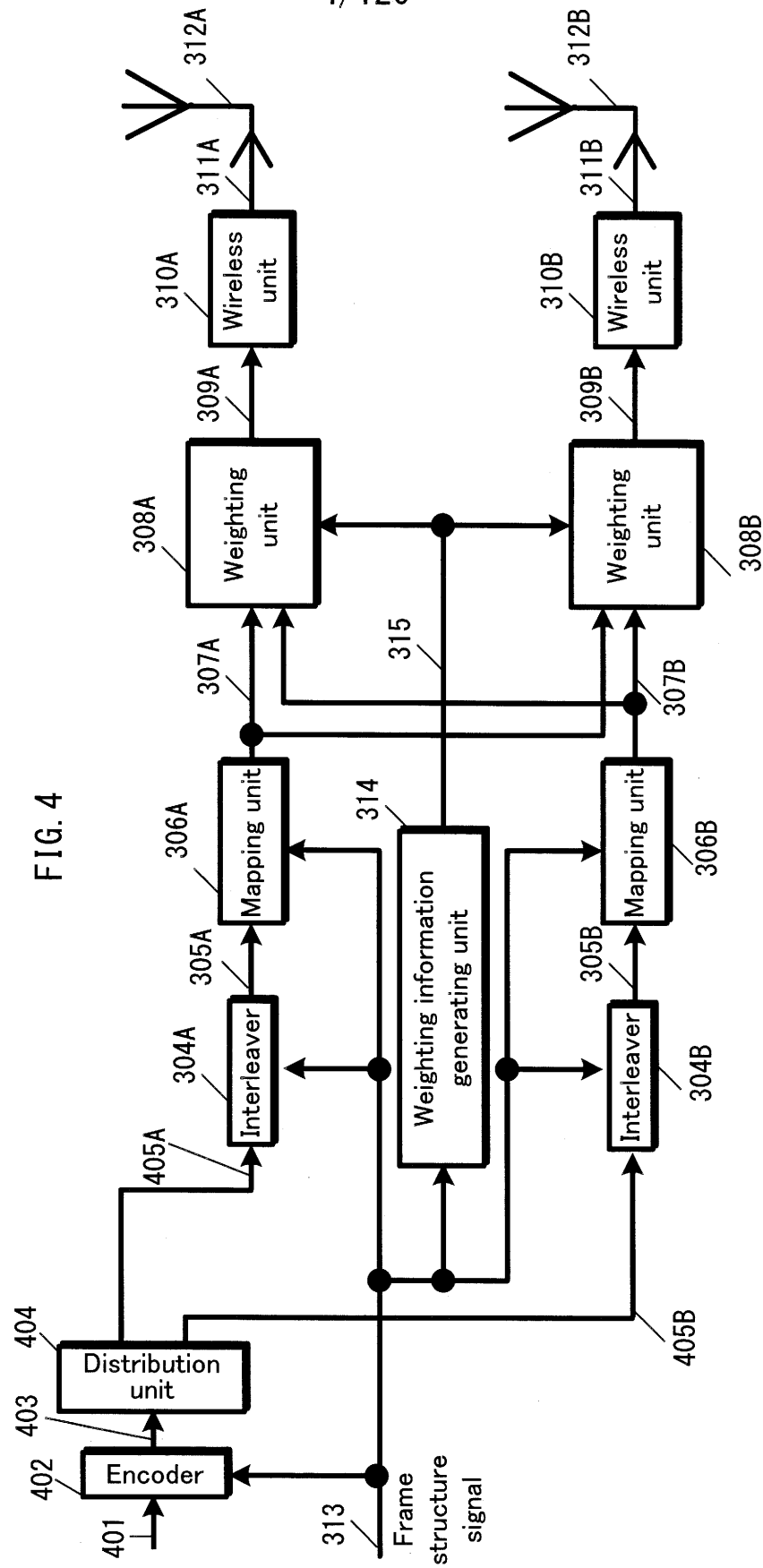


FIG. 5

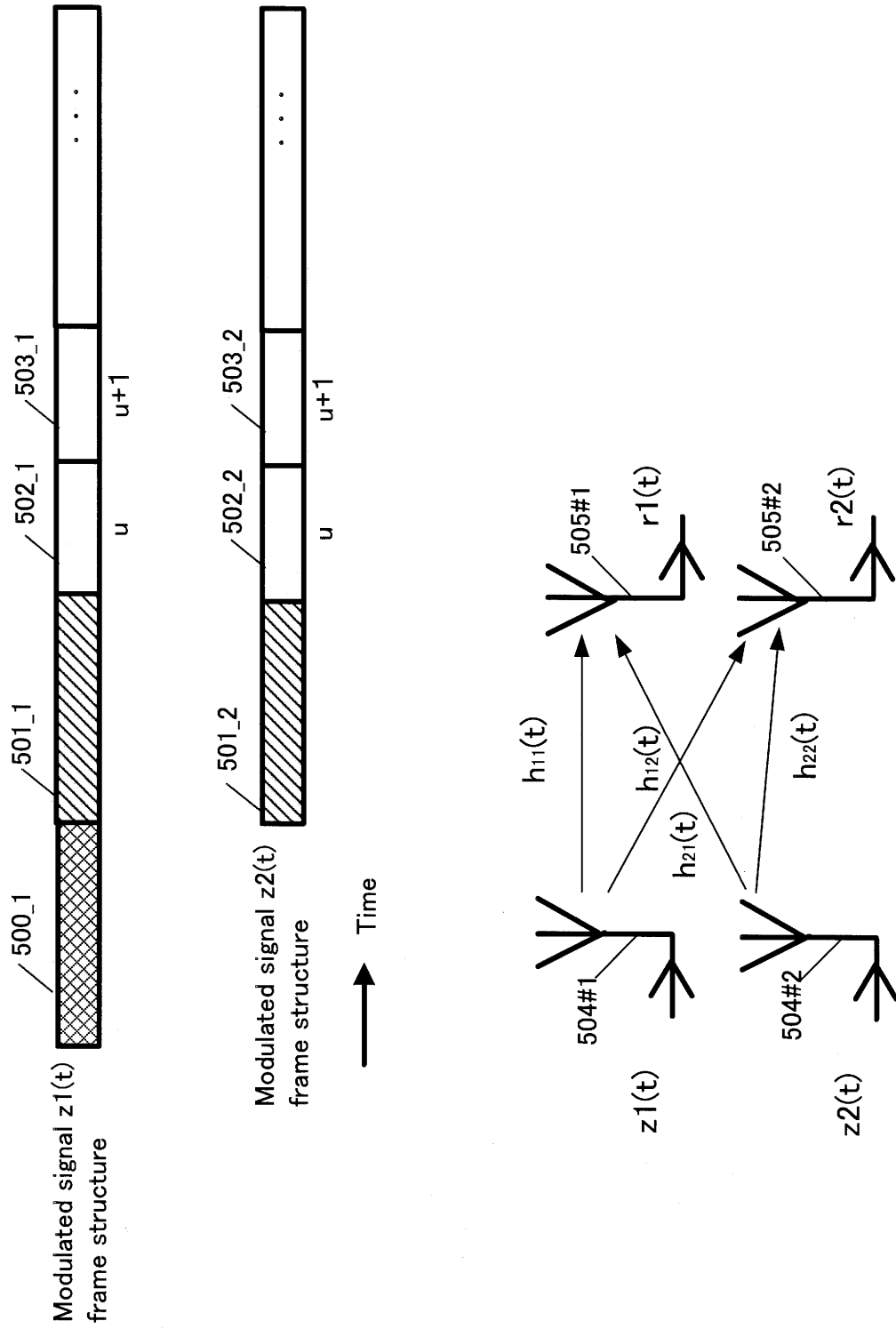


FIG. 6

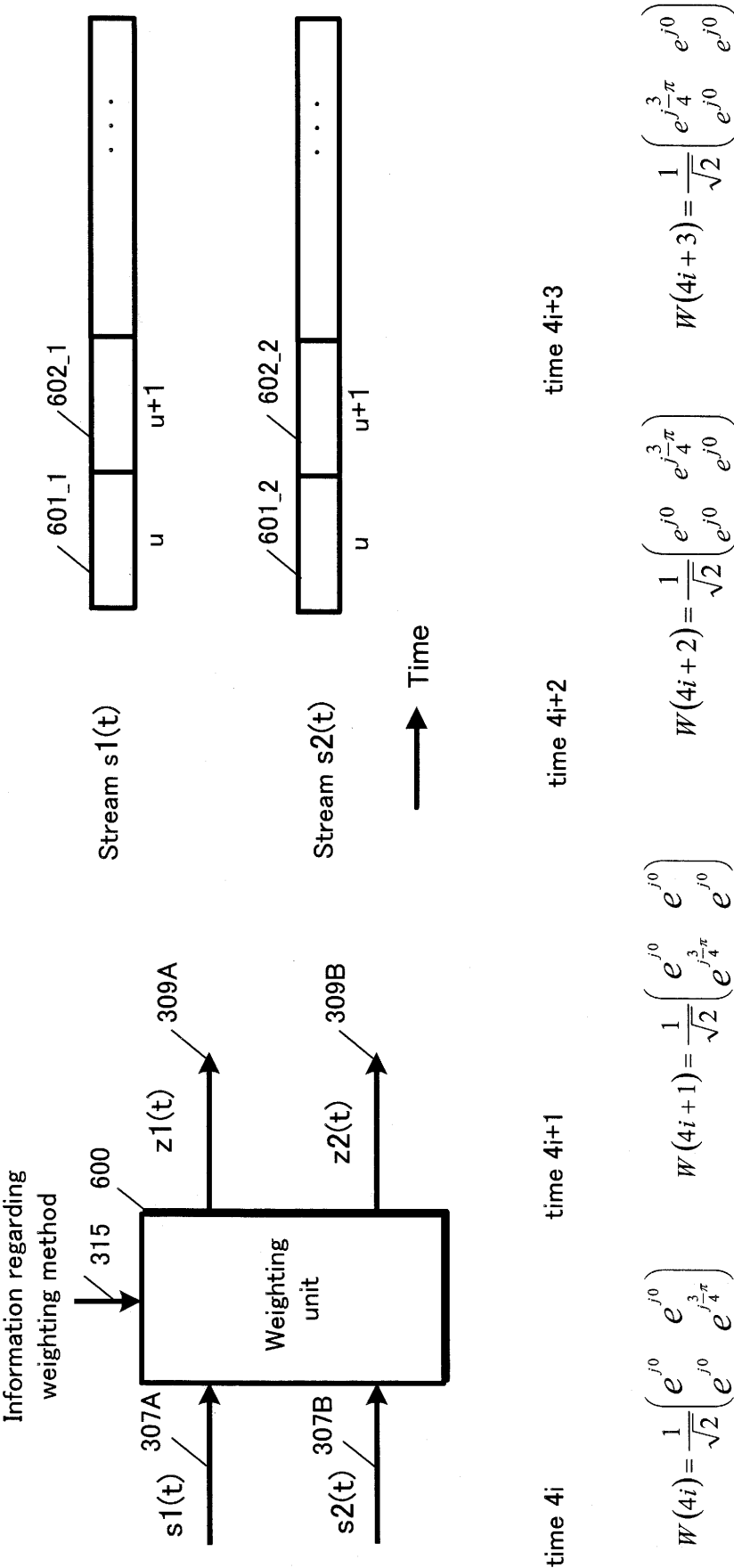
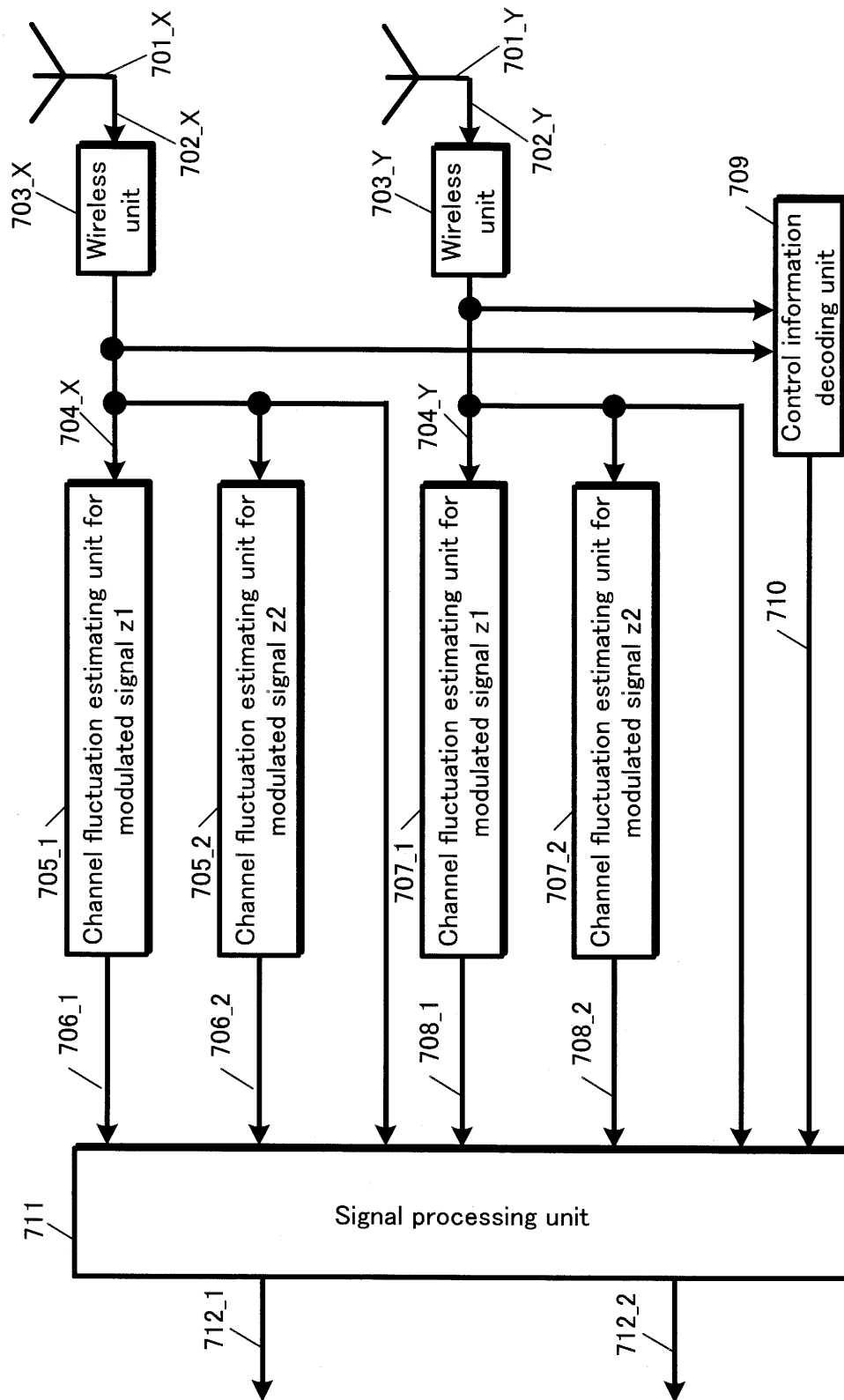
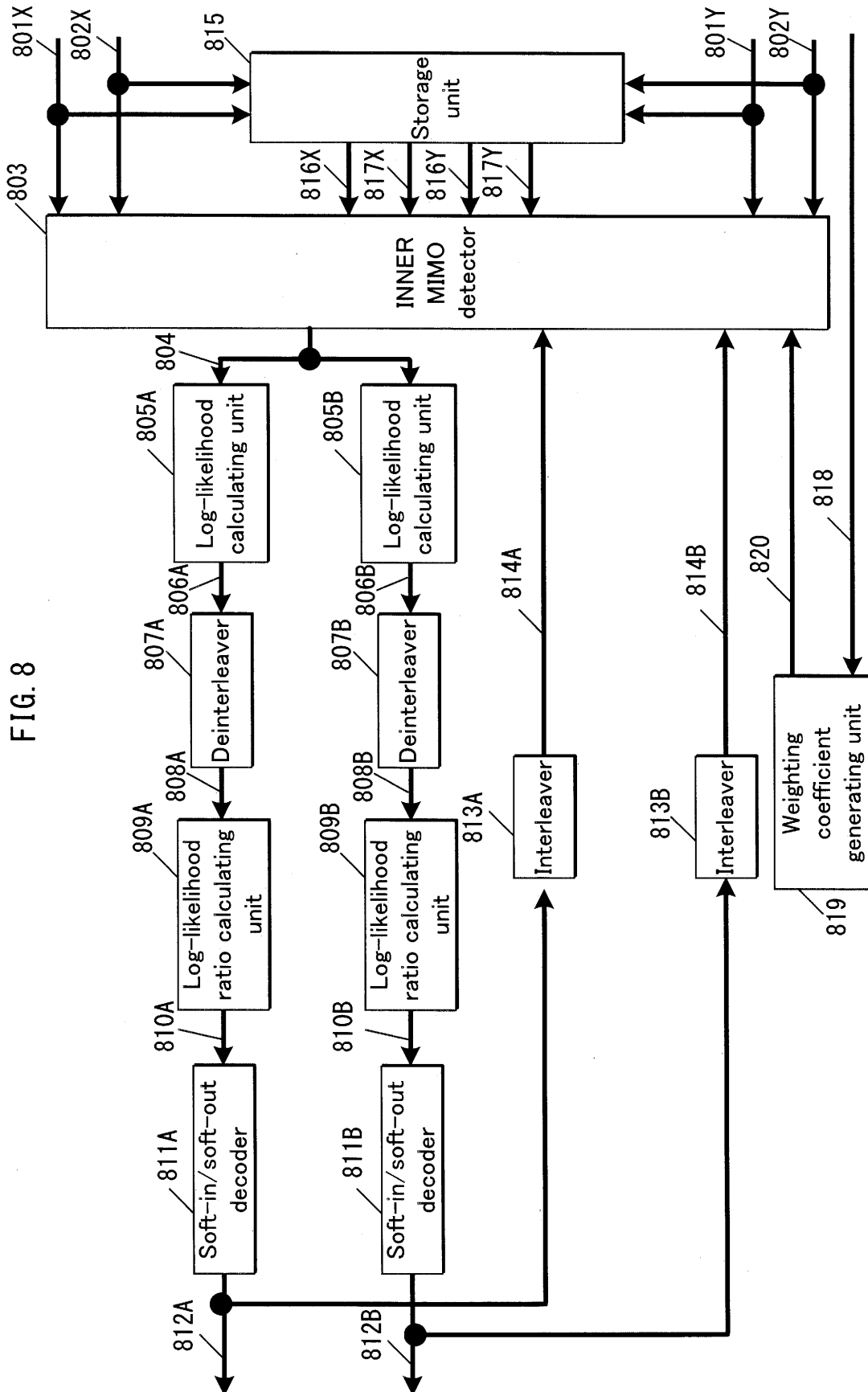


FIG. 7





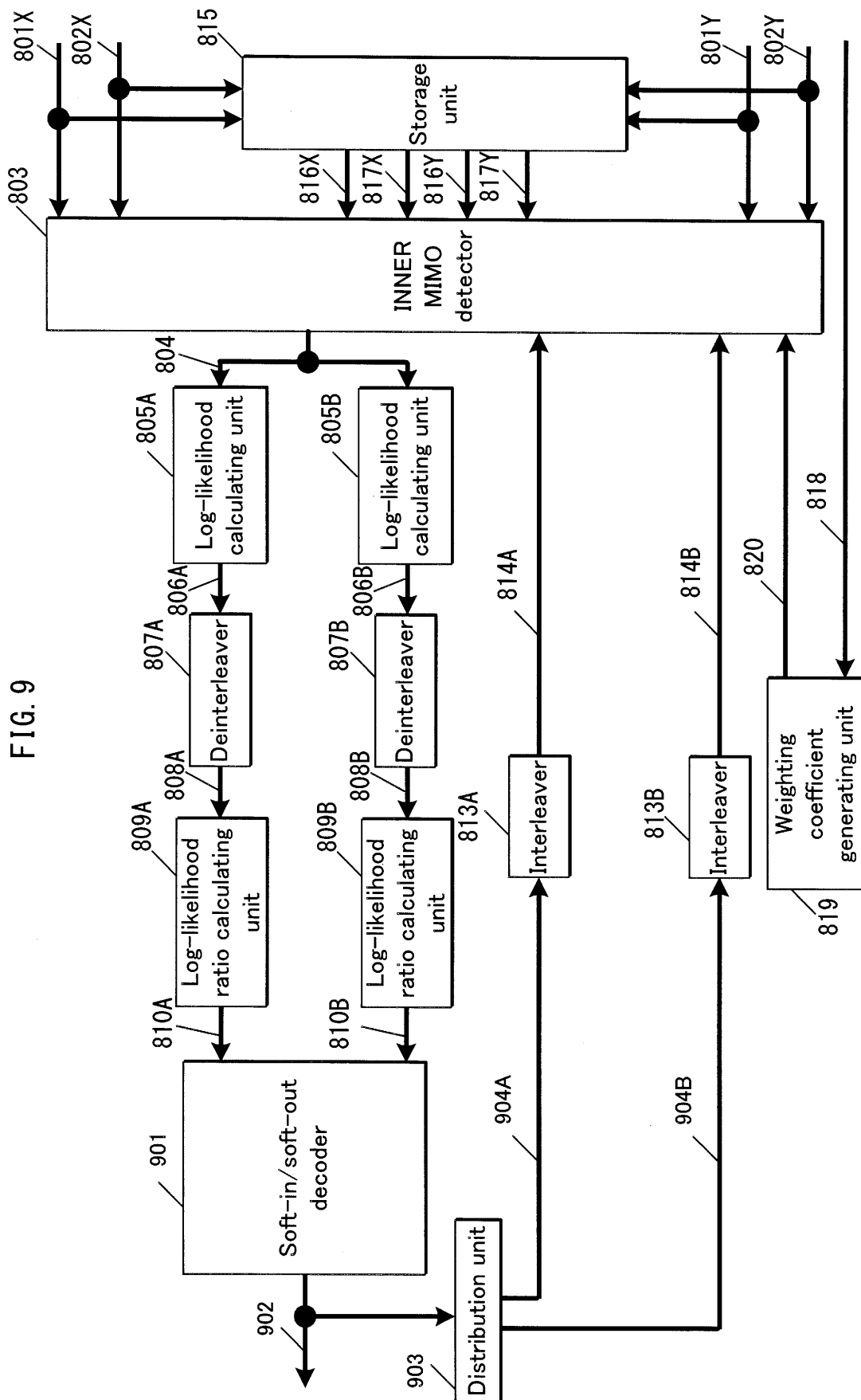


FIG. 10

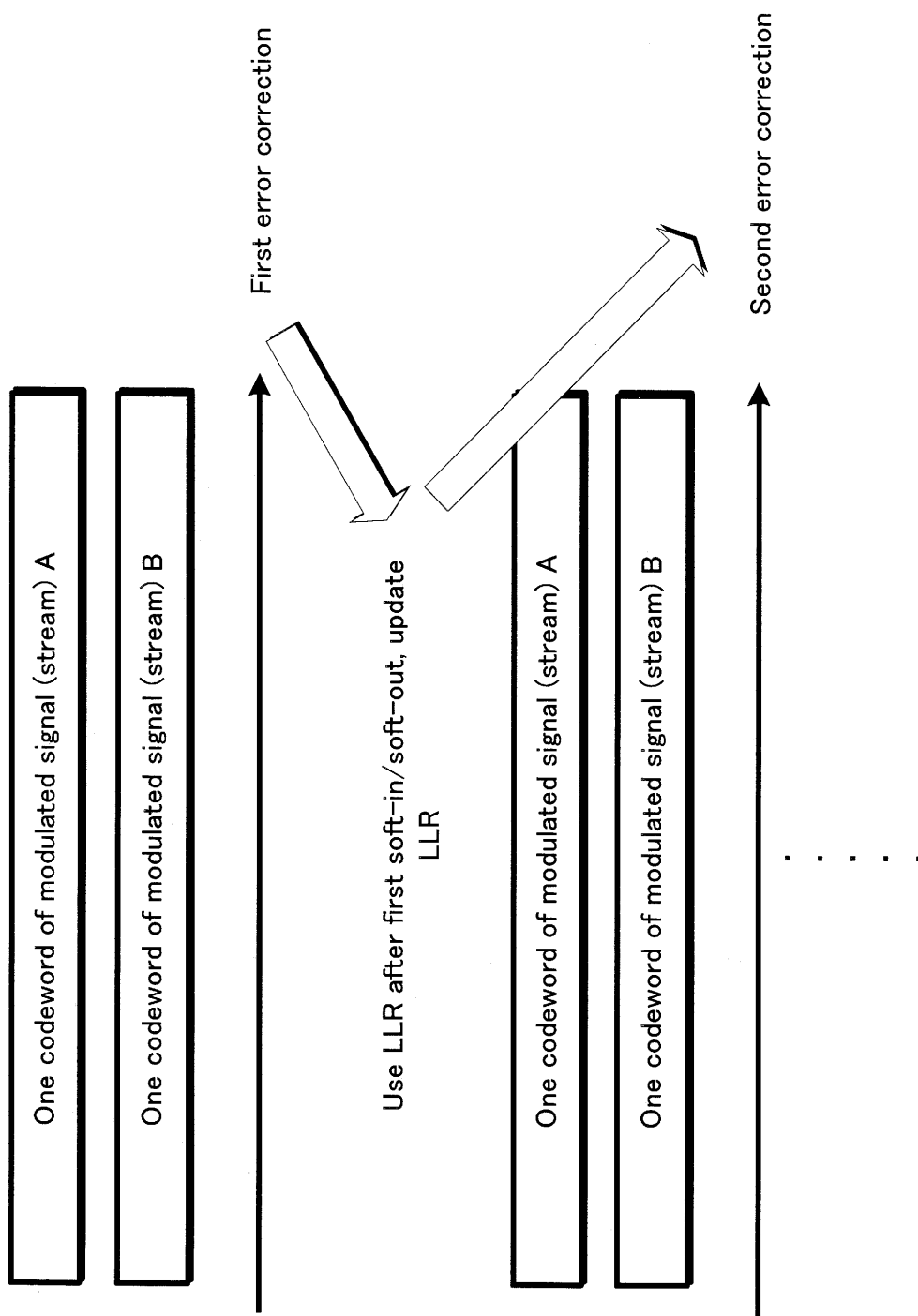


FIG. 11

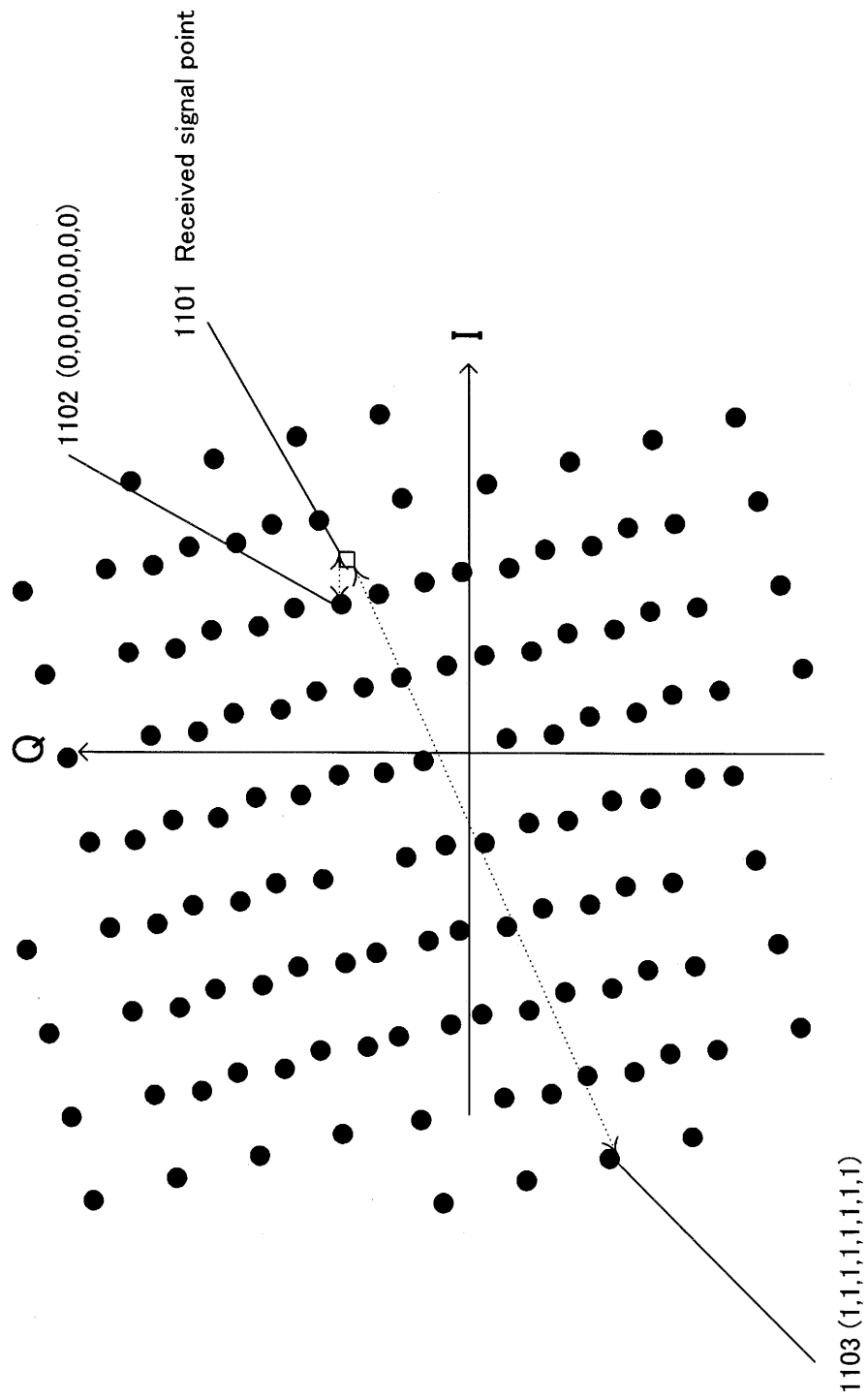


FIG. 13

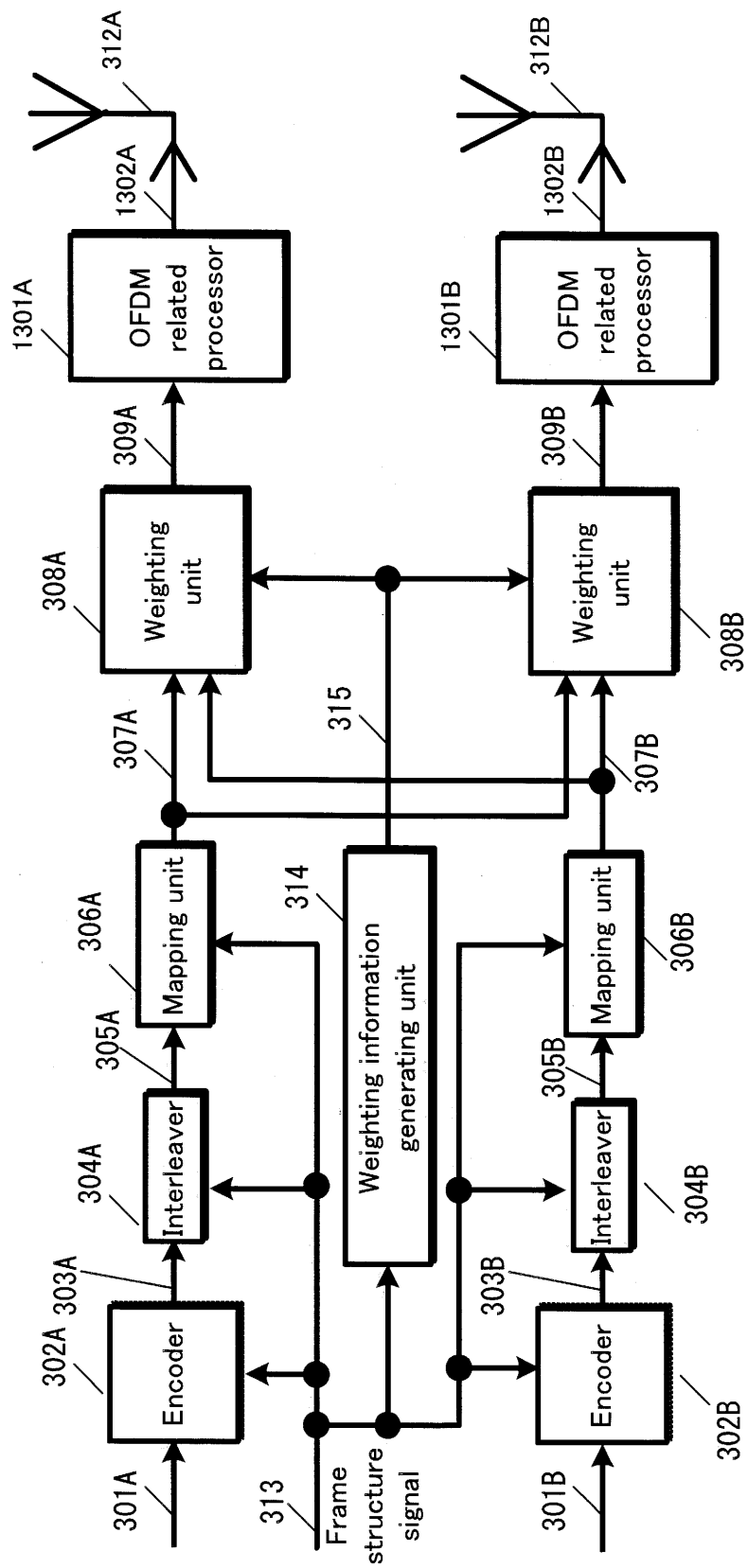


FIG. 14

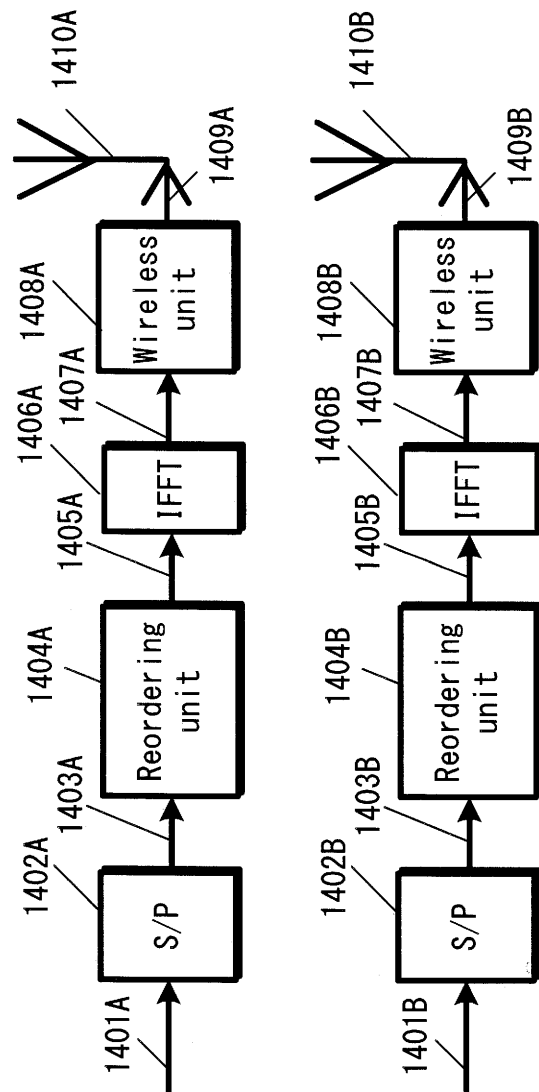


FIG. 15A

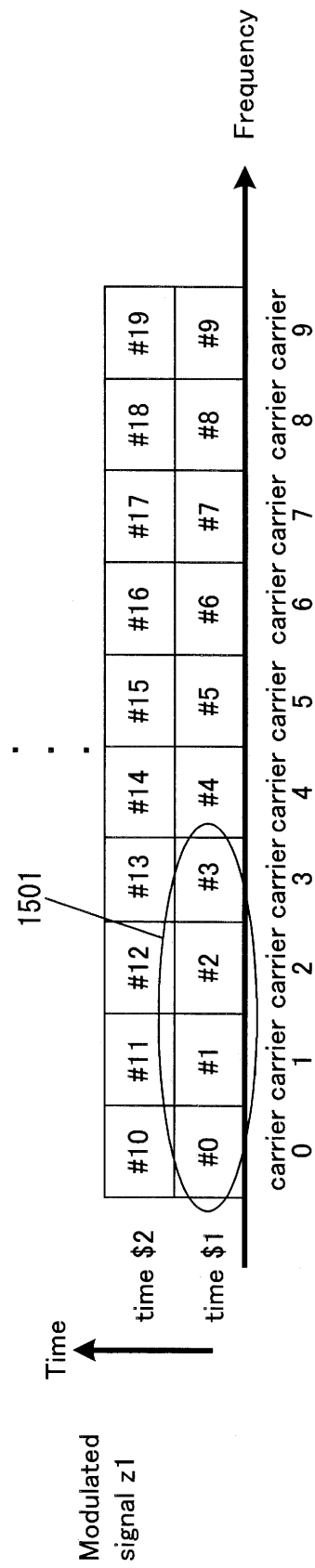


FIG. 15B

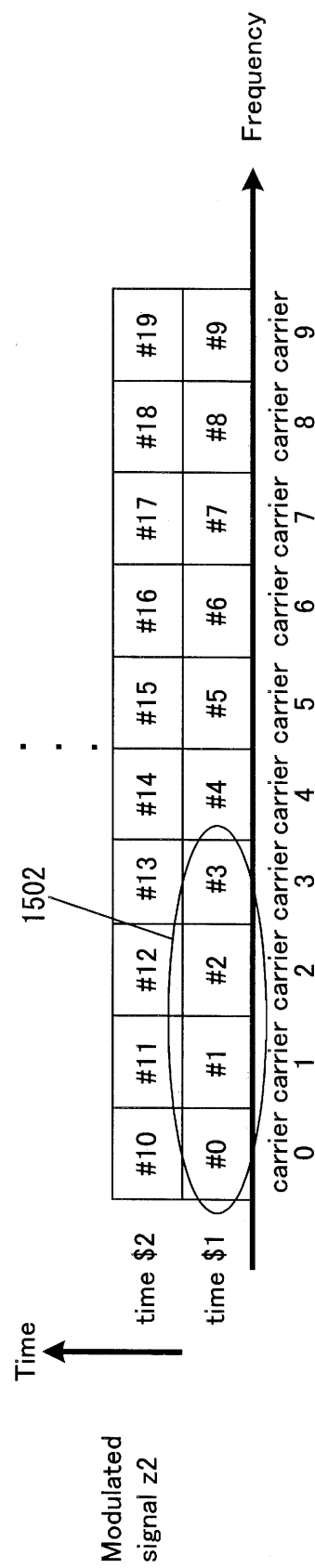


FIG. 16A

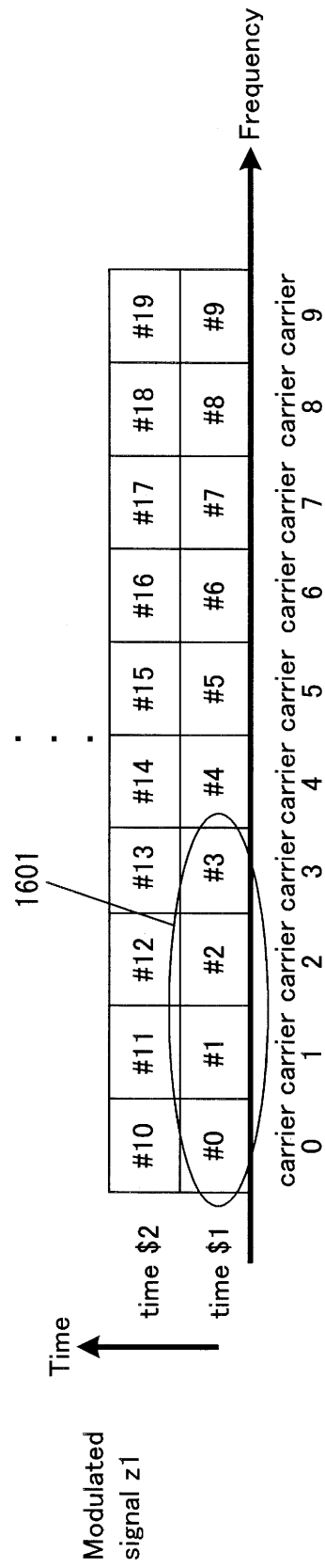


FIG. 16B

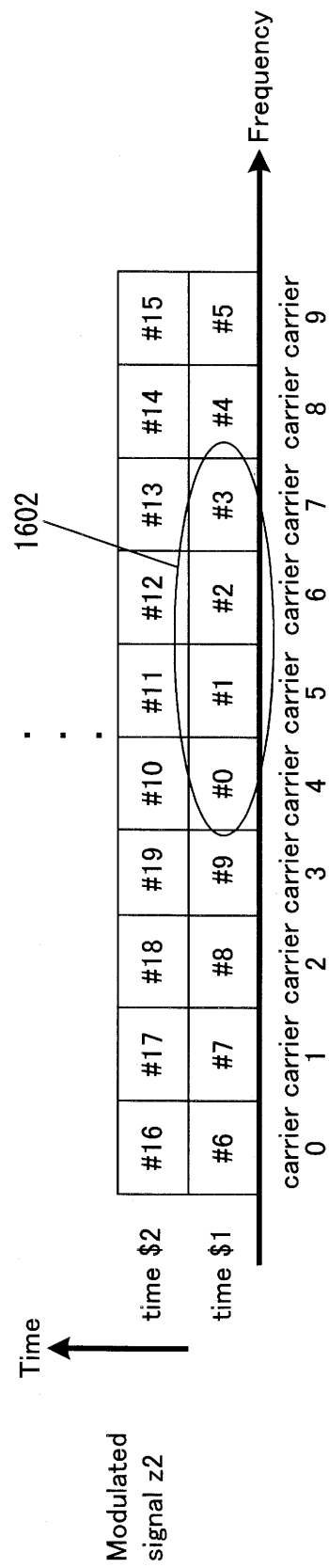


FIG. 17A

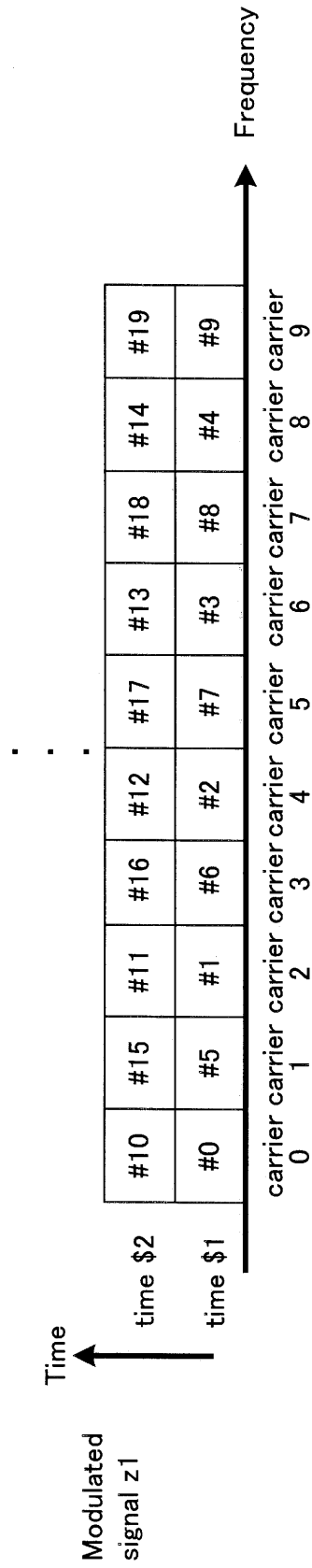


FIG. 17B

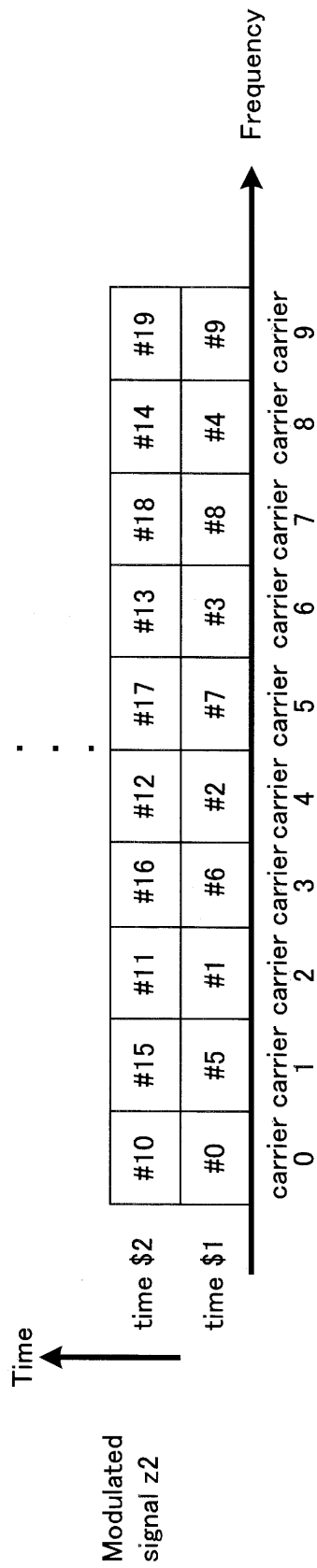


FIG. 18A

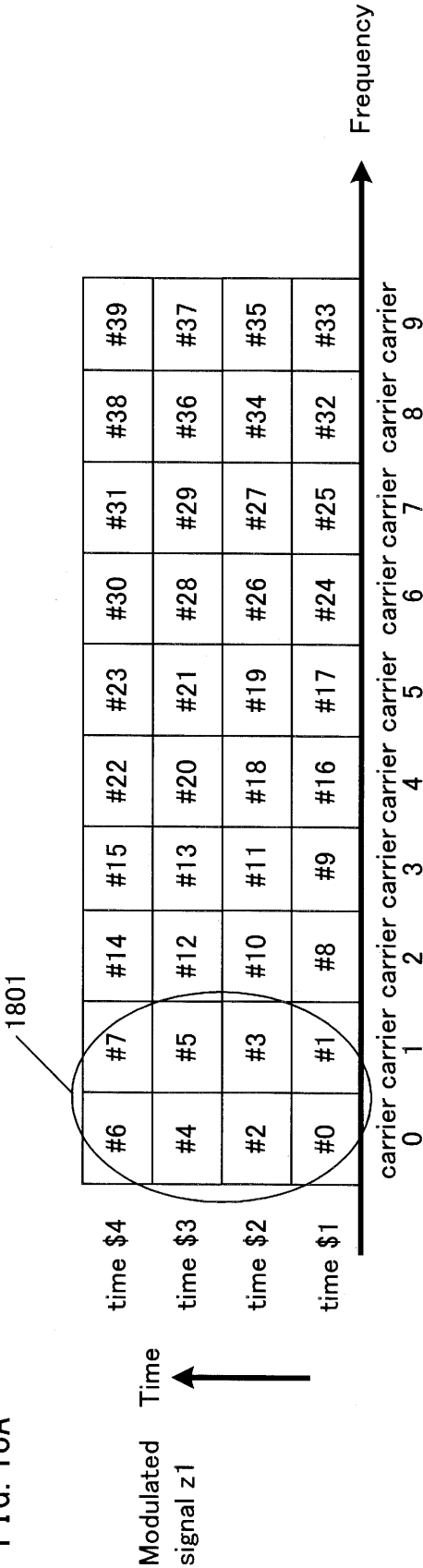


FIG. 18B

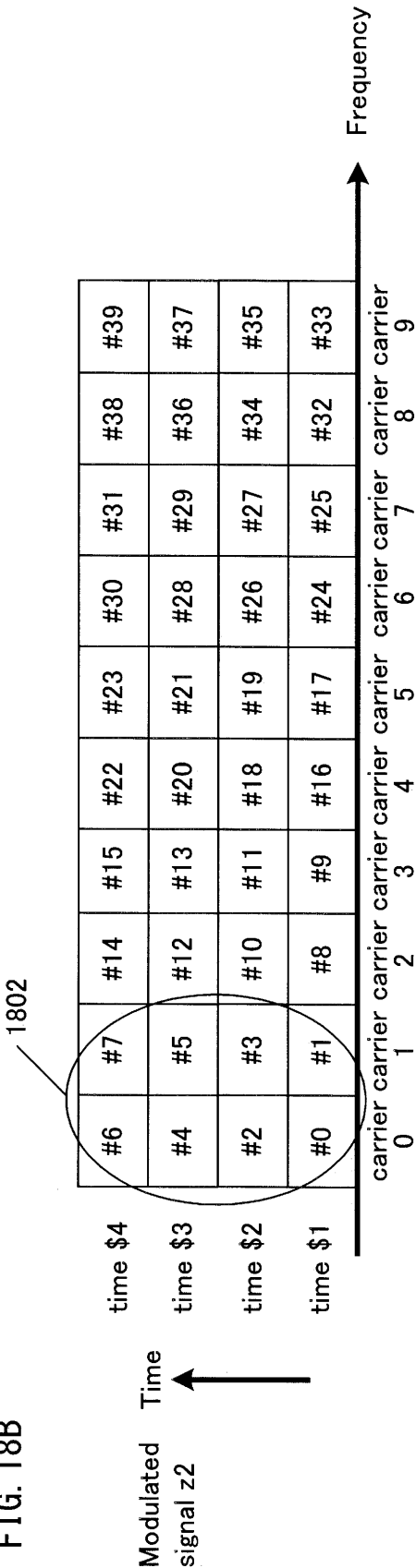


FIG. 19A

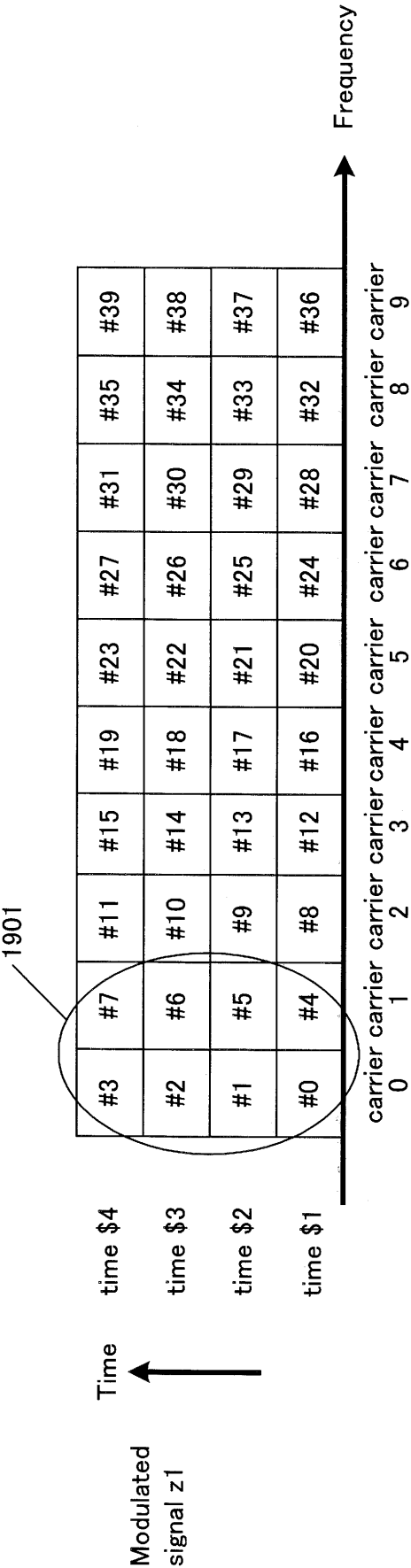


FIG. 19B

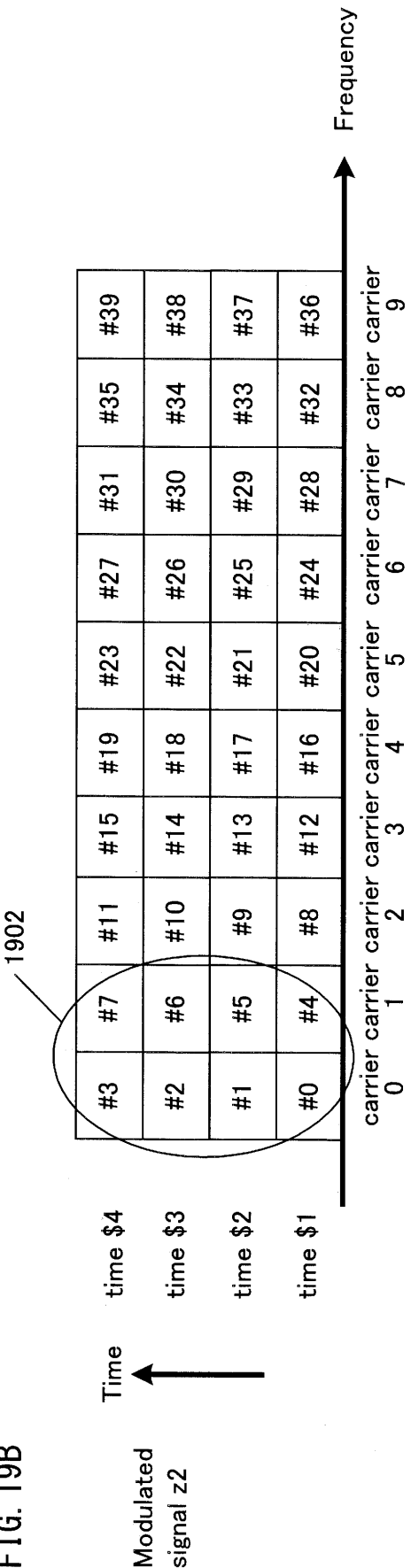


FIG. 20

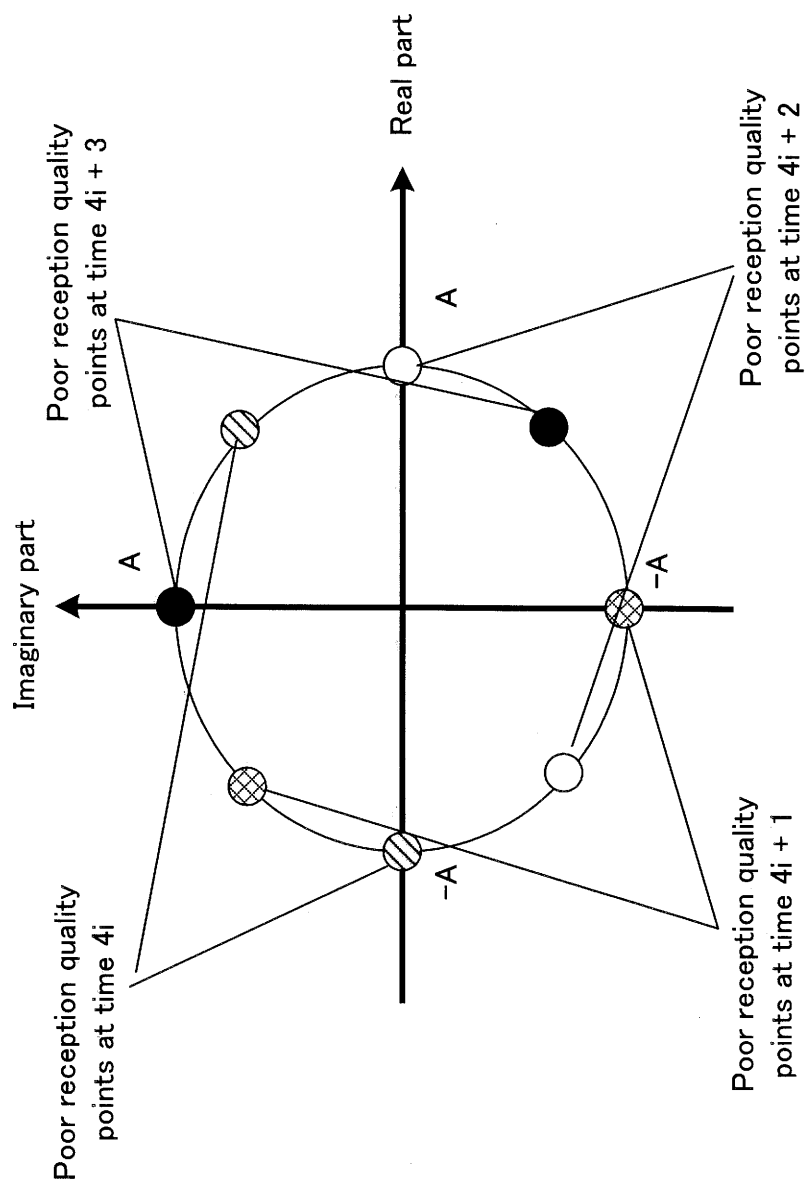


FIG. 21

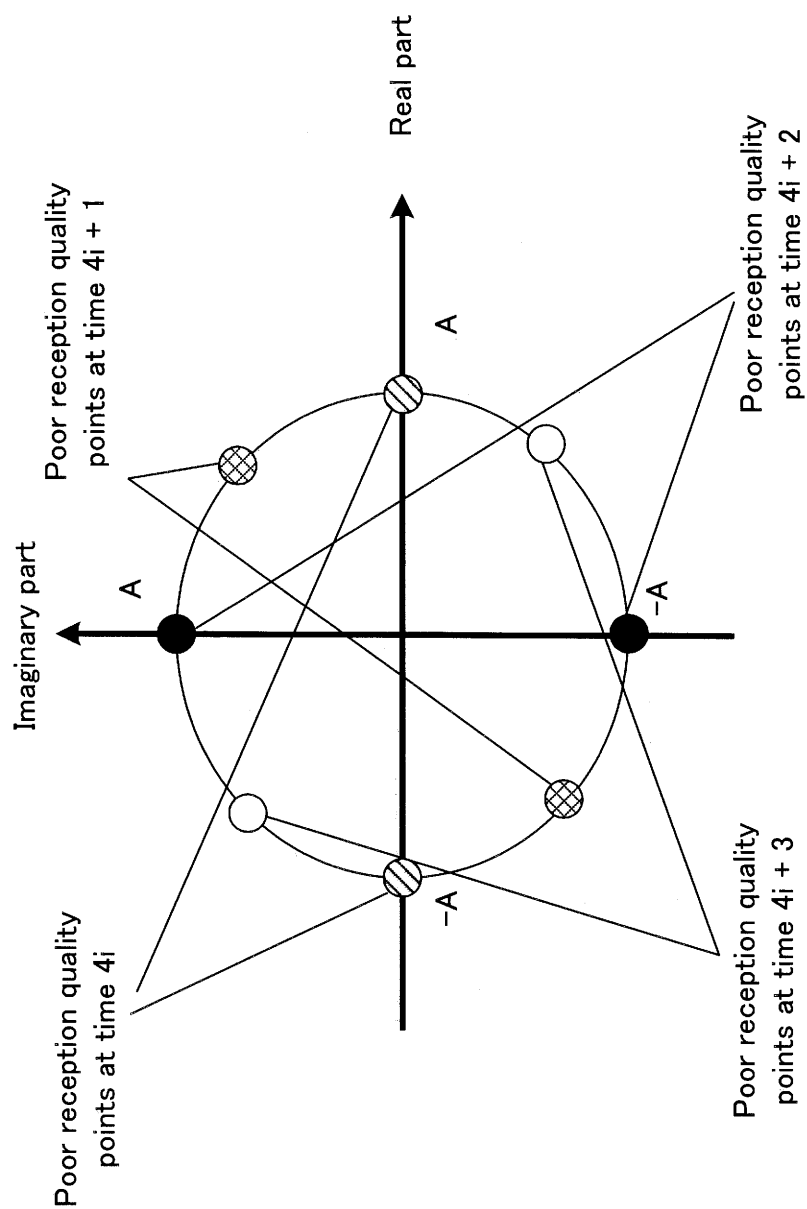


FIG. 22

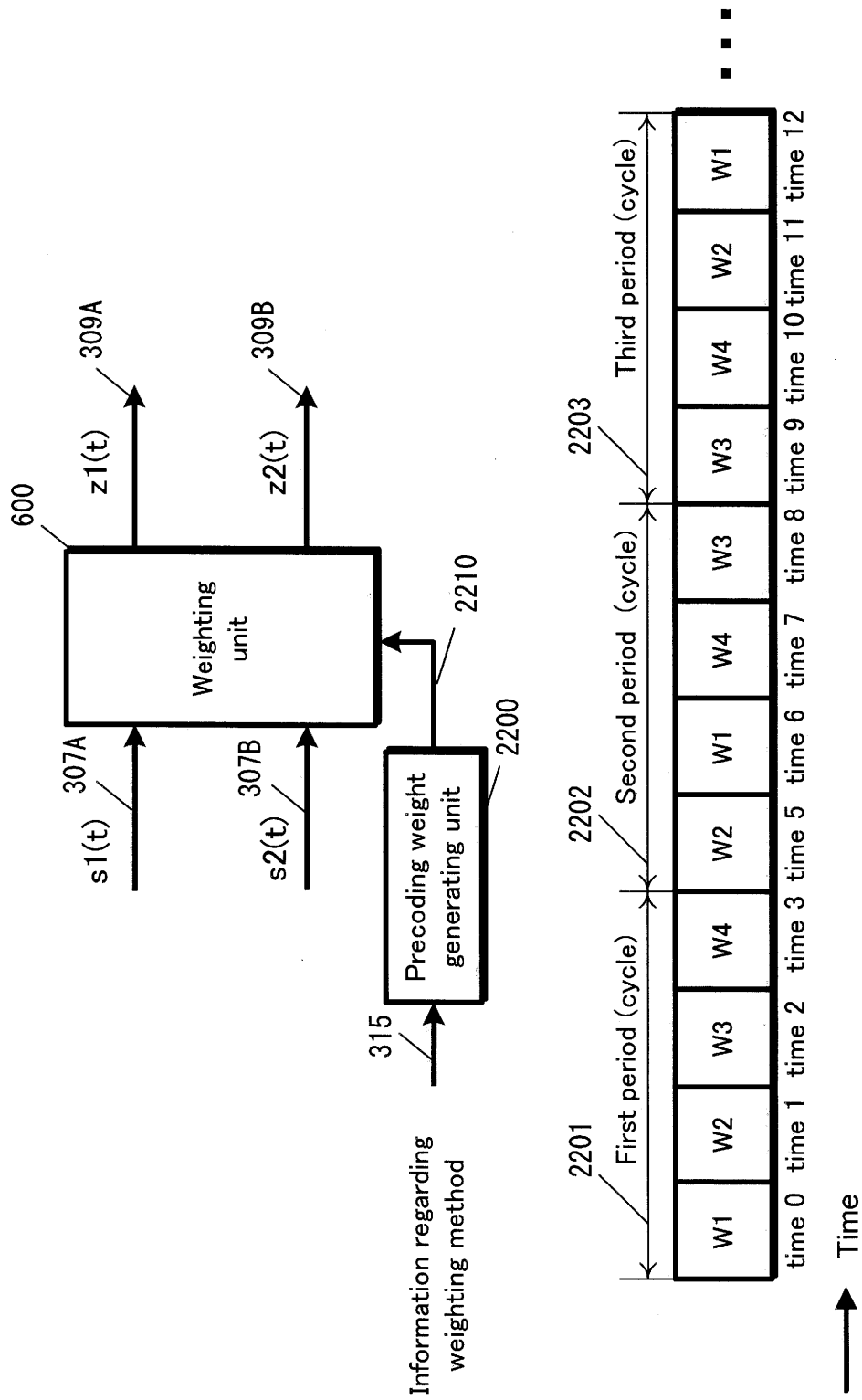


FIG. 23

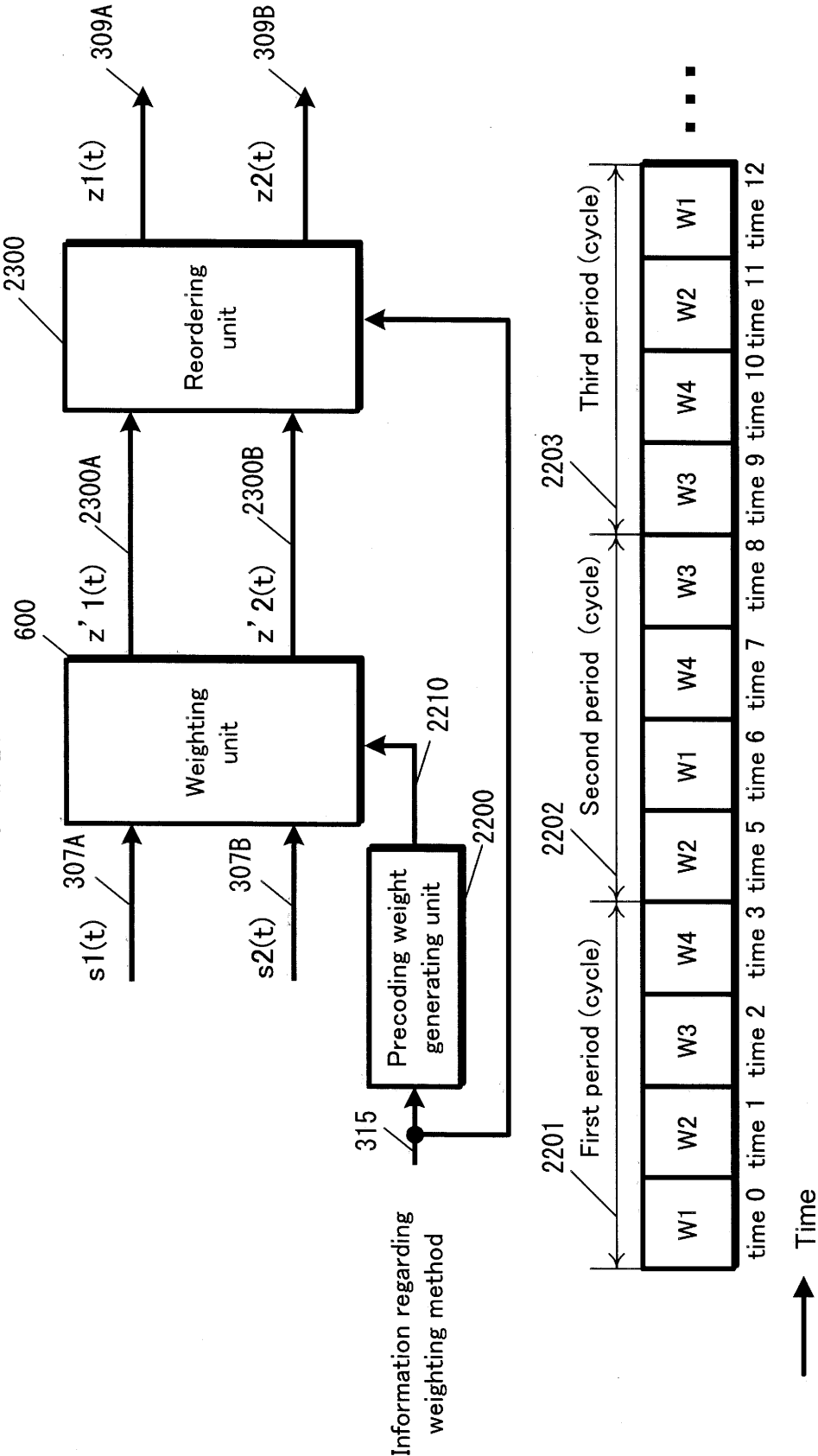


FIG. 24B

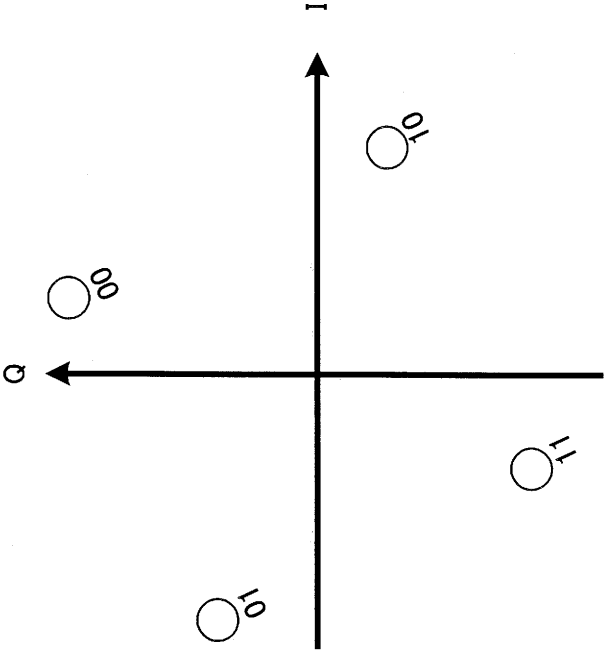


FIG. 24A

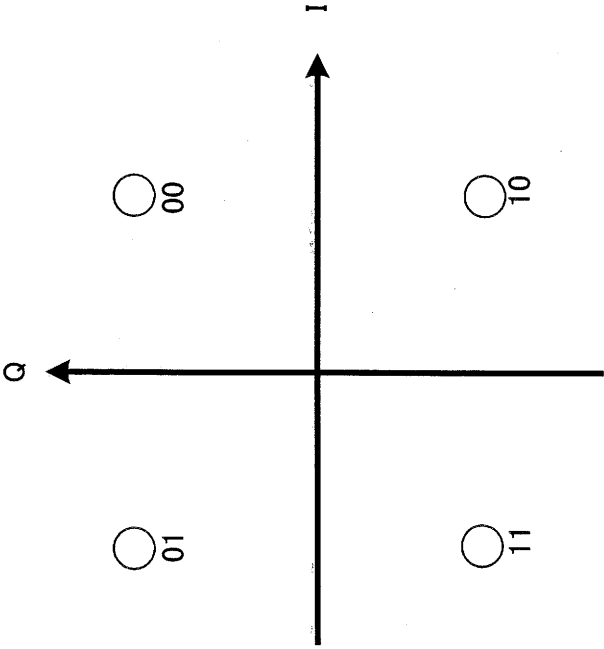


FIG. 25B

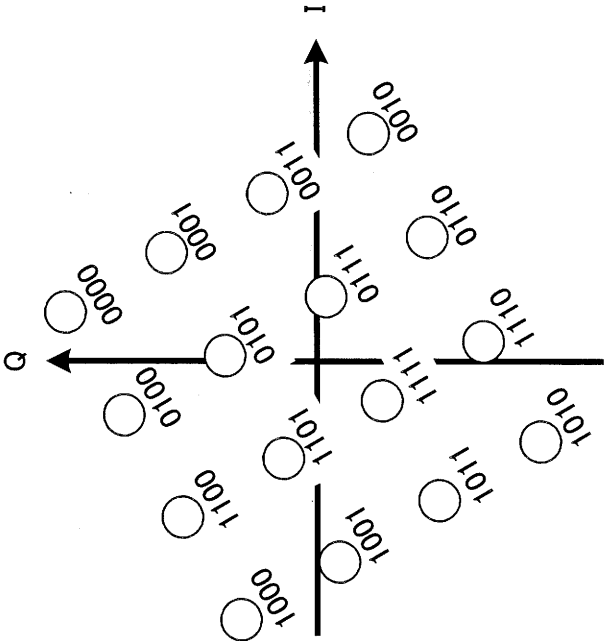


FIG. 25A

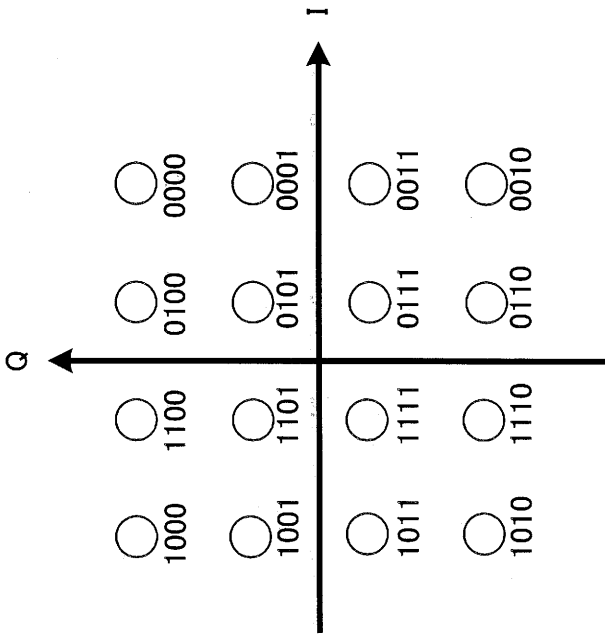


FIG. 26

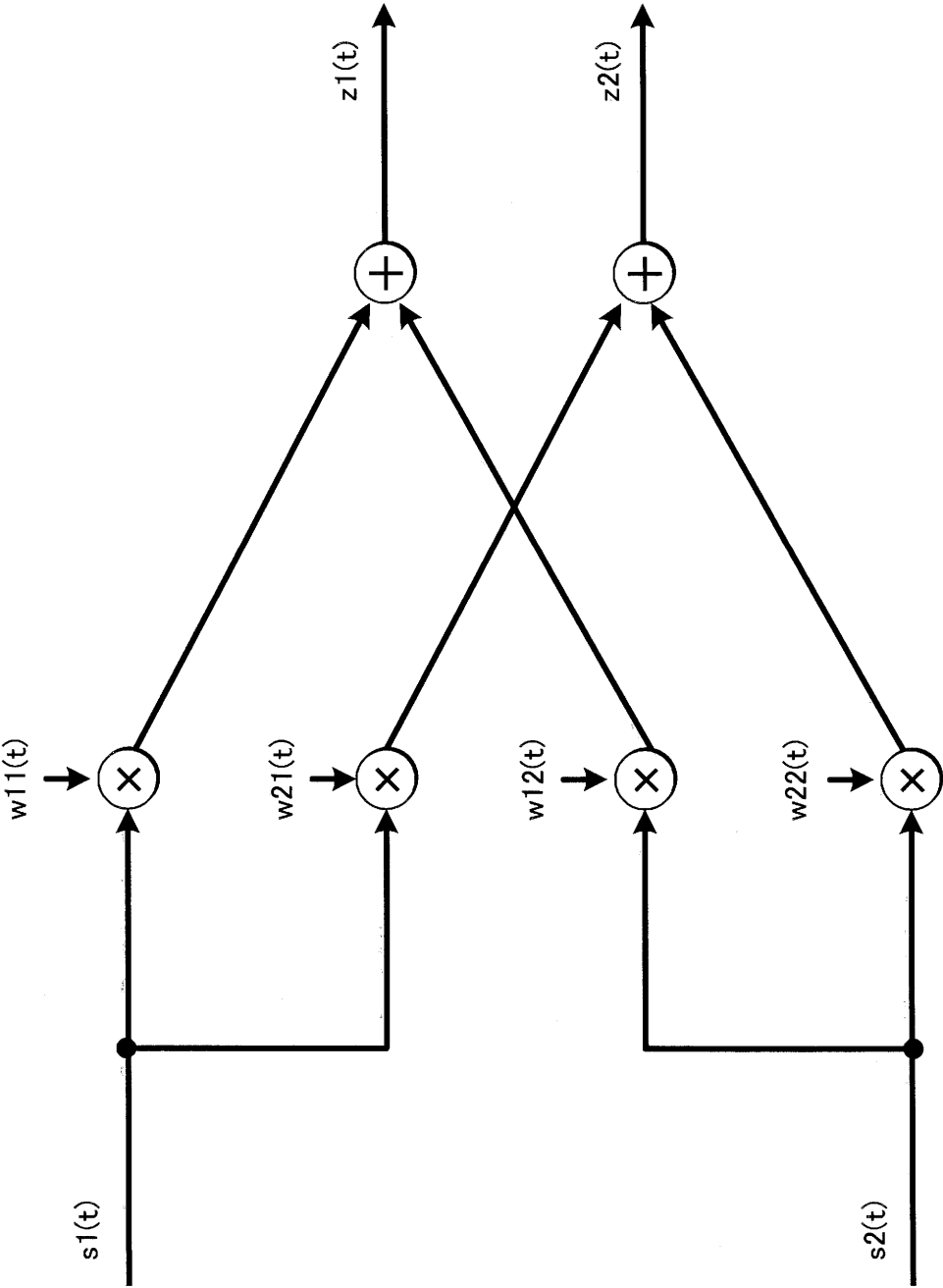


FIG. 28

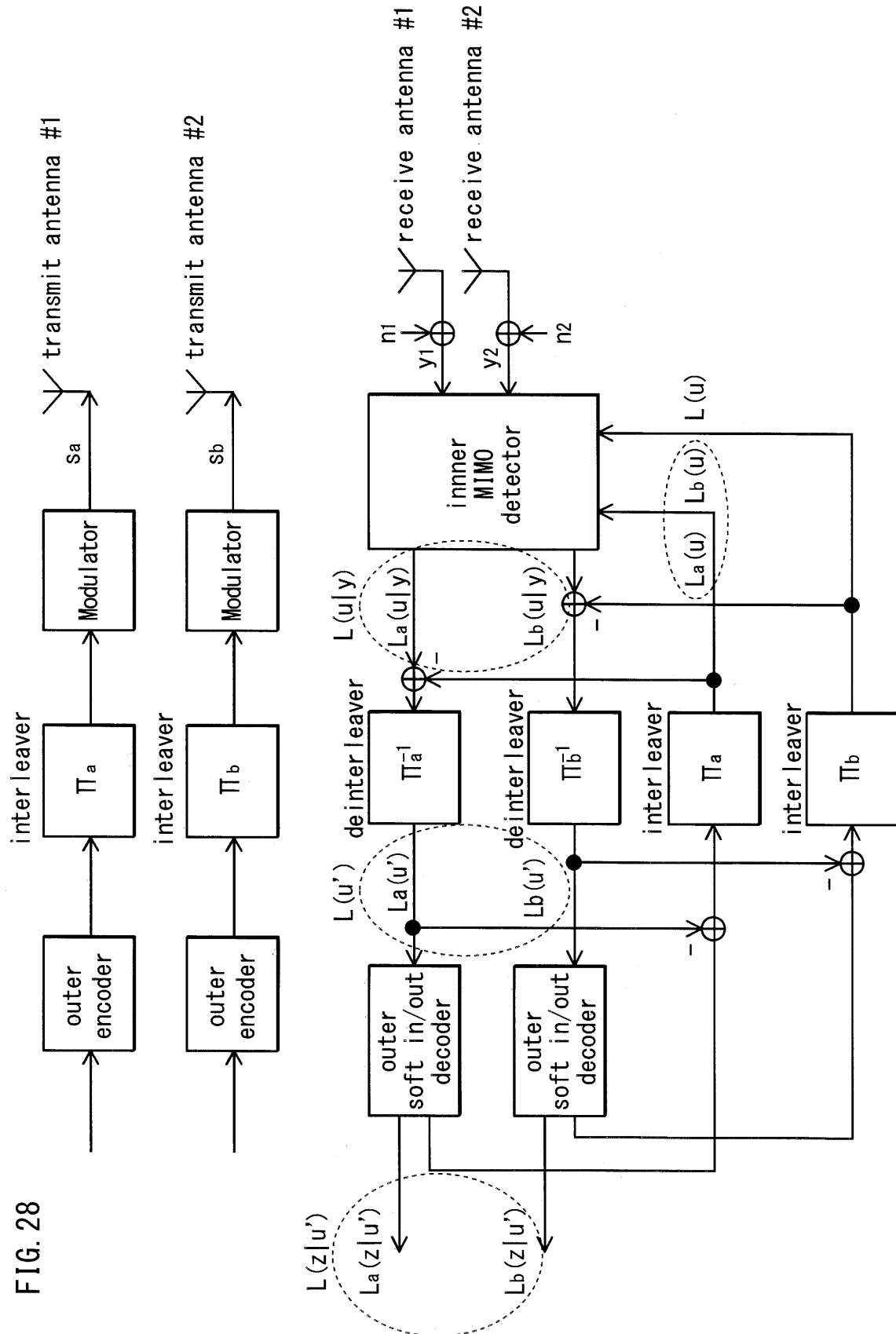


FIG. 29B

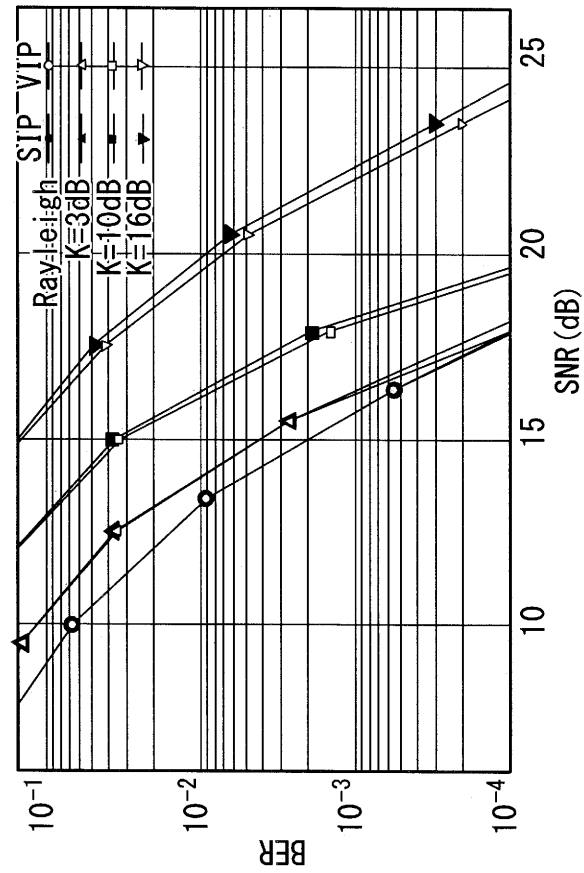
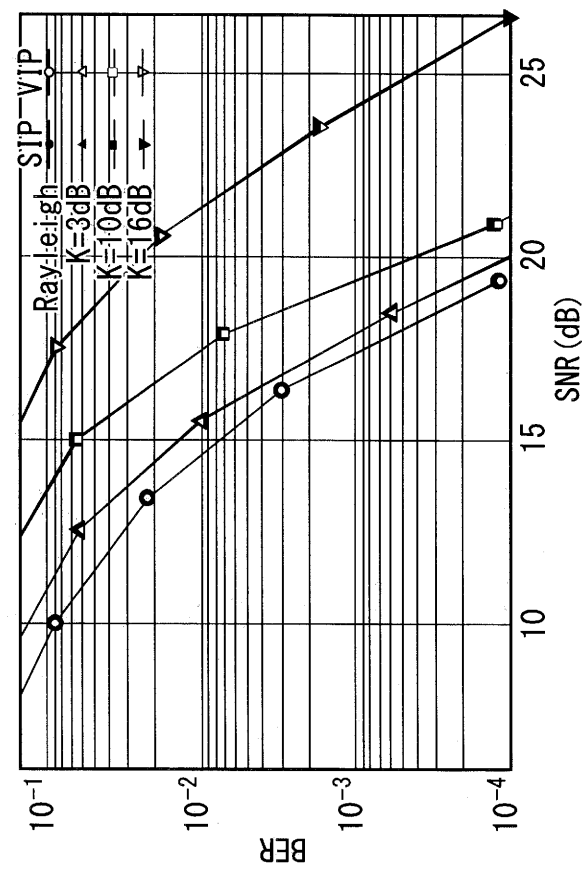


FIG. 29A



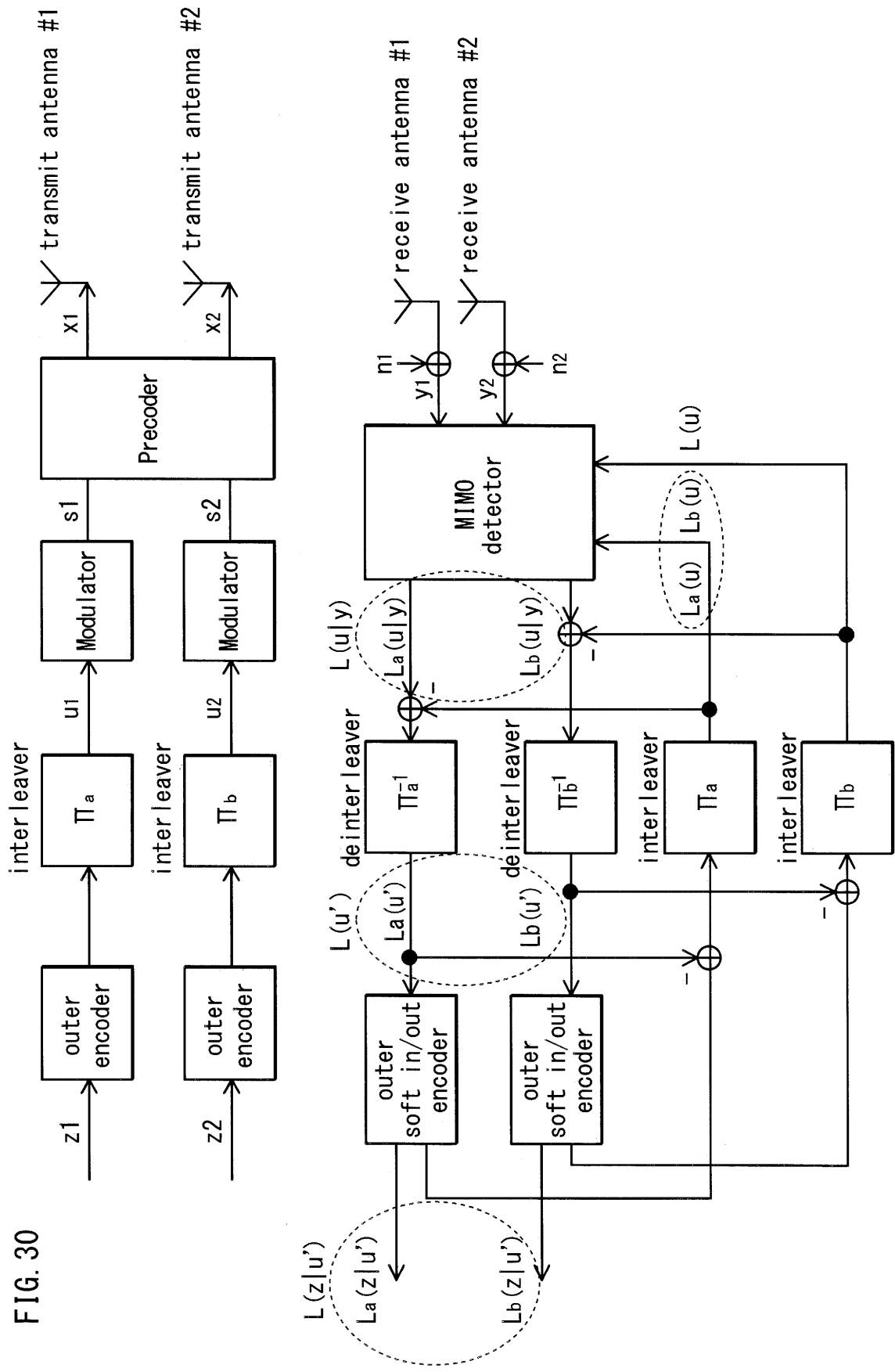


FIG. 30

FIG. 31B

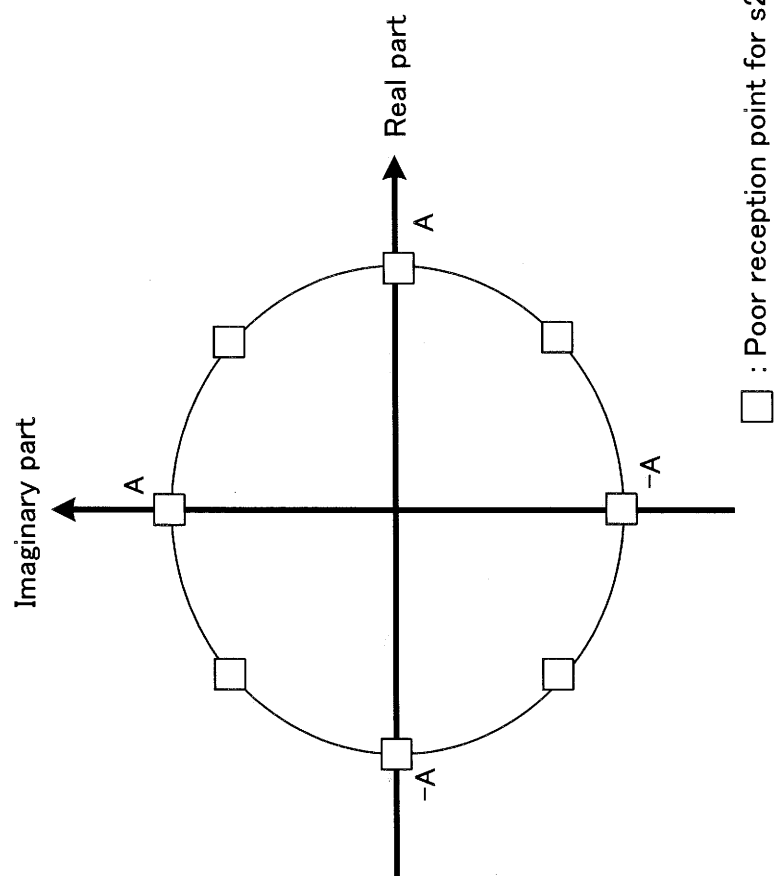


FIG. 31A

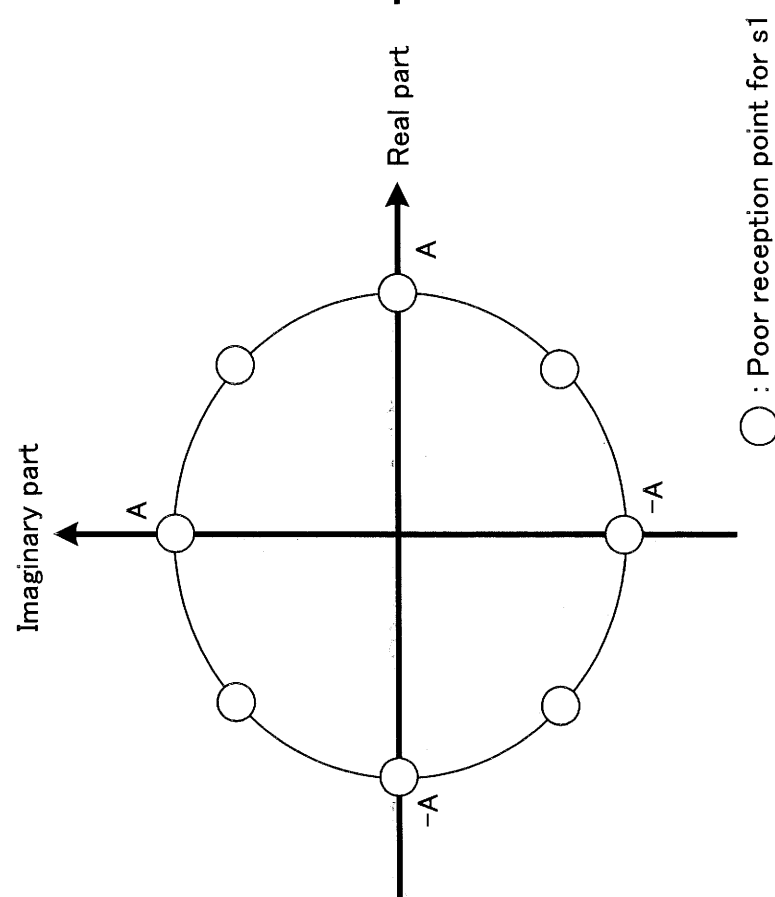


FIG. 32

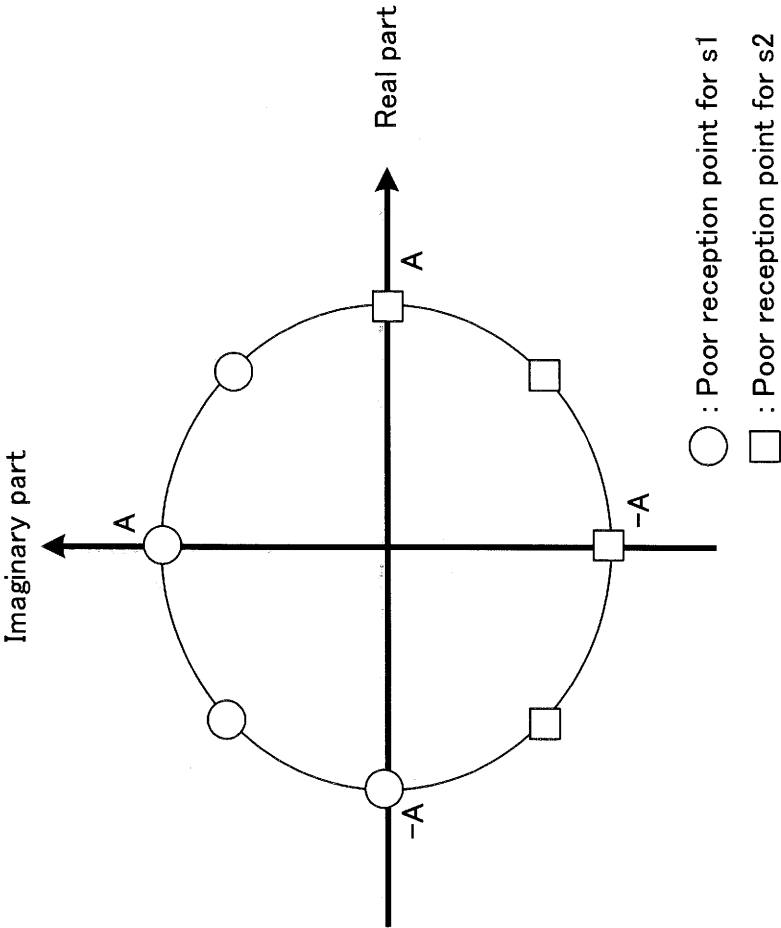
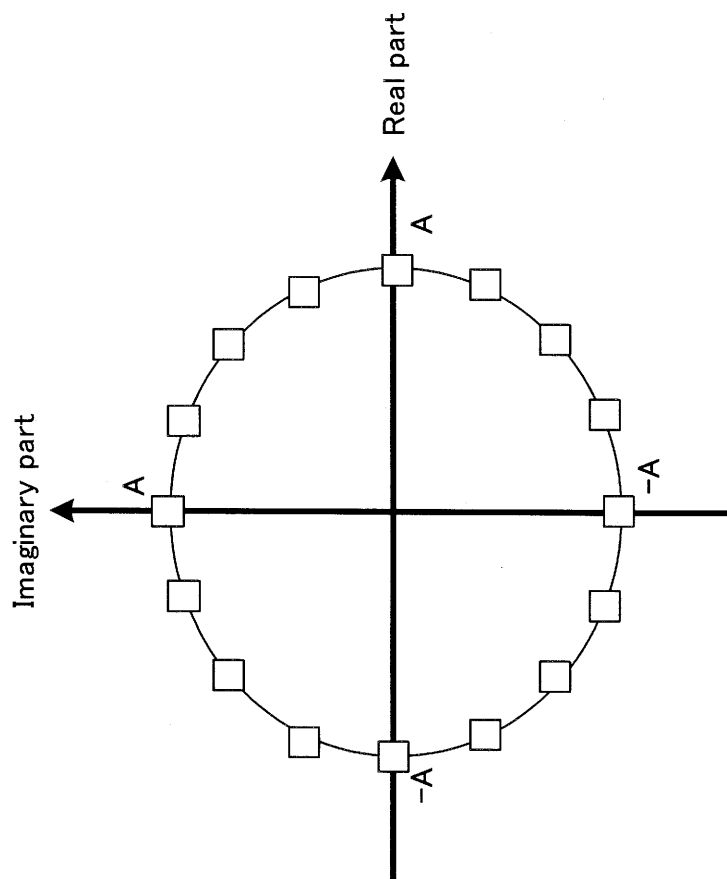
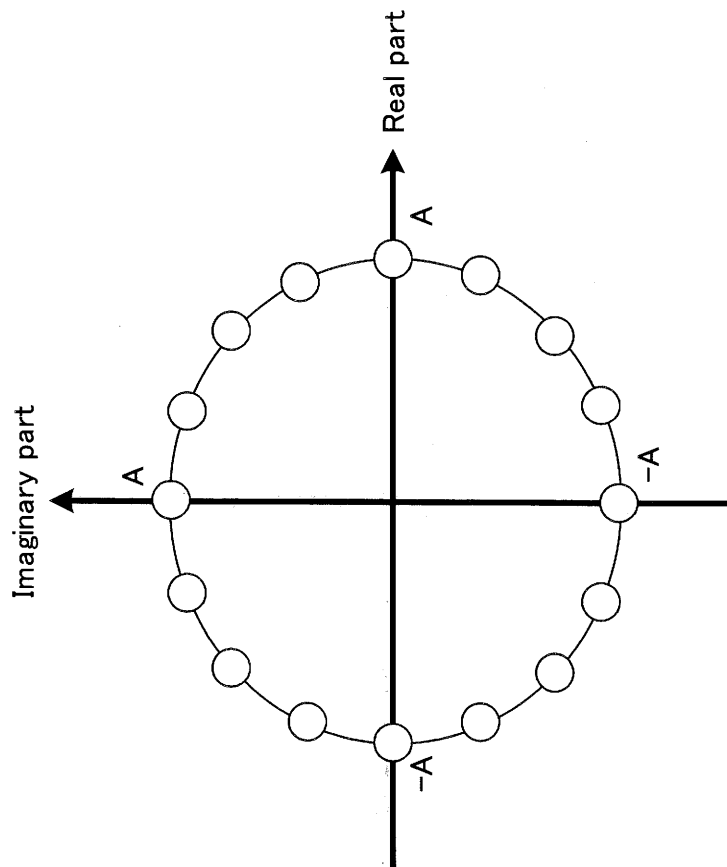


FIG. 33B



□ : Poor reception point for s_2

FIG. 33A



○ : Poor reception point for s_1

FIG. 34

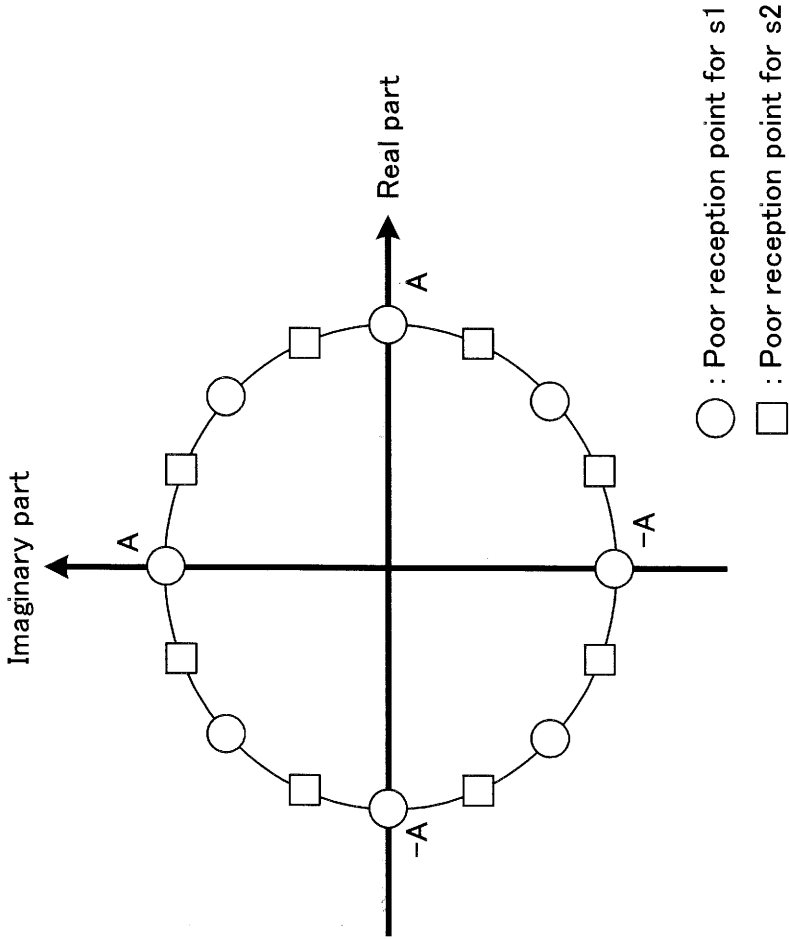


FIG. 35A

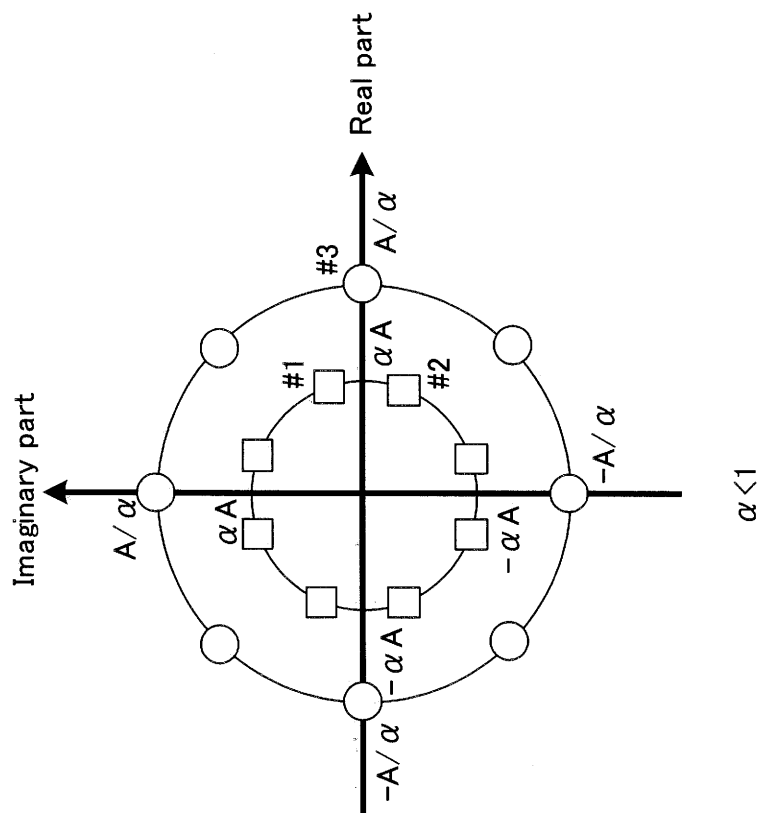


FIG. 35B

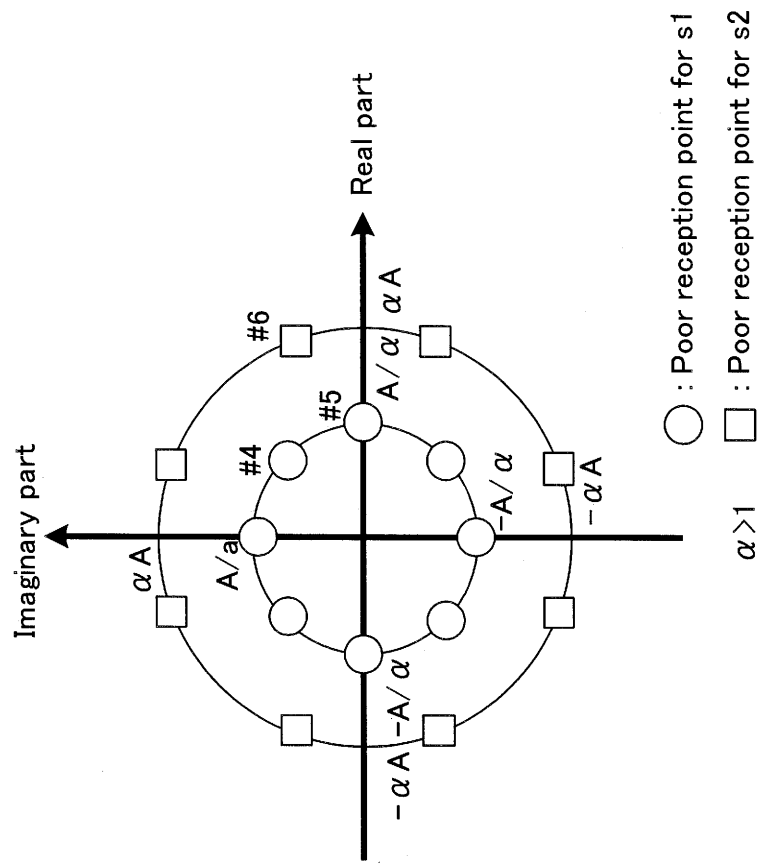


FIG. 36

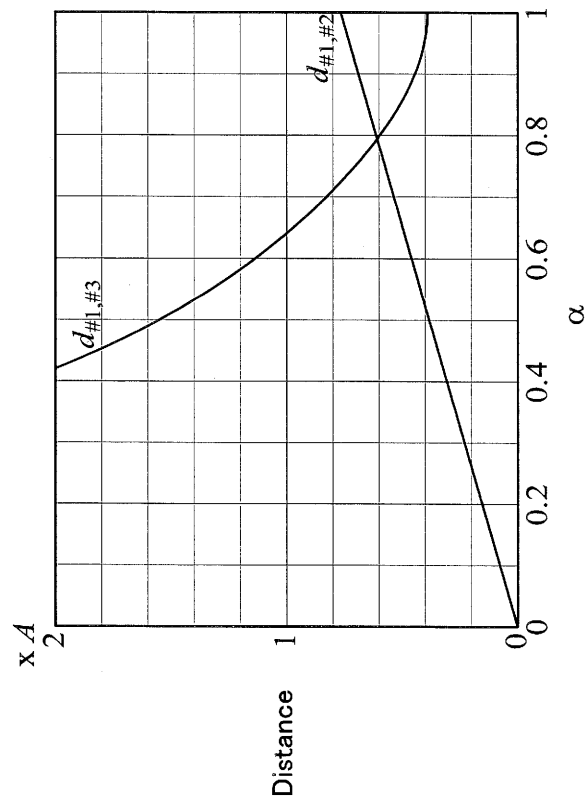


FIG. 37

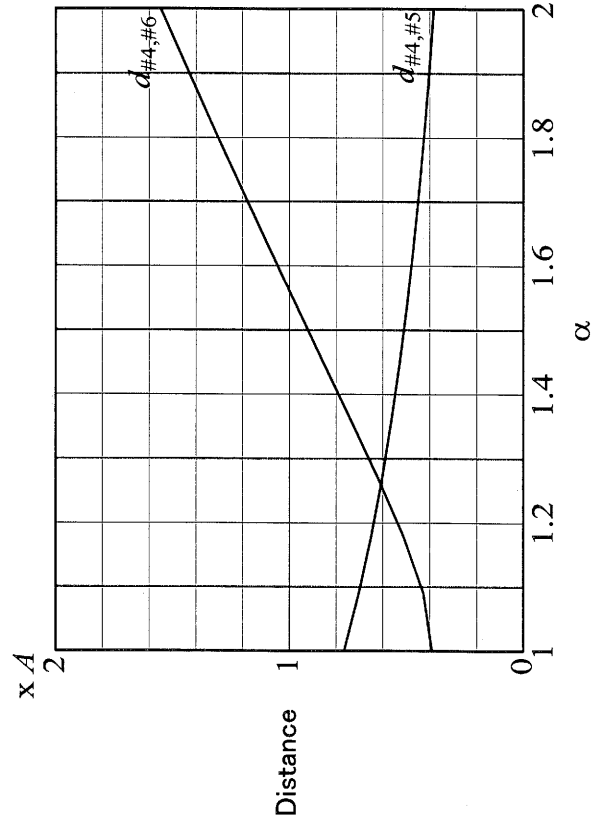


FIG. 38B

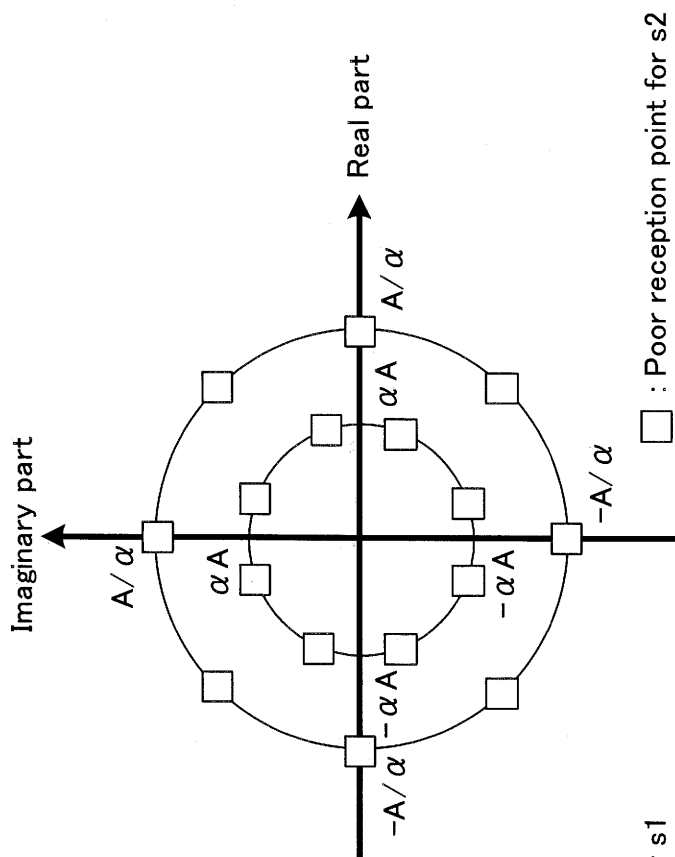


FIG. 38A

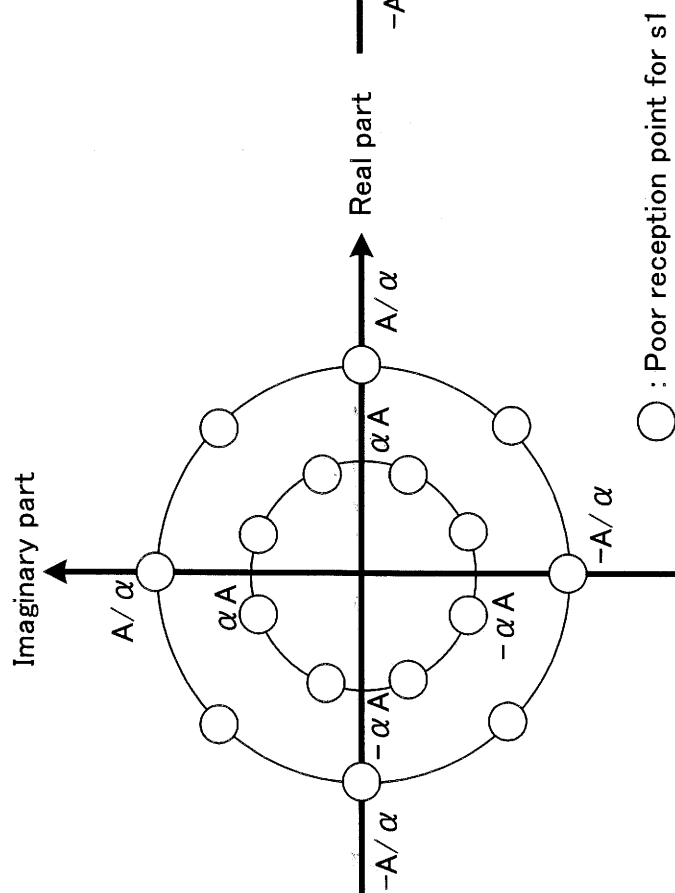


FIG. 39A

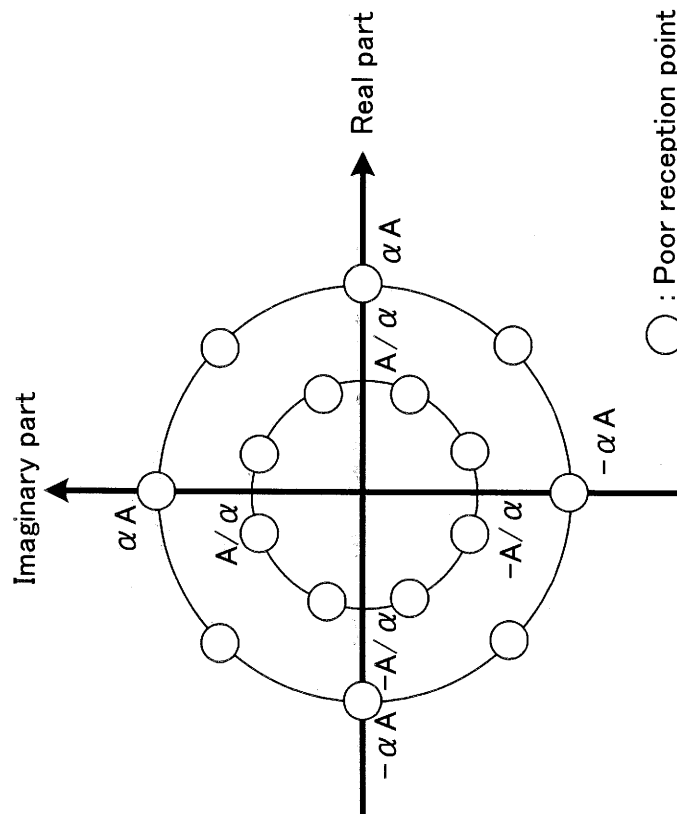


FIG. 39B

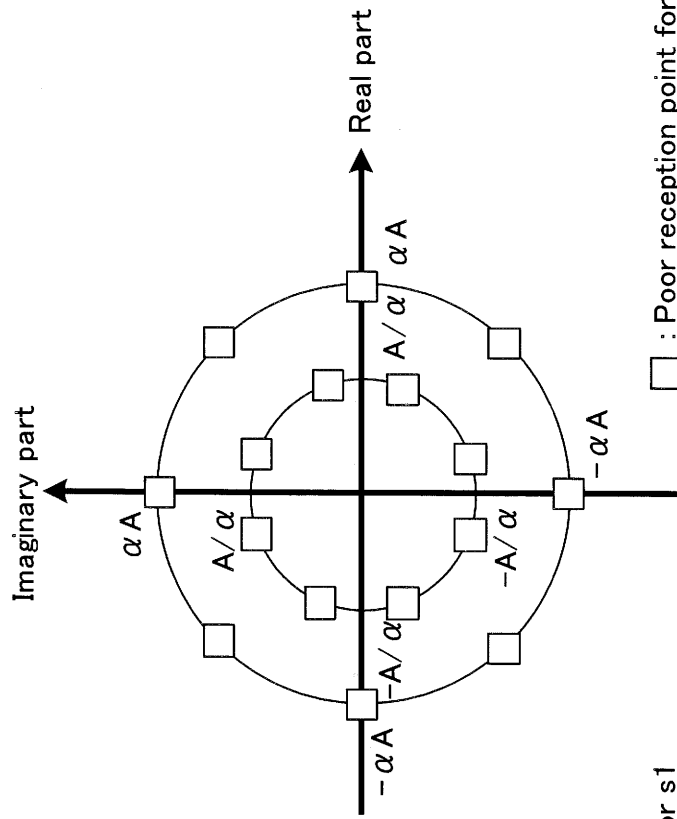


FIG. 40

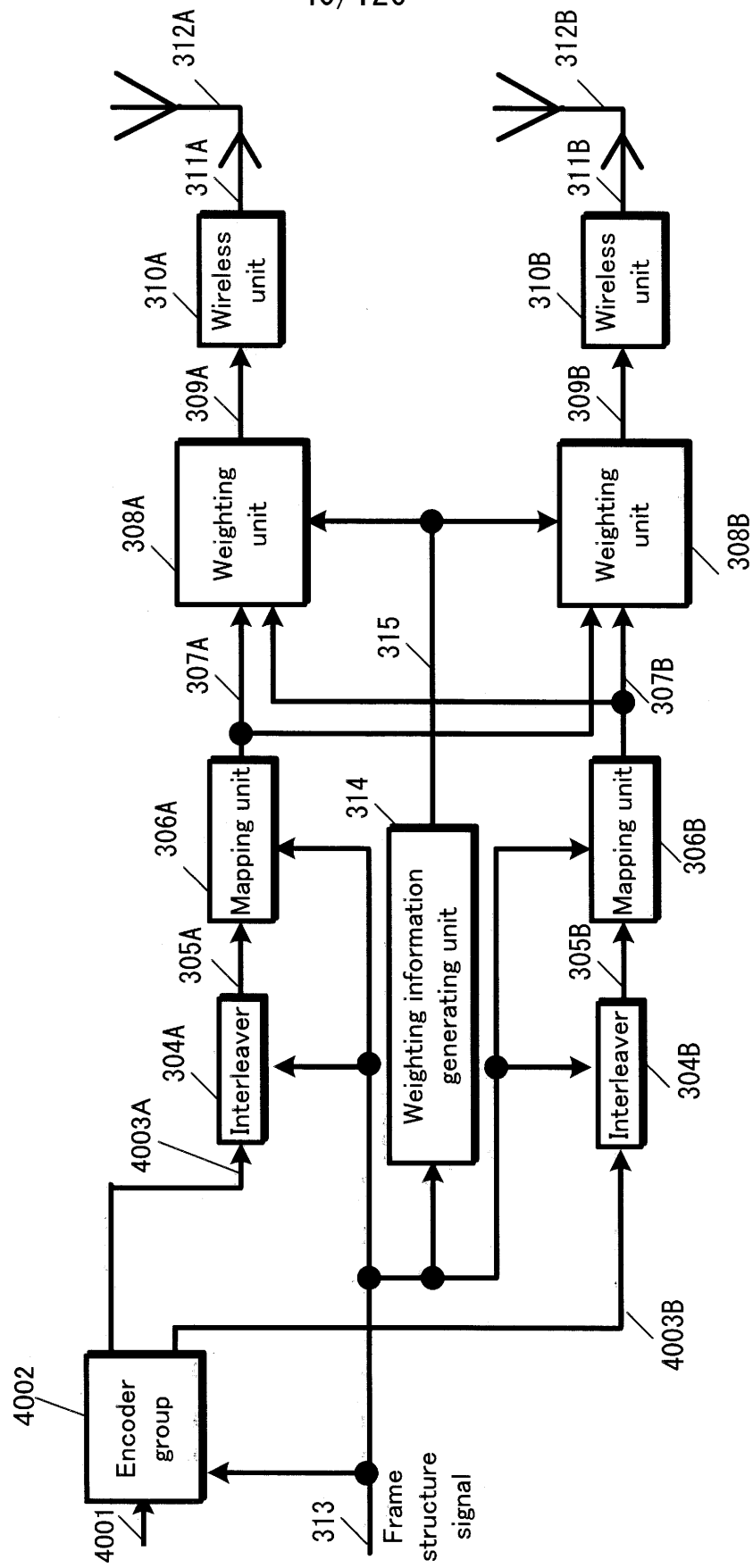


FIG. 41

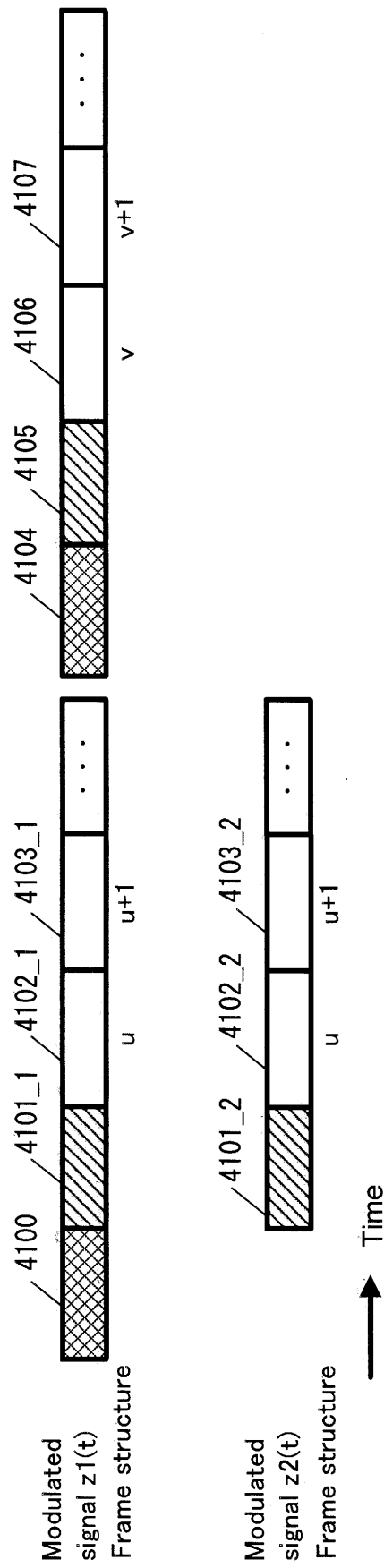


FIG. 42B

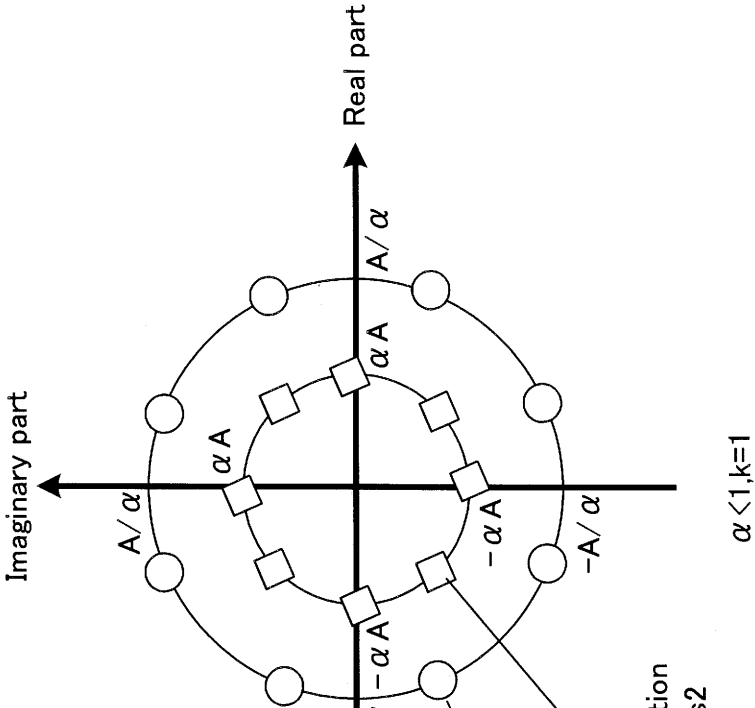


FIG. 42A

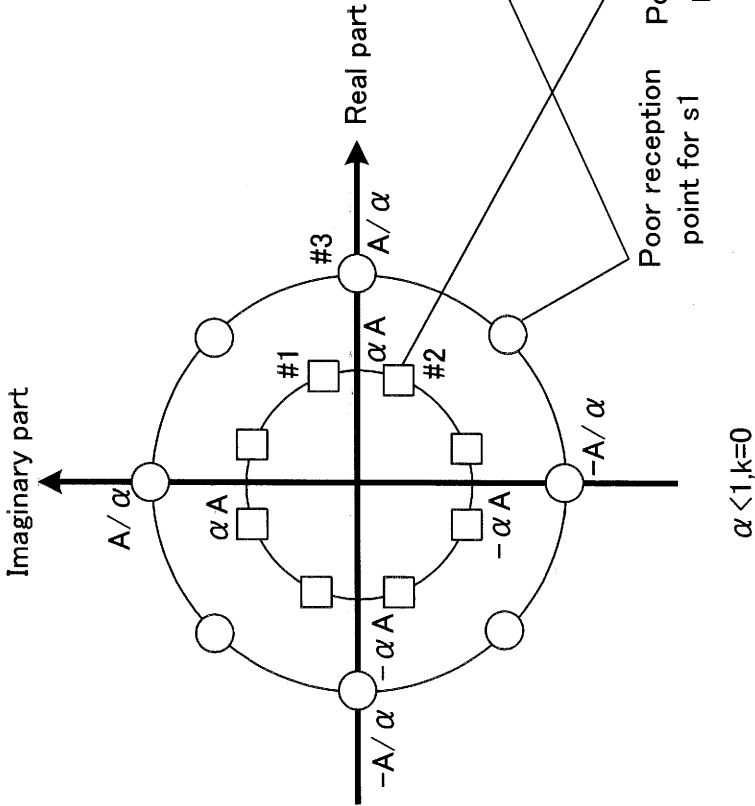


FIG. 43A

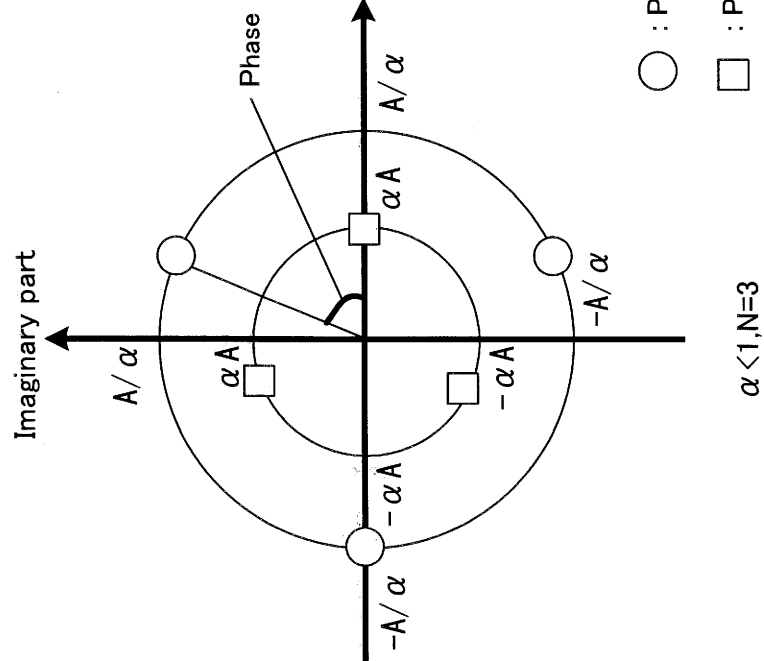


FIG. 43B

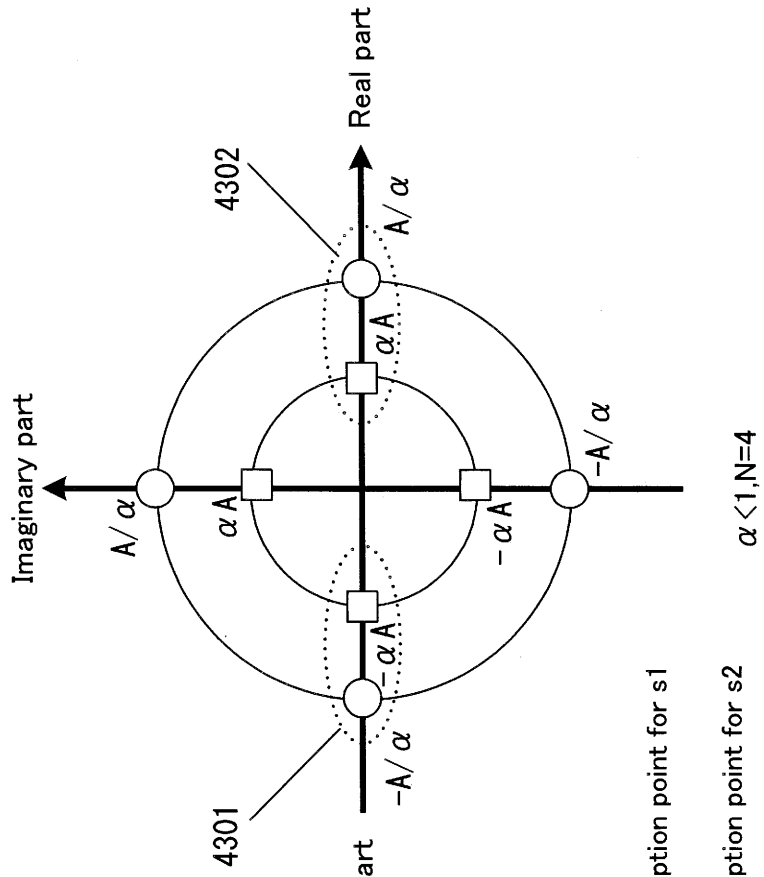


FIG. 44B

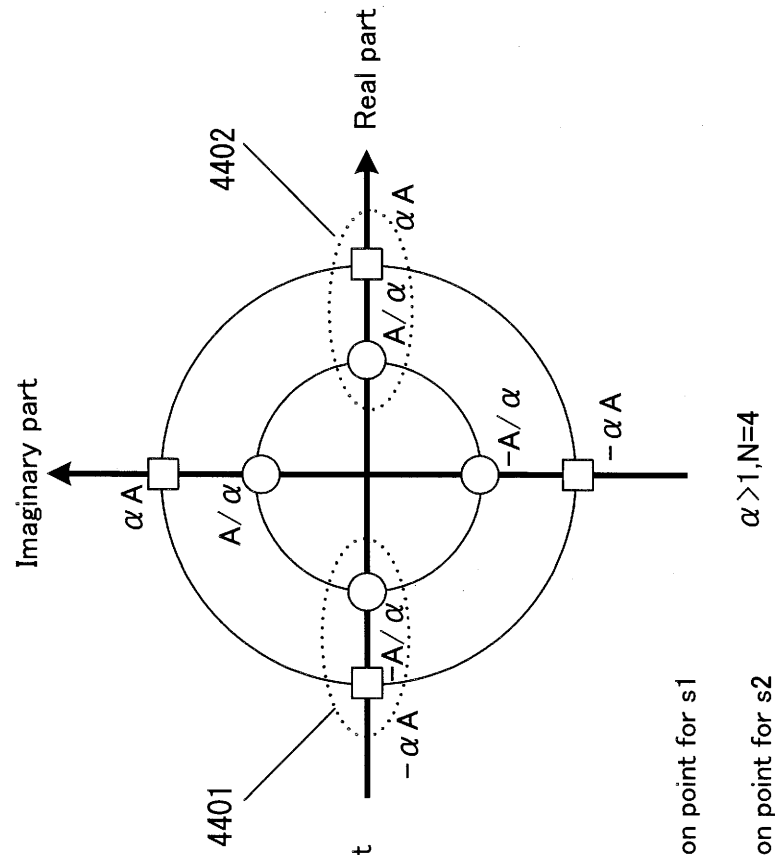
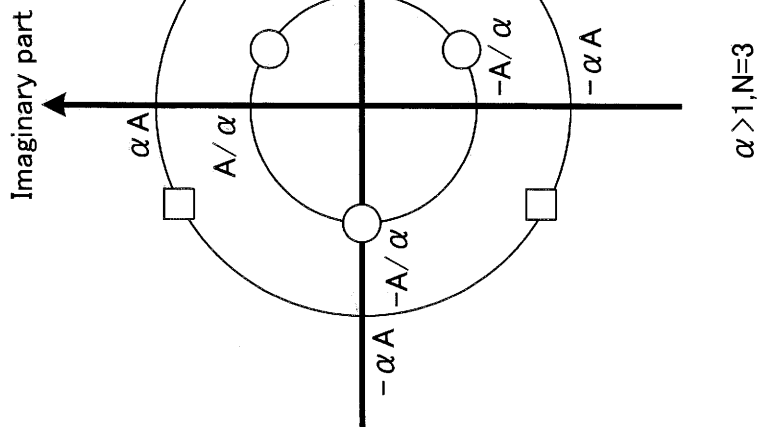


FIG. 44A



- : Poor reception point for s_1
- : Poor reception point for s_2

$\alpha > 1, N=3$

$\alpha > 1, N=4$

FIG. 45B

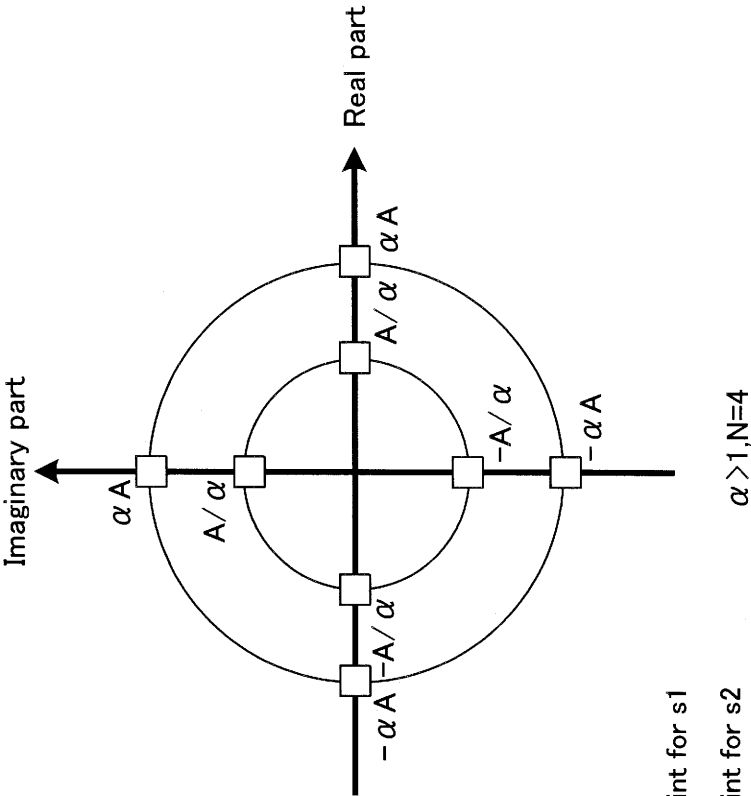


FIG. 45A

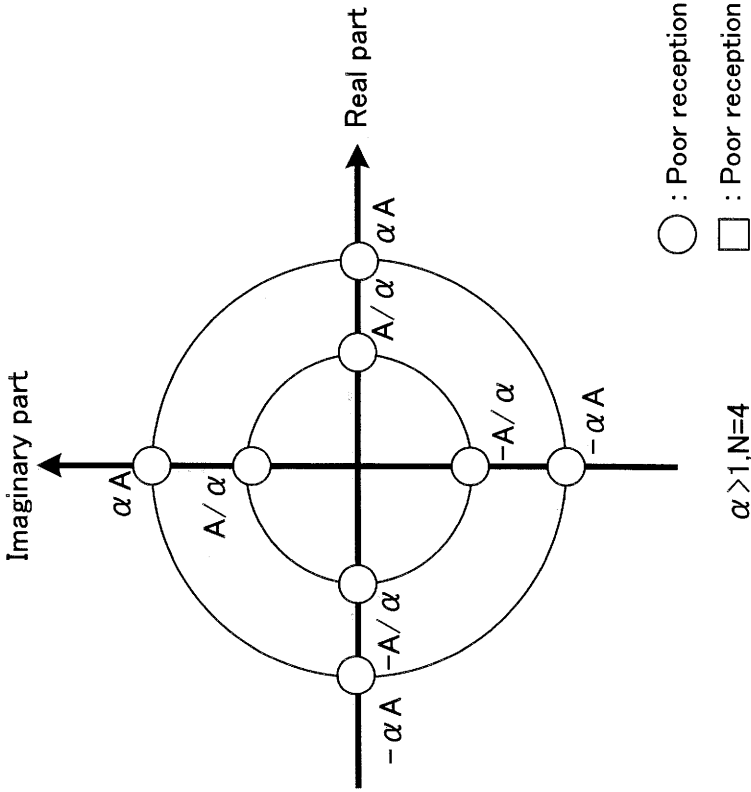


FIG. 46B

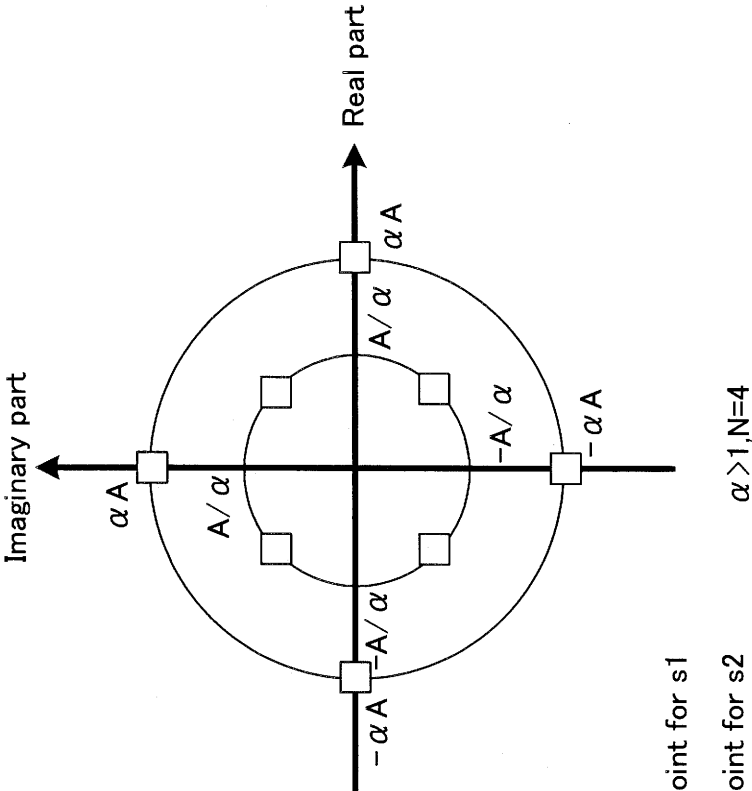


FIG. 46A

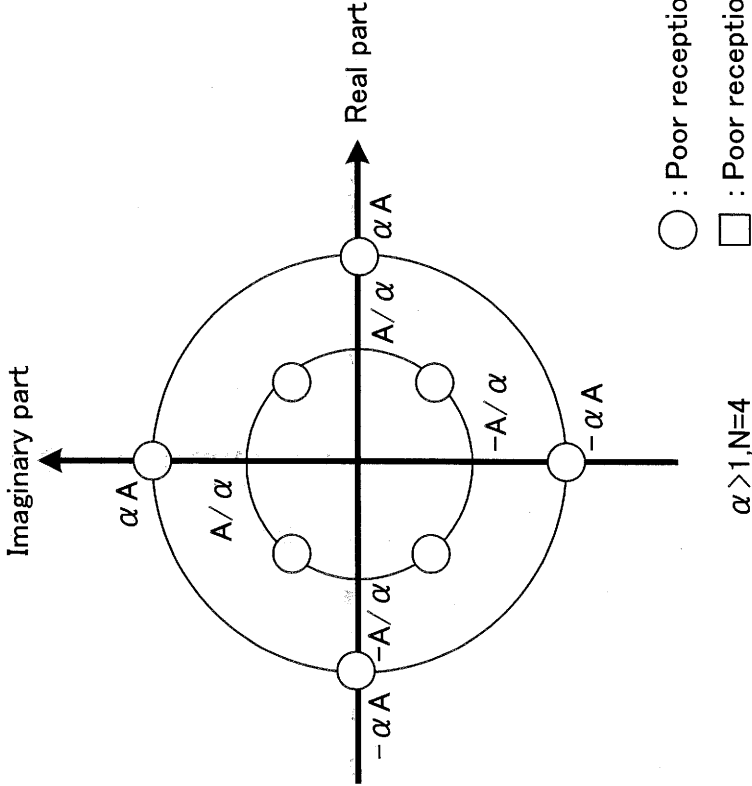


FIG. 47A

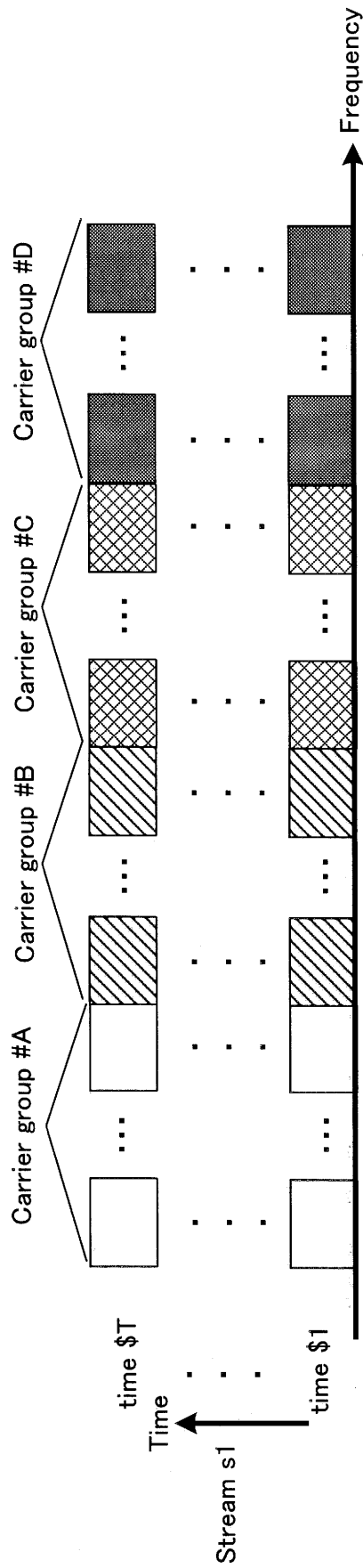


FIG. 47B

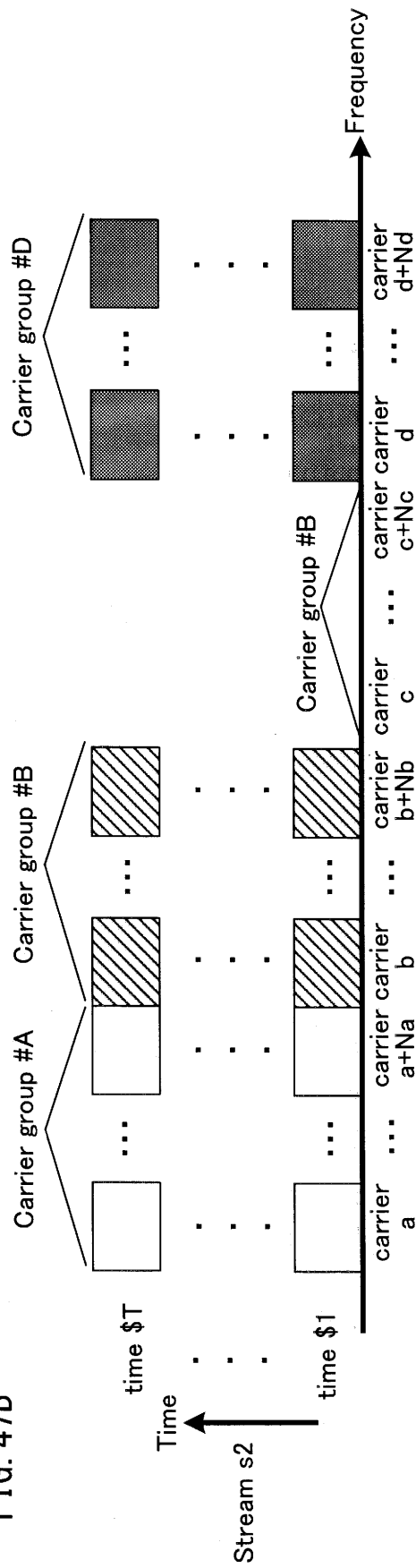
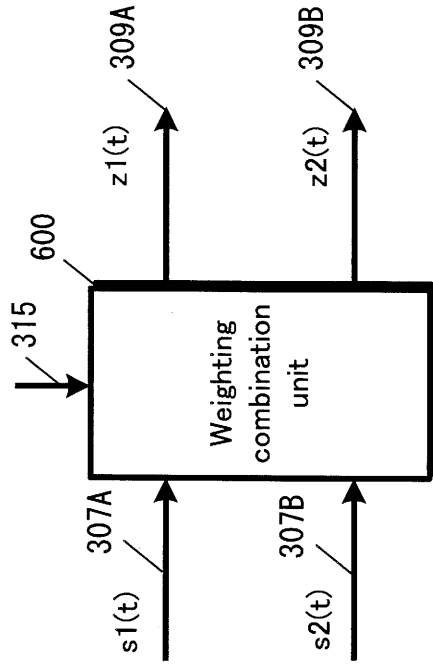


FIG. 49

Information regarding weighting method



Method #1:

$$\begin{pmatrix} z1(t) \\ z2(t) \end{pmatrix} = \begin{pmatrix} e^{j0} & 0 \\ 0 & e^{j0} \end{pmatrix} \begin{pmatrix} s1(t) \\ s2(t) \end{pmatrix} \\ = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} s1(t) \\ s2(t) \end{pmatrix}$$

Different

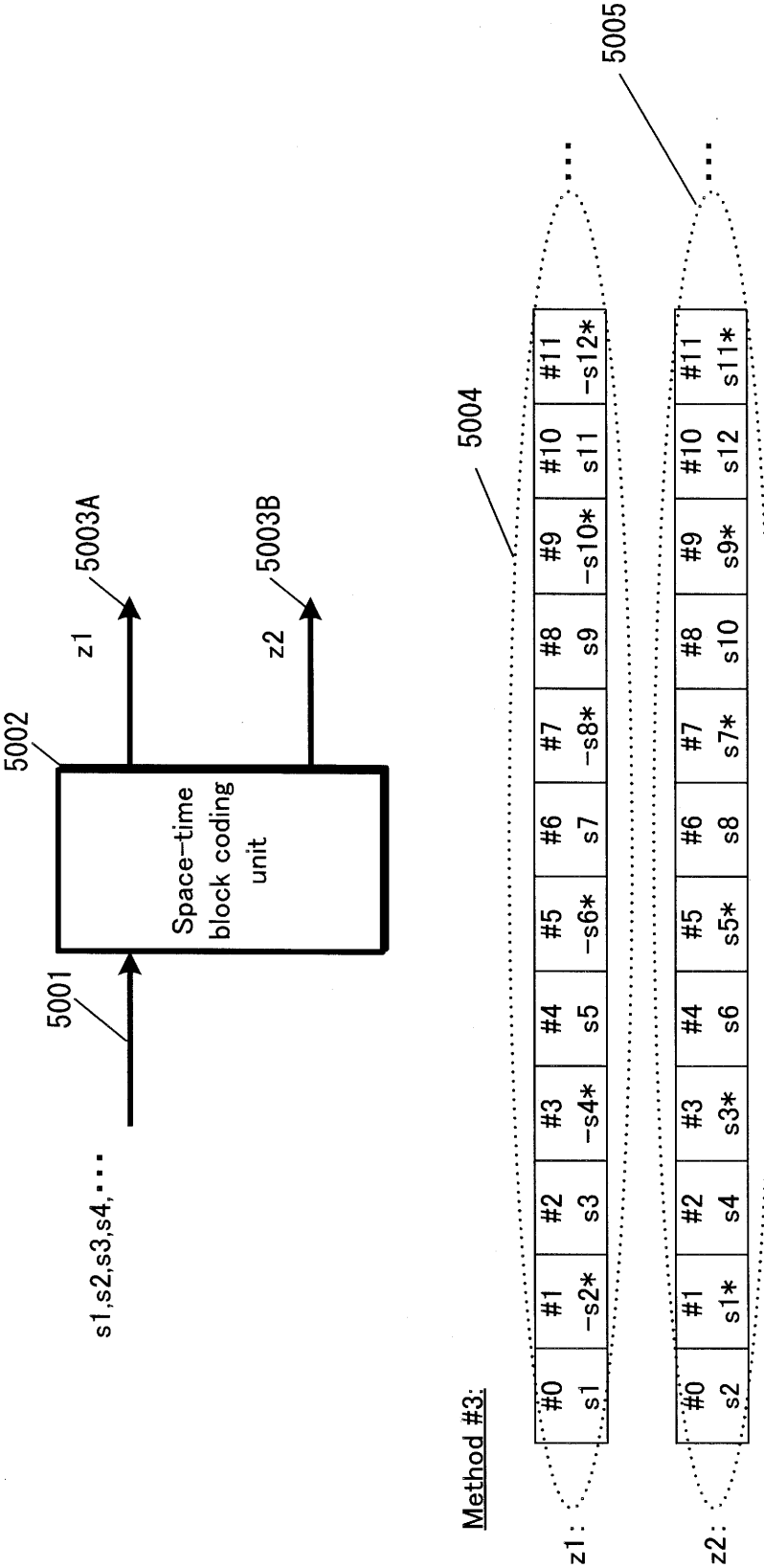
expression

$$\begin{pmatrix} z1(t) \\ z2(t) \end{pmatrix} = \frac{1}{\sqrt{2}} \begin{pmatrix} e^{j0} & 0 \\ 0 & e^{j0} \end{pmatrix} \begin{pmatrix} s1(t) \\ s2(t) \end{pmatrix} \\ = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} s1(t) \\ s2(t) \end{pmatrix}$$

Method #2:

$$\begin{pmatrix} z1(t) \\ z2(t) \end{pmatrix} = \frac{1}{\sqrt{\alpha^2 + 1}} \begin{pmatrix} e^{j\theta_{11}(i)} \\ \alpha \times e^{j\theta_{21}(i)} \end{pmatrix} \begin{pmatrix} s1(t) \\ s2(t) \end{pmatrix}$$

FIG. 50



* denotes a complex conjugate

FIG. 51

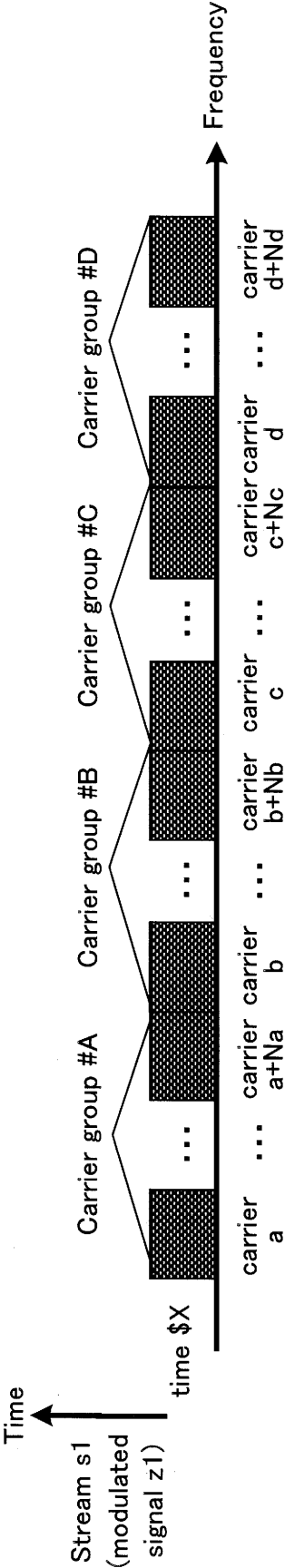


FIG. 52

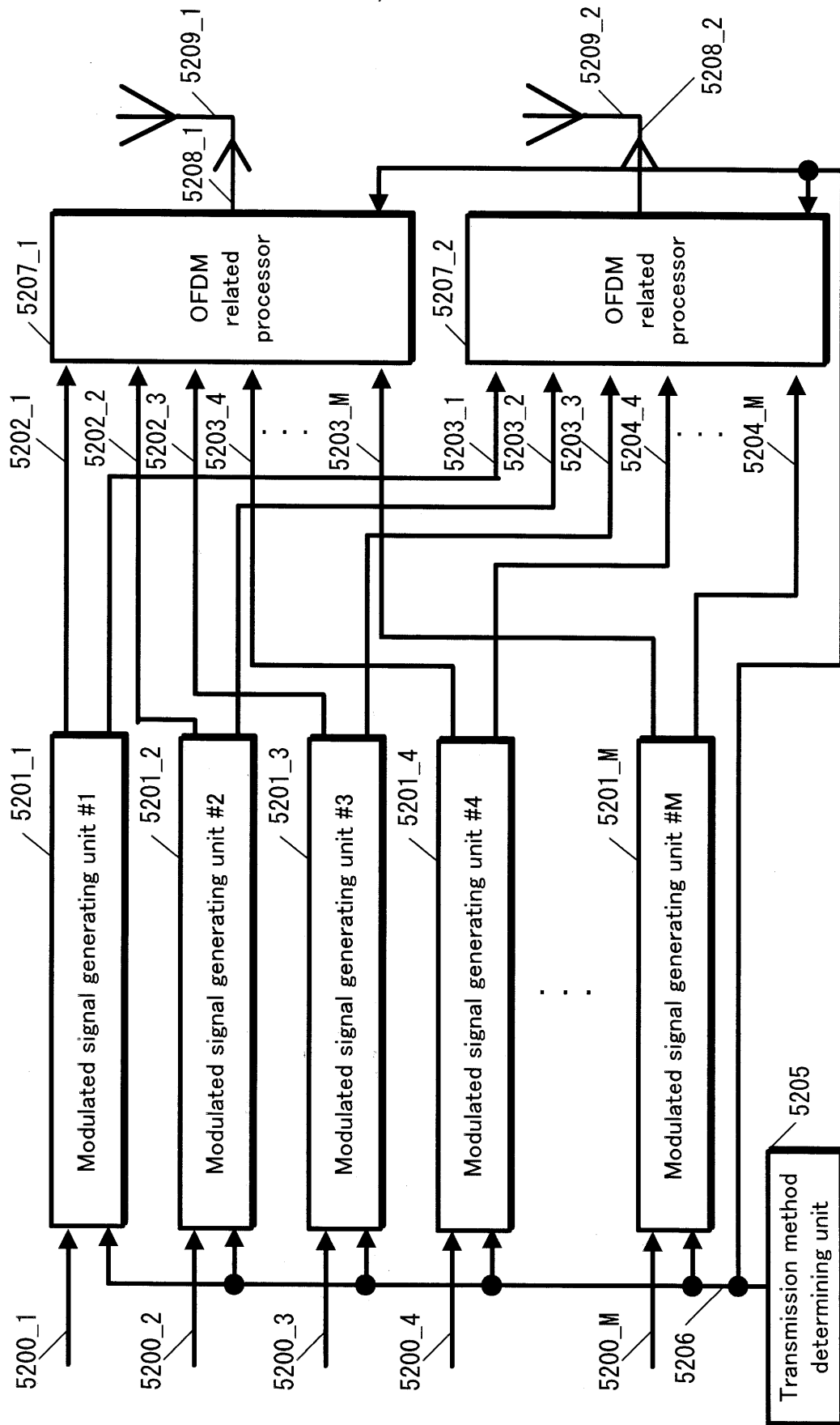
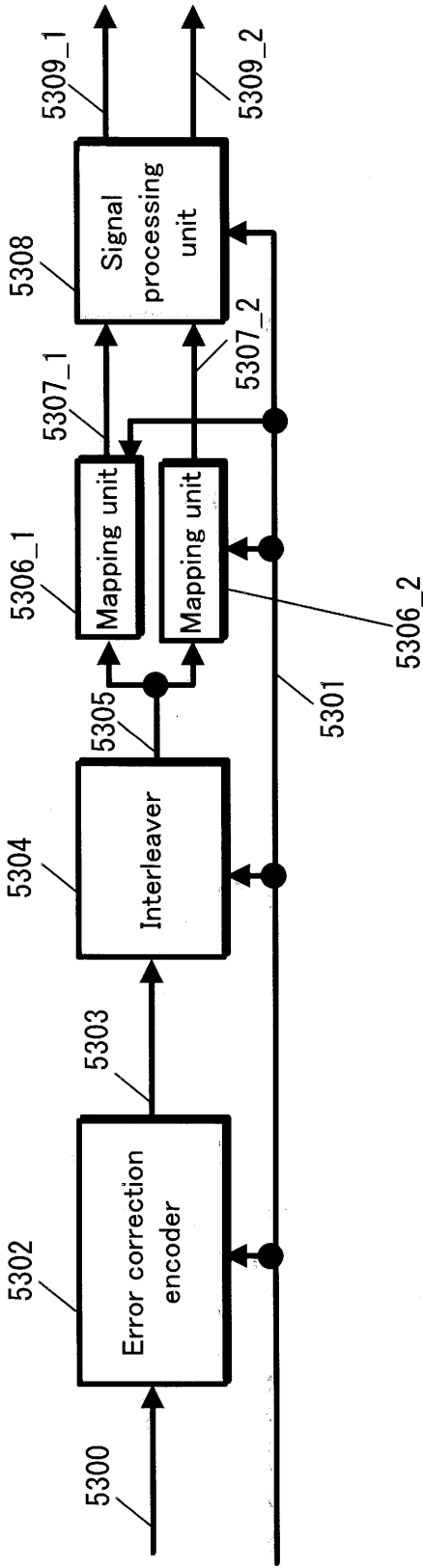


FIG. 53



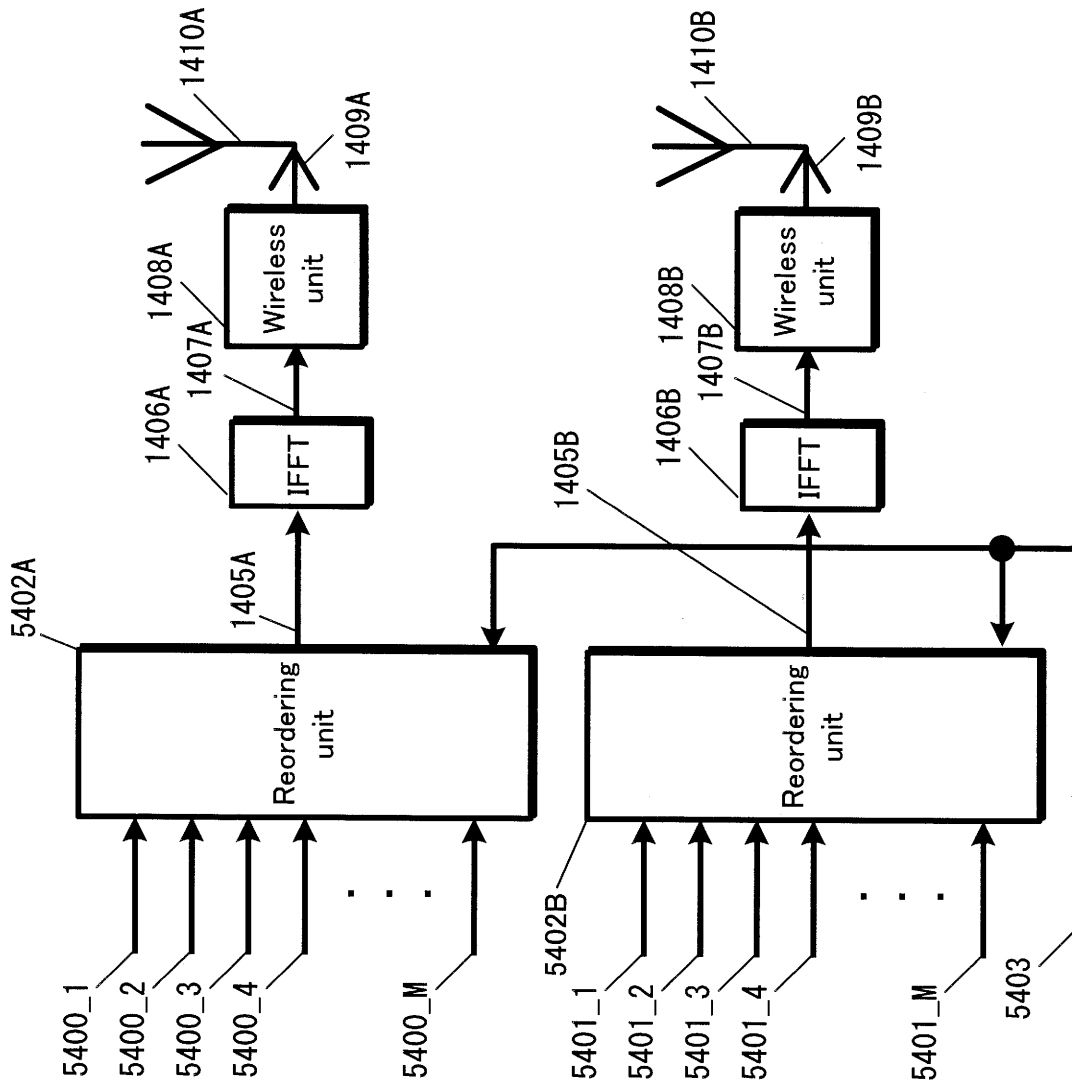


FIG. 55A

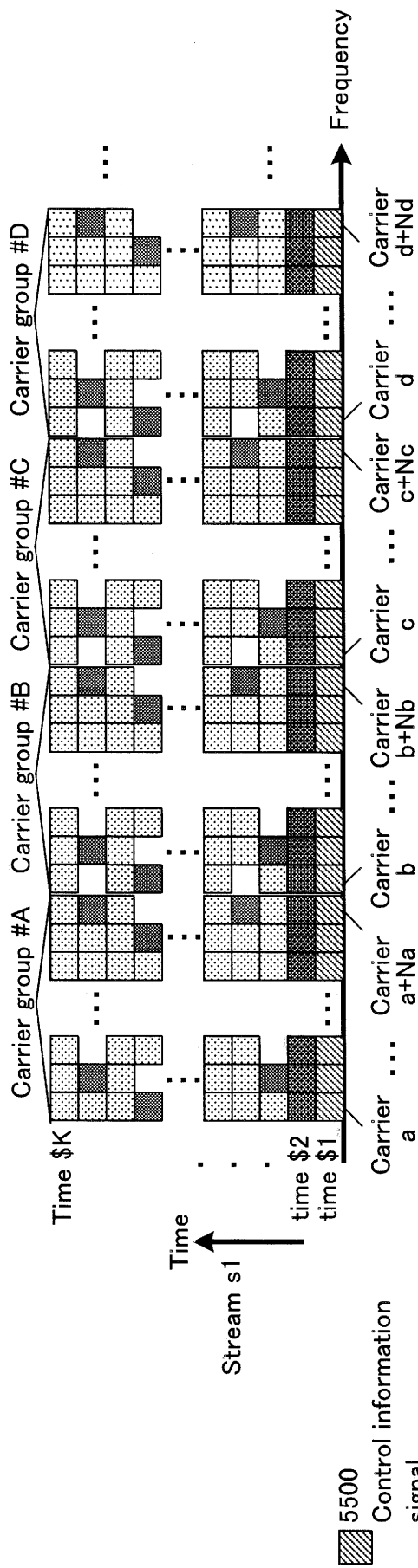


FIG. 55B

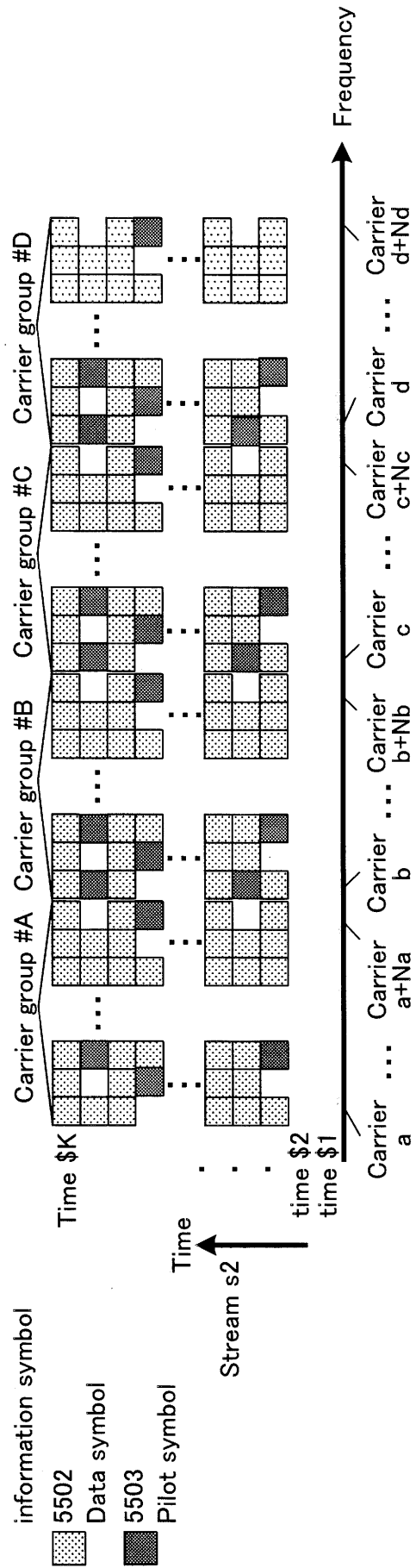


FIG. 56

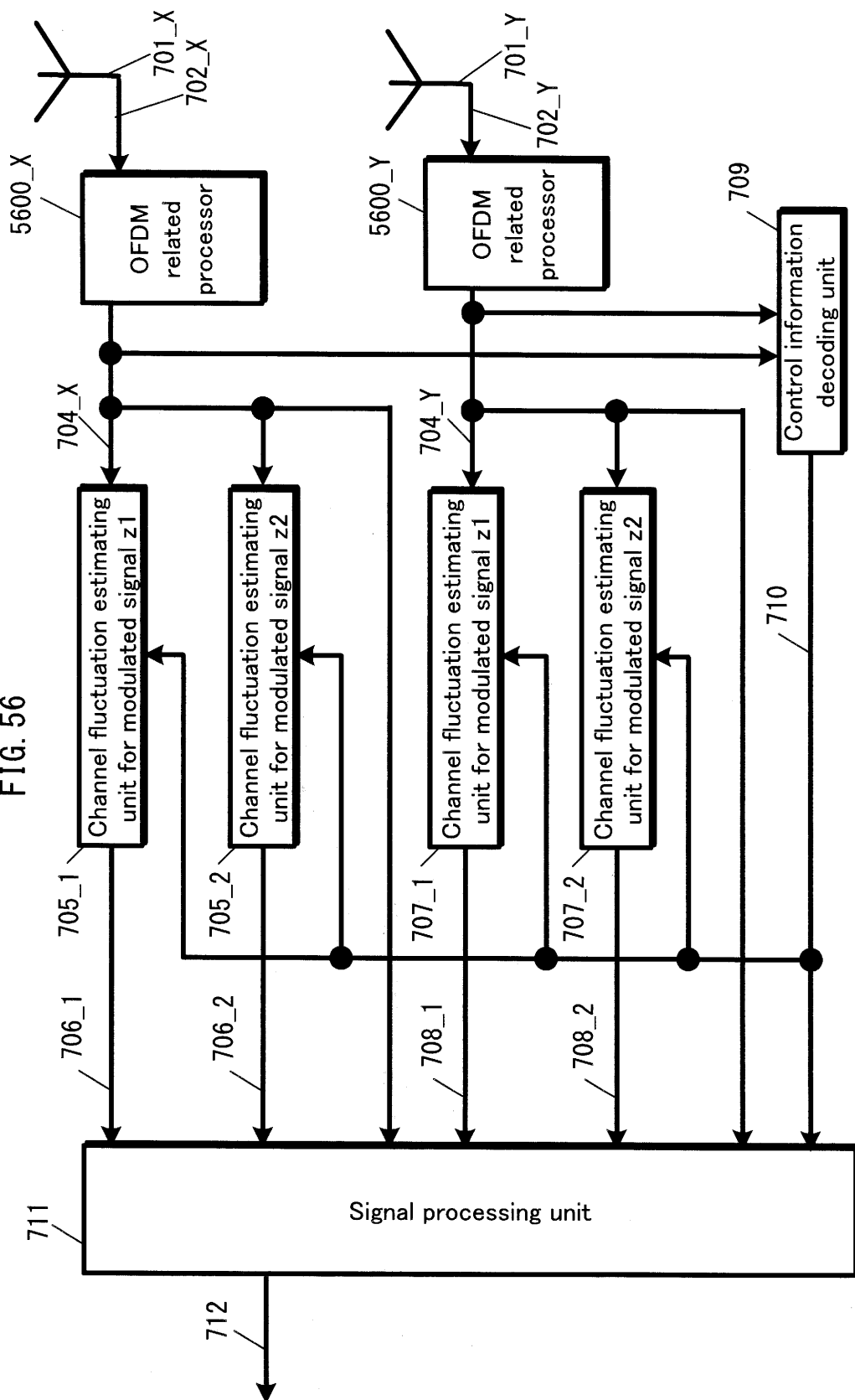


FIG. 57

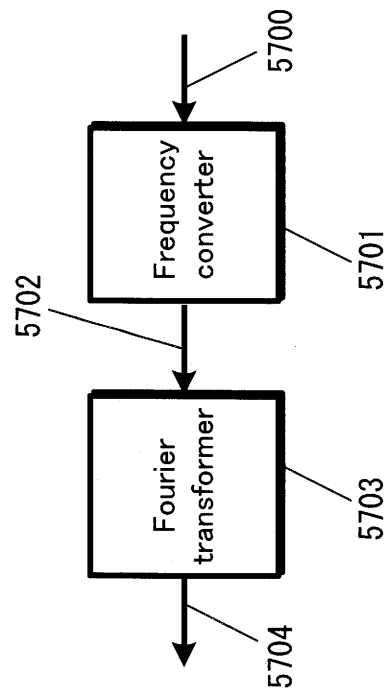


FIG. 58A

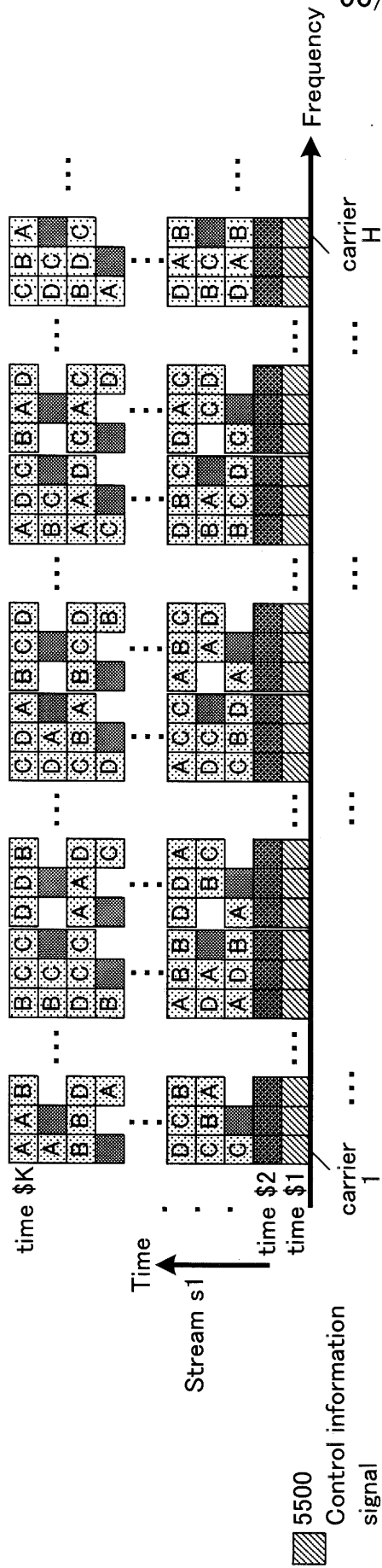


FIG. 58B

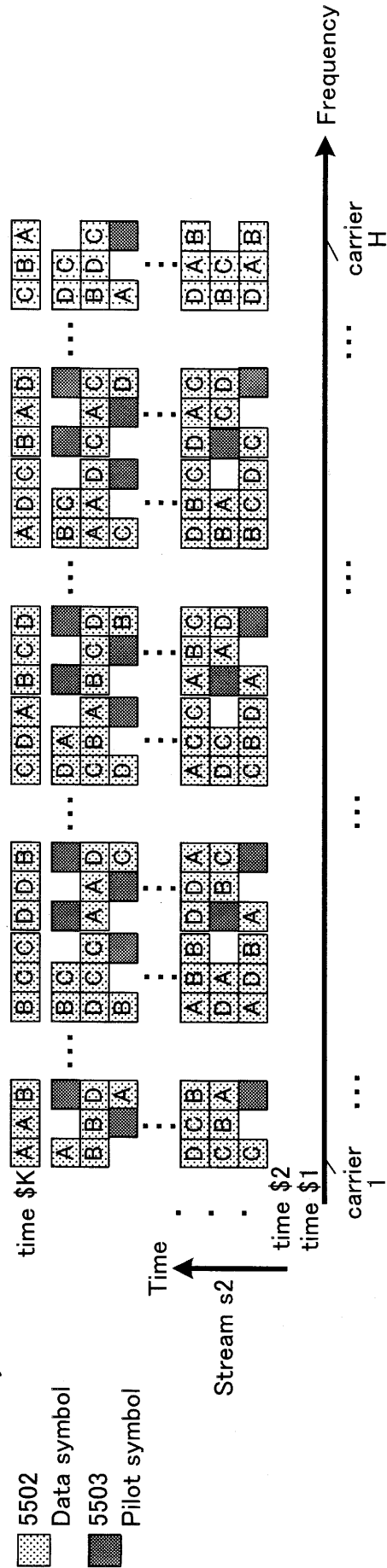


FIG. 59

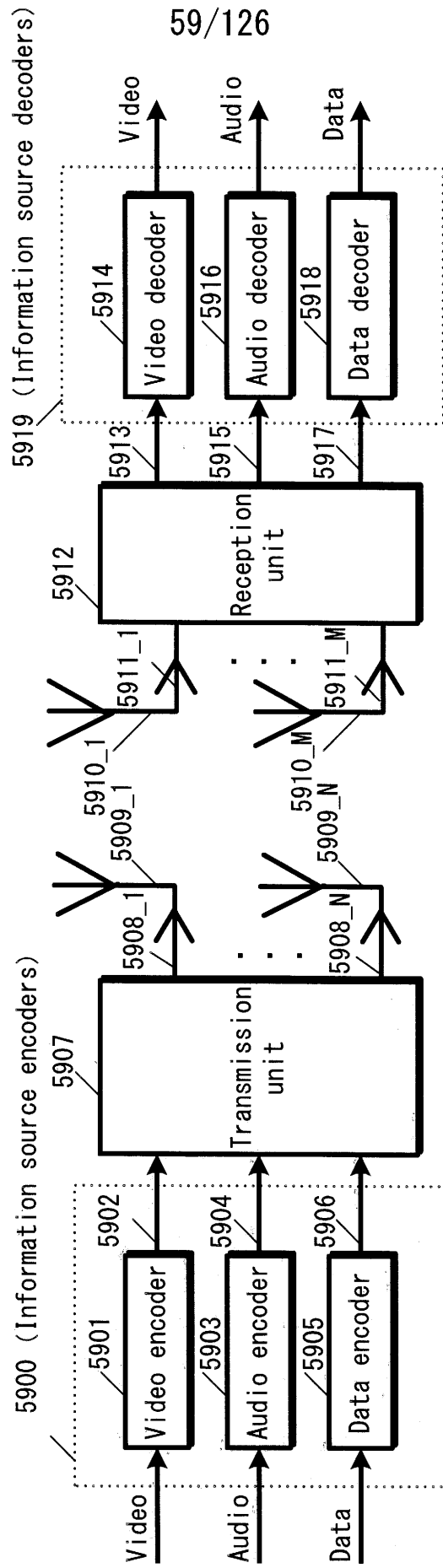


FIG. 60B

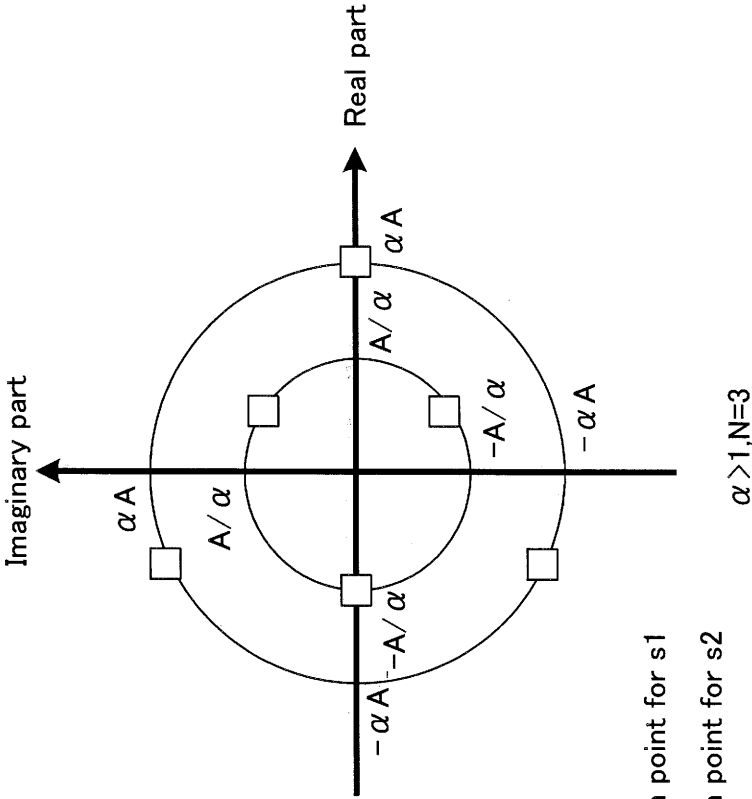
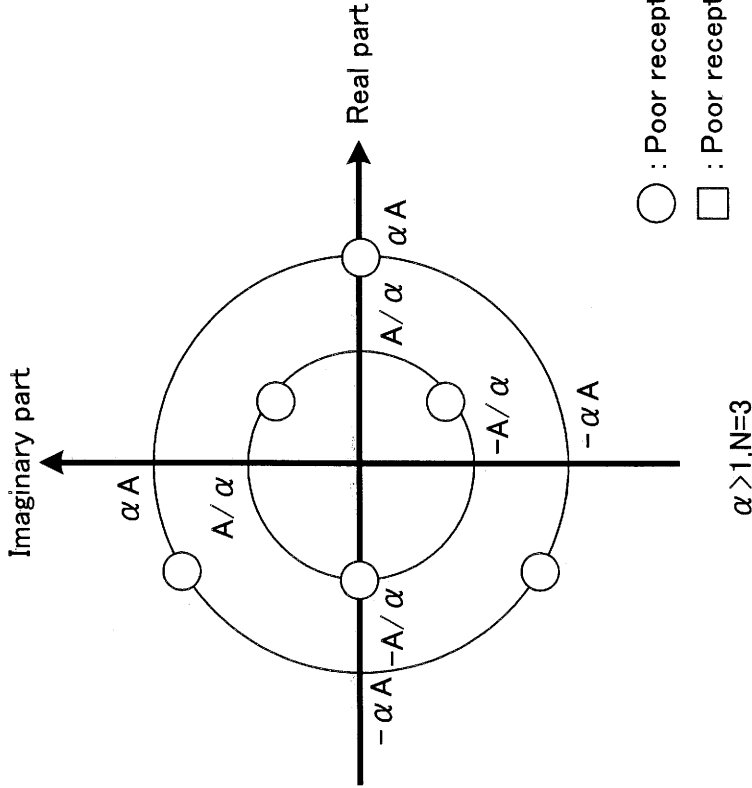


FIG. 60A



○ : Poor reception point for s1
□ : Poor reception point for s2

FIG. 61

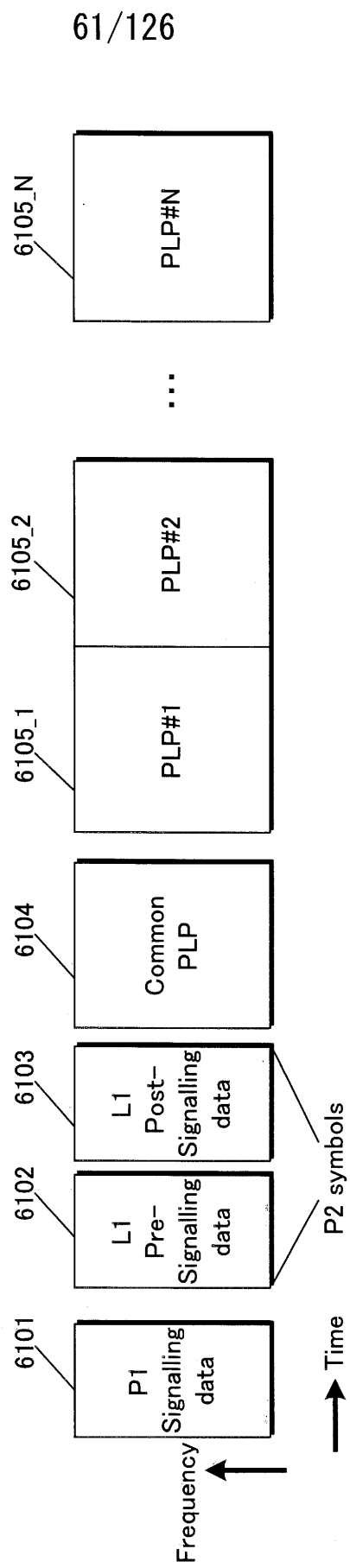


FIG. 62

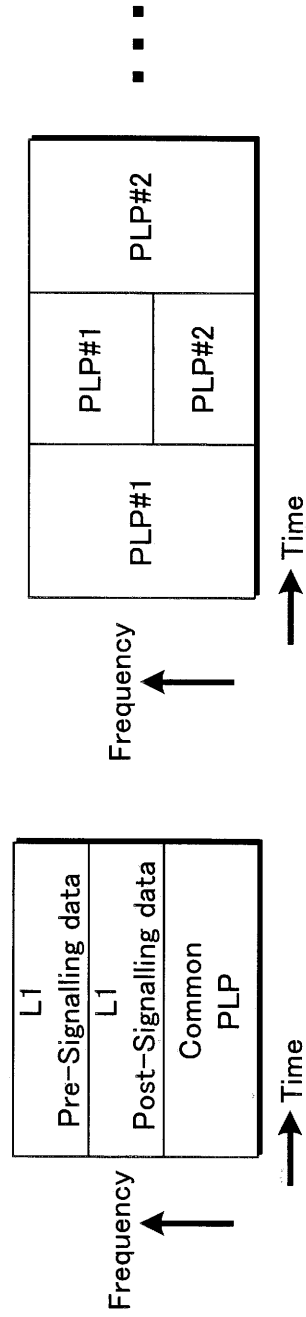


FIG. 63

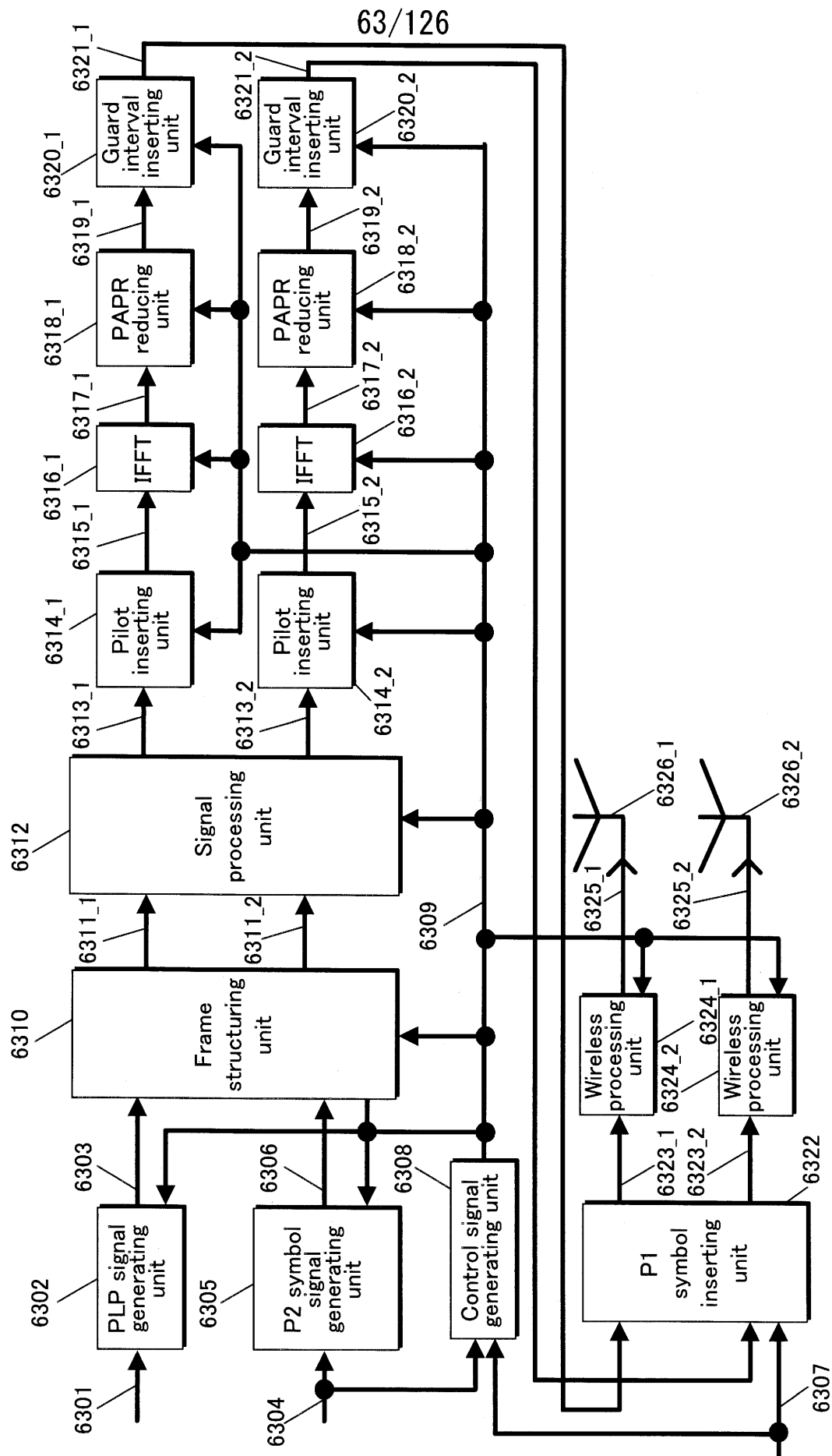


FIG. 64

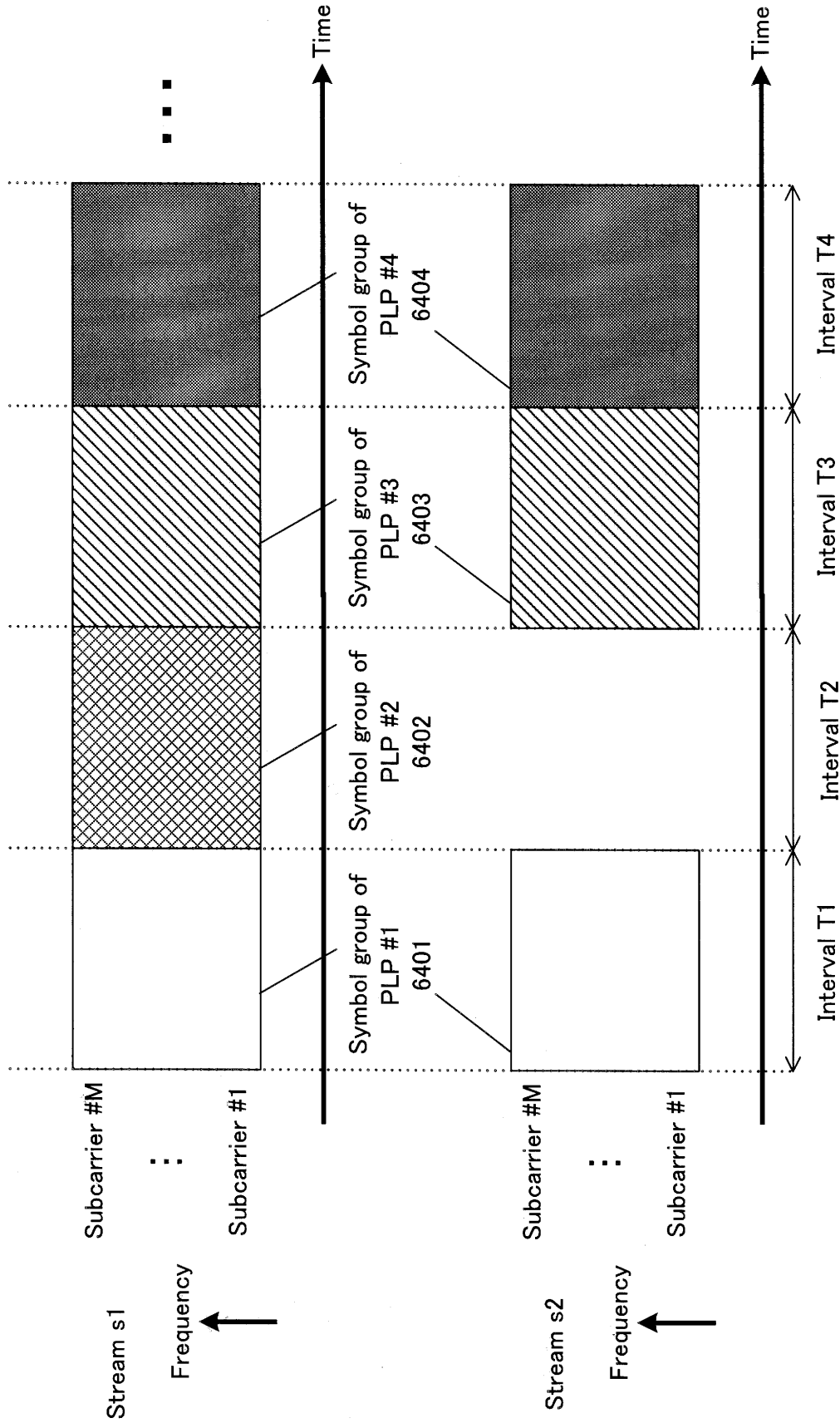


FIG. 65

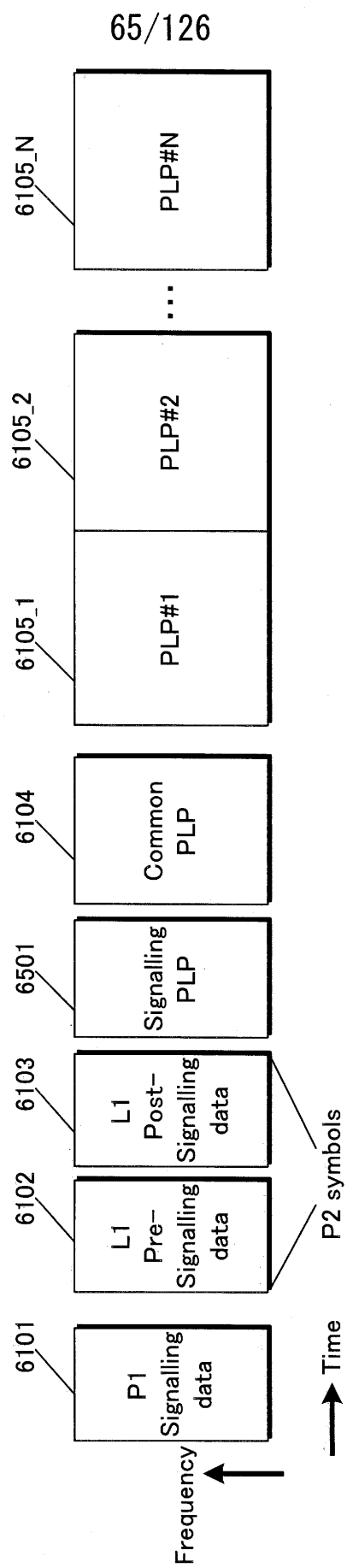


FIG. 66

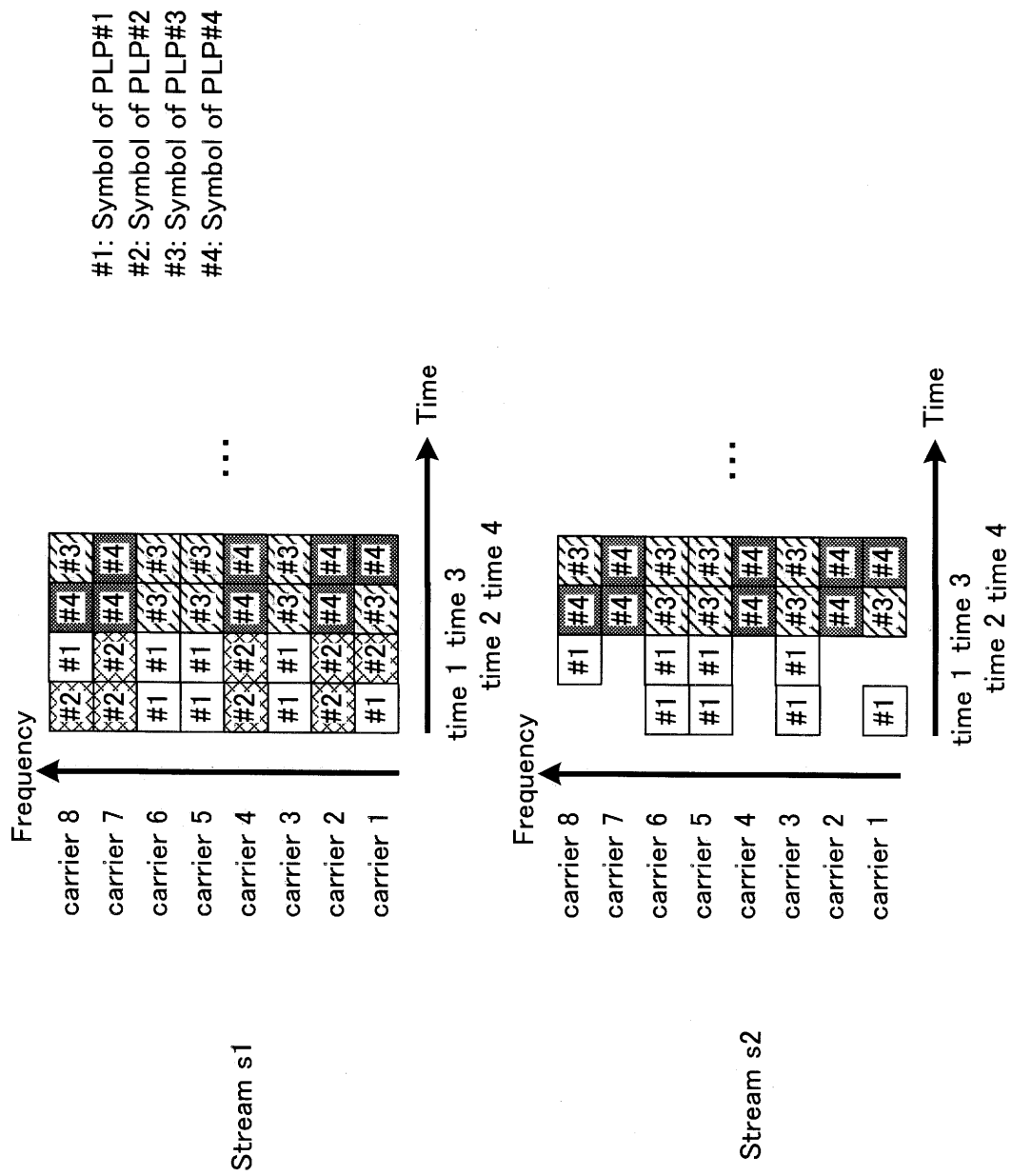


FIG. 67

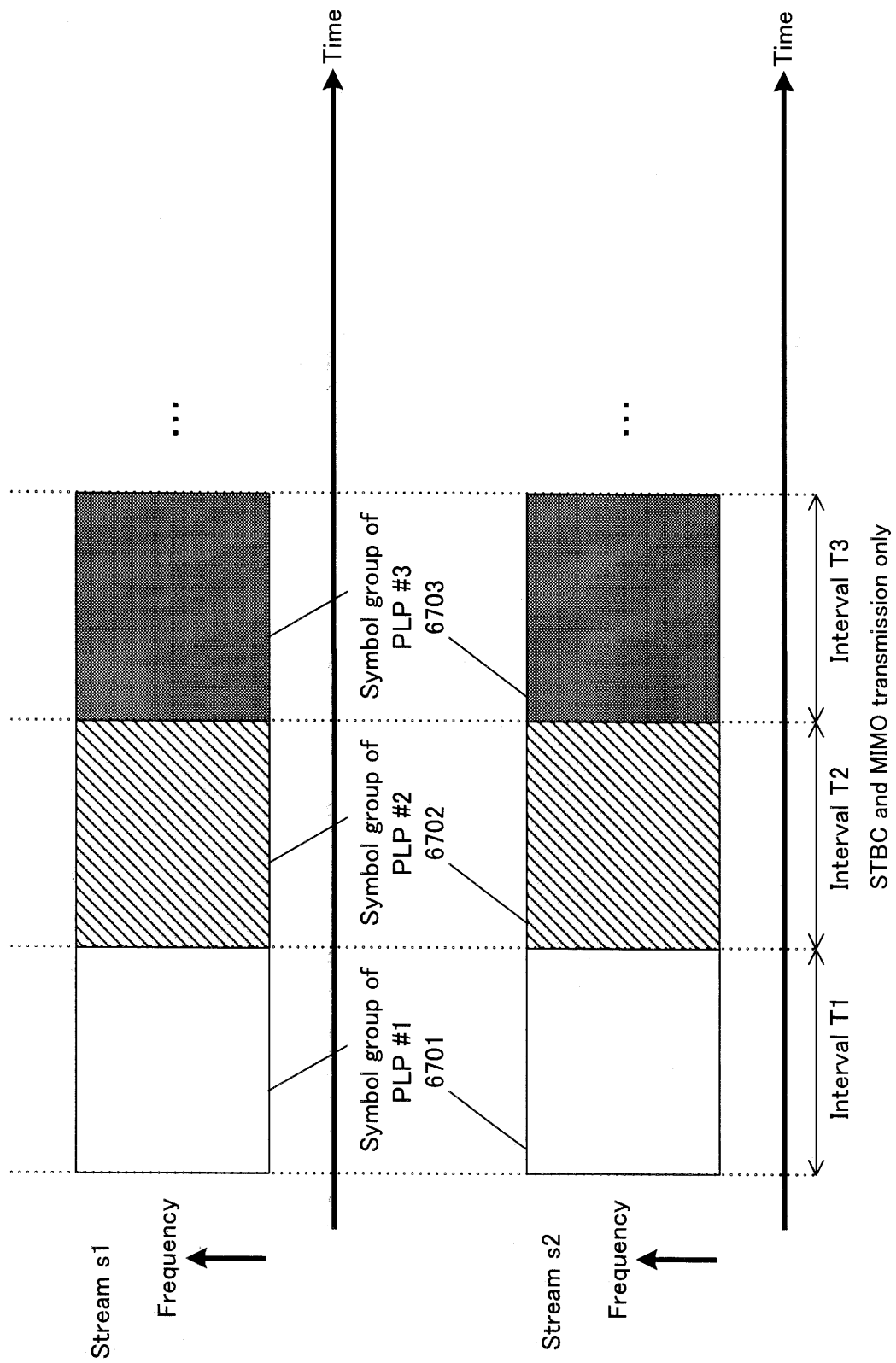


FIG. 68

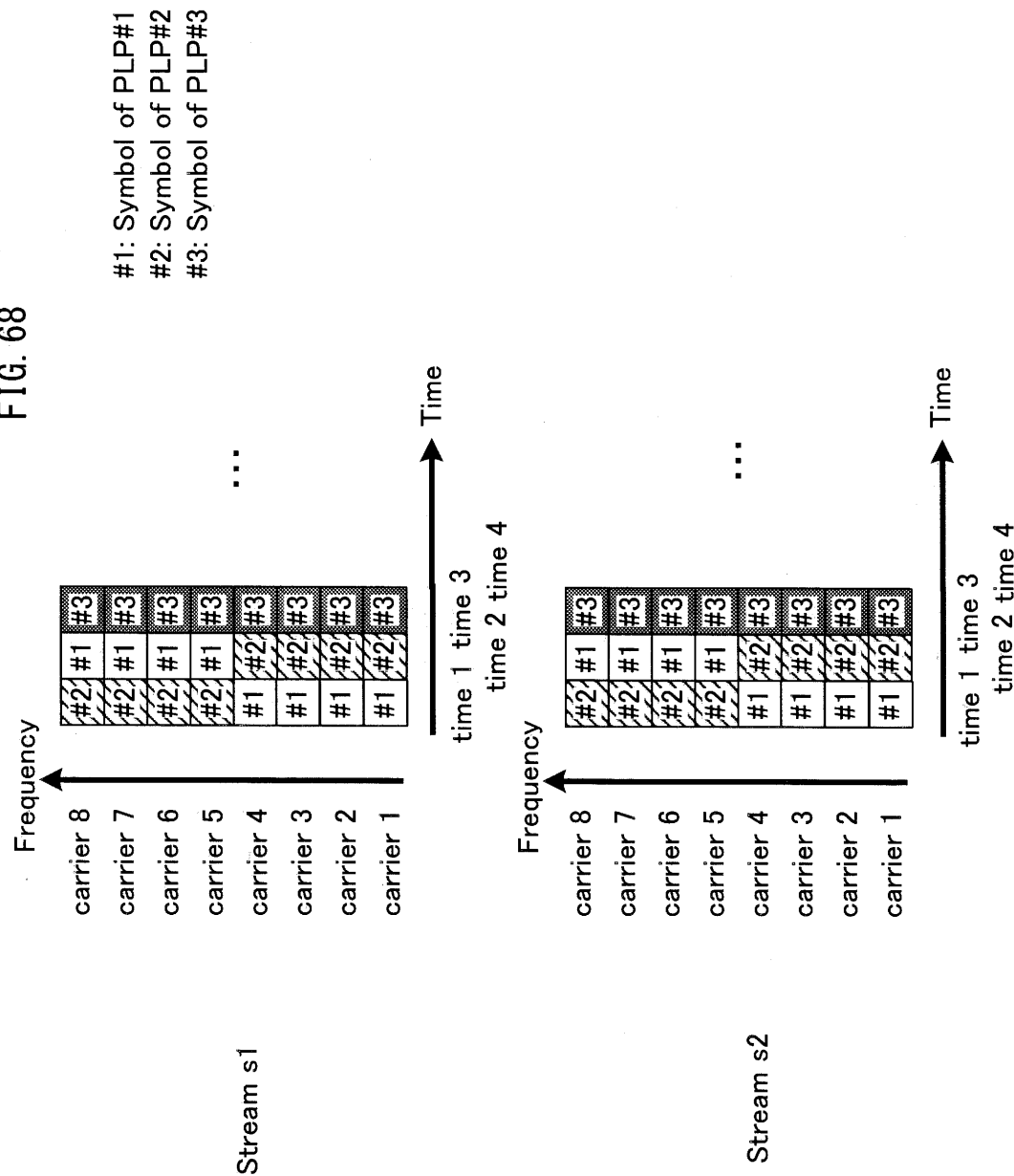


FIG. 69

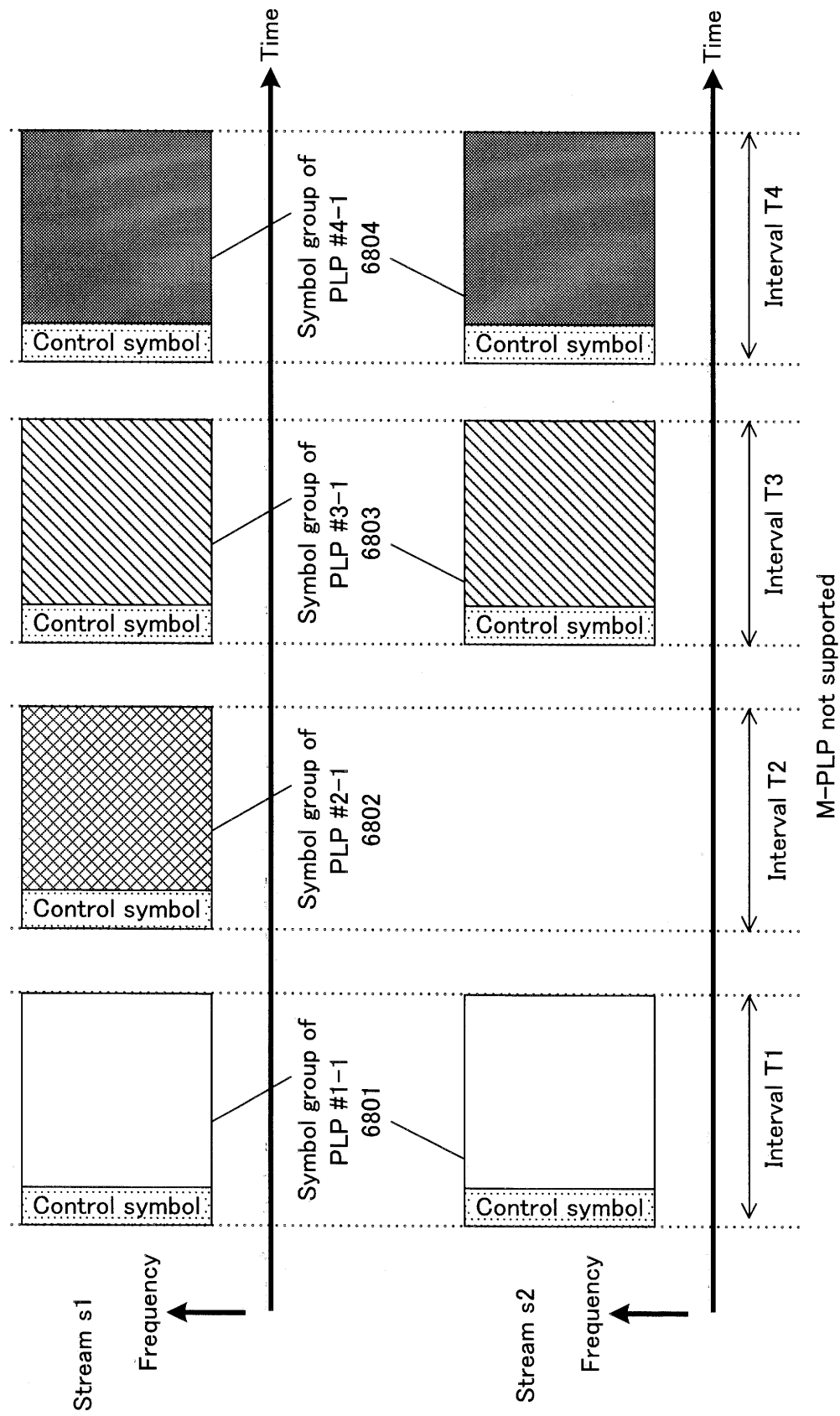


FIG. 70

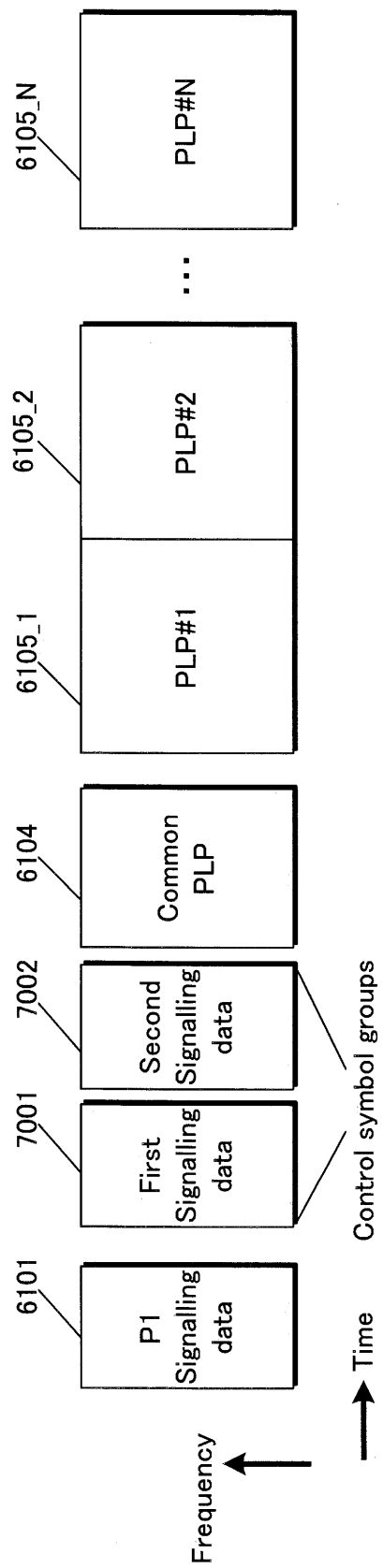


FIG. 71

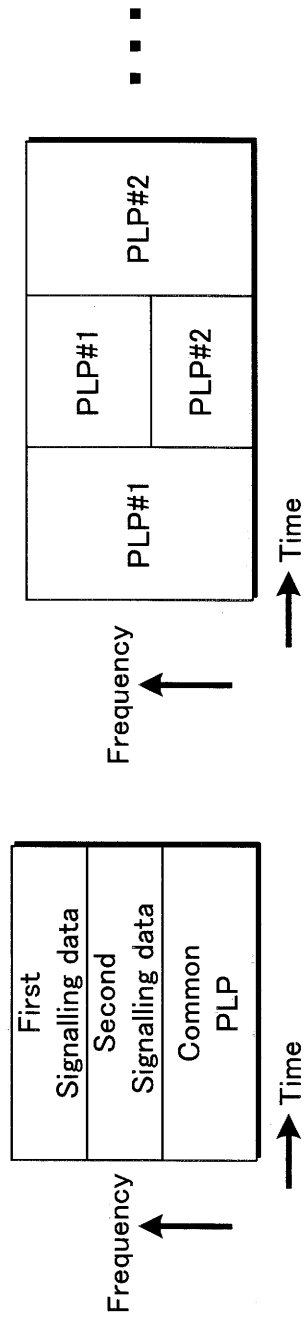


FIG. 72

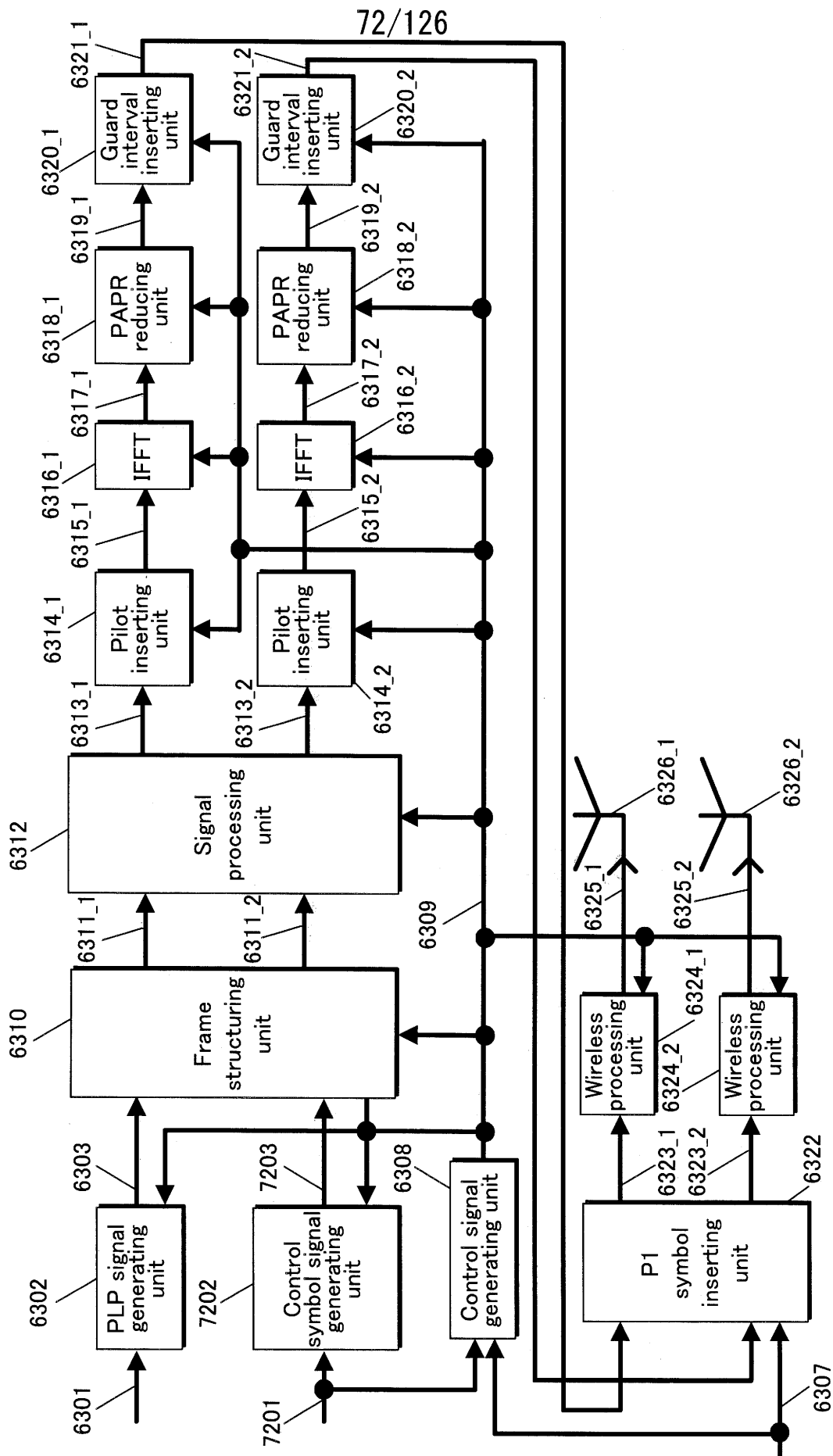


FIG. 73

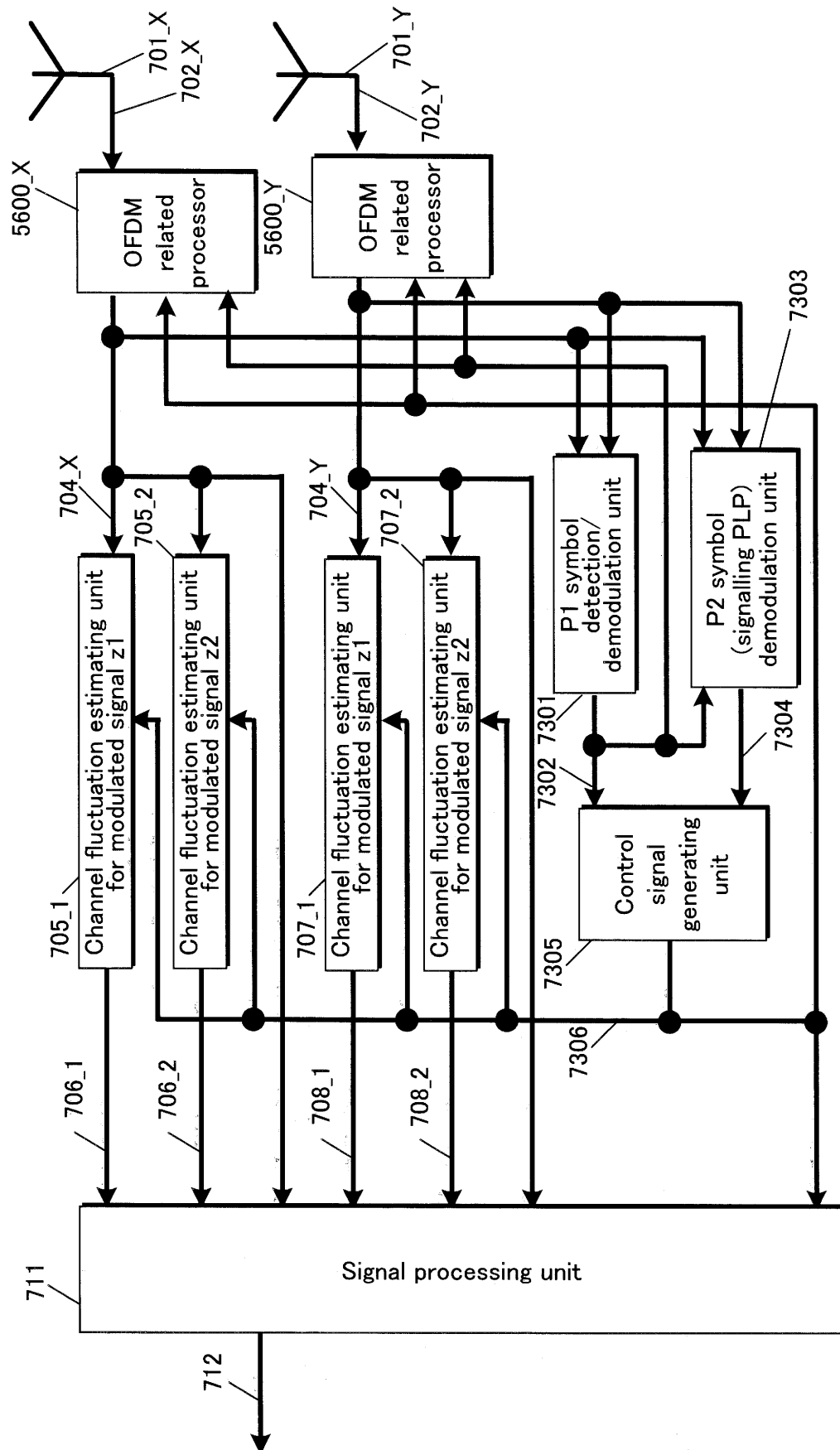


FIG. 74

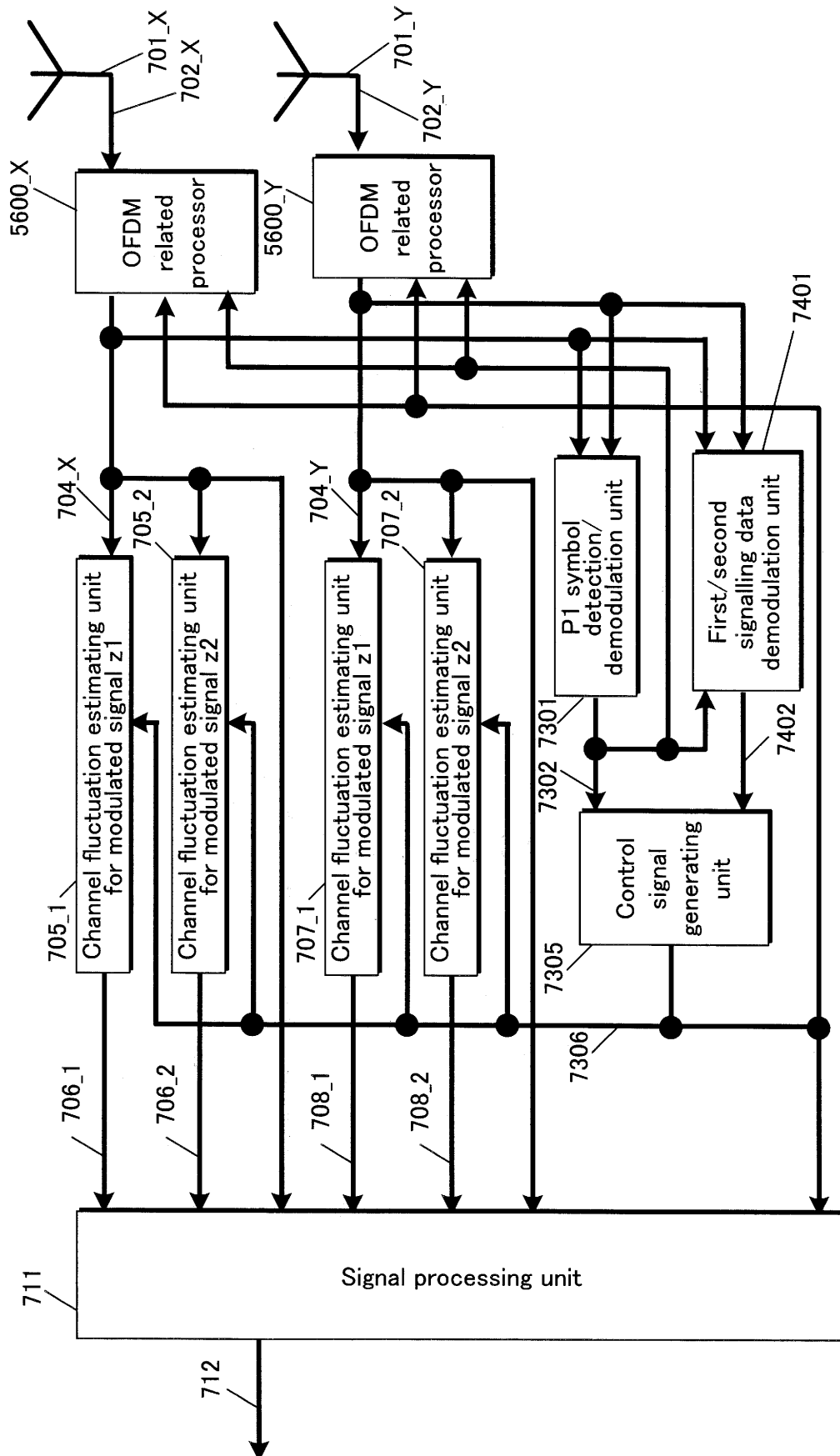


FIG. 75

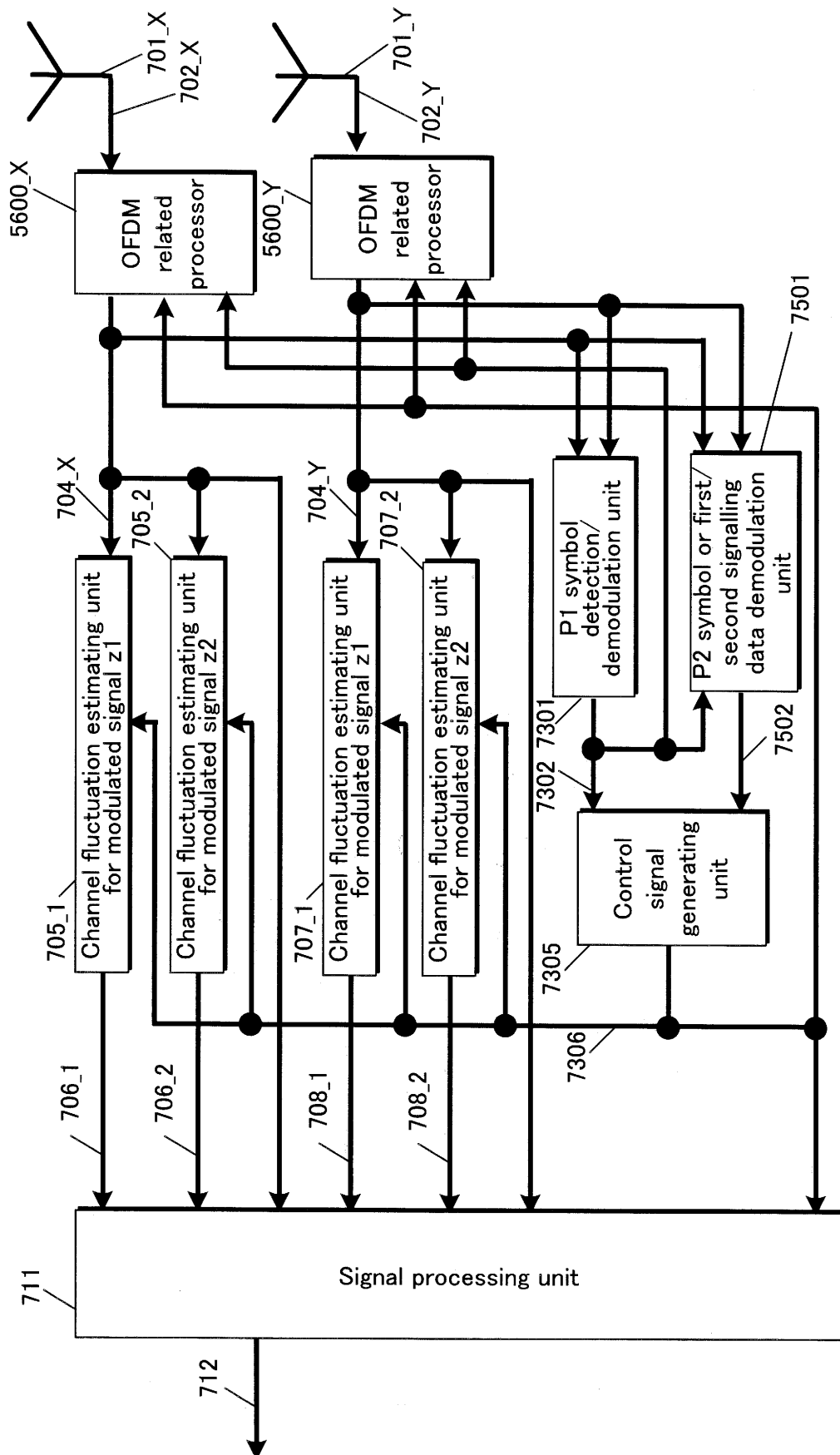


FIG. 76A

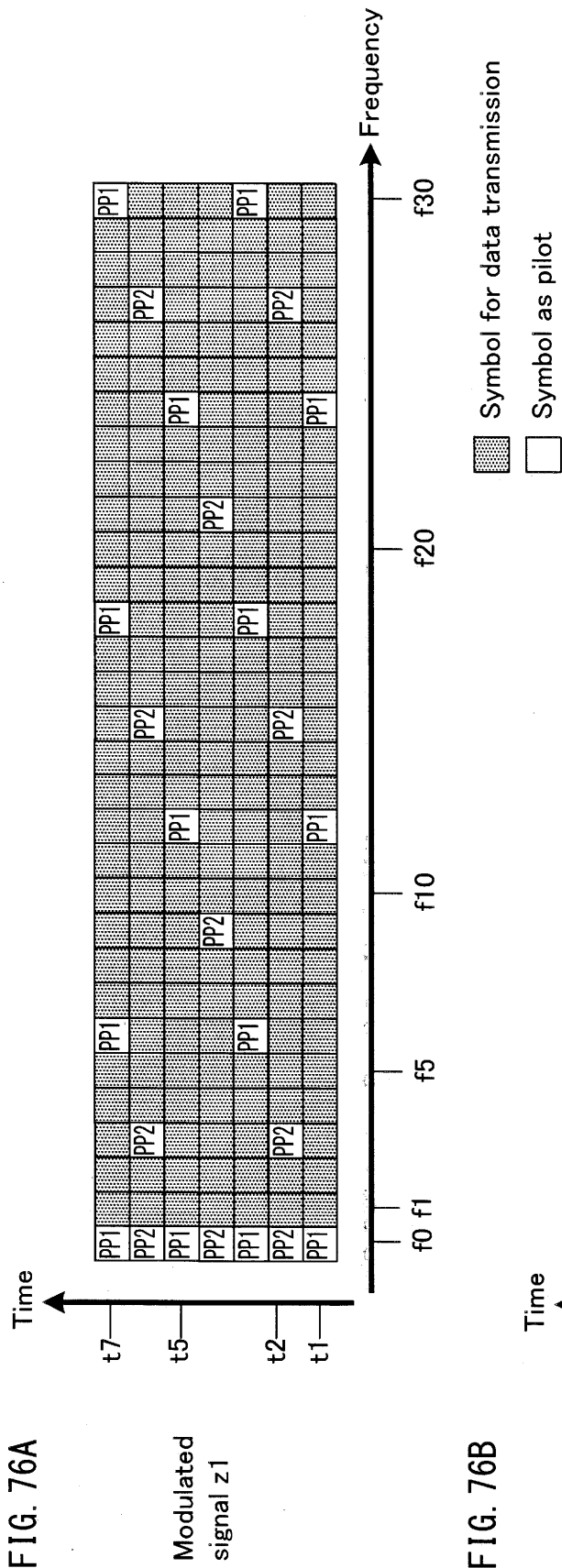


FIG. 76B

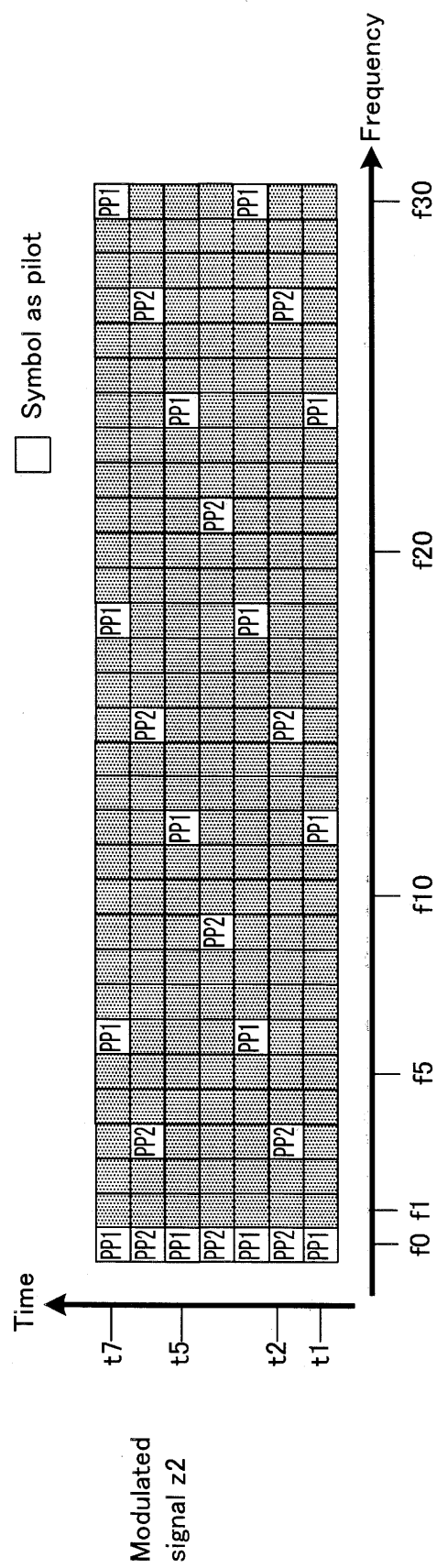


FIG. 77A

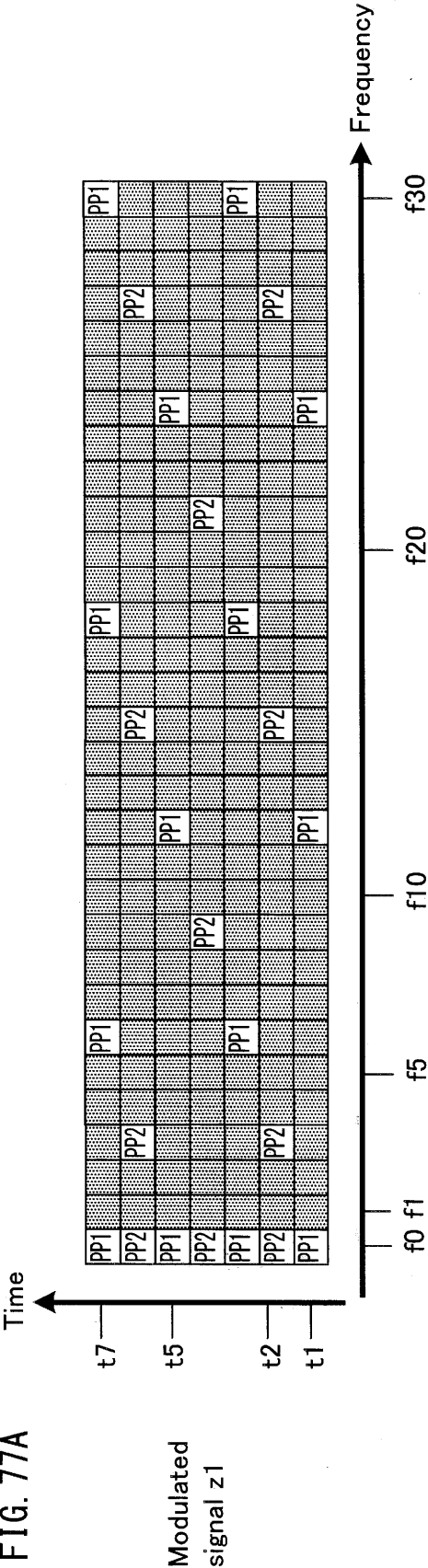


FIG. 77B

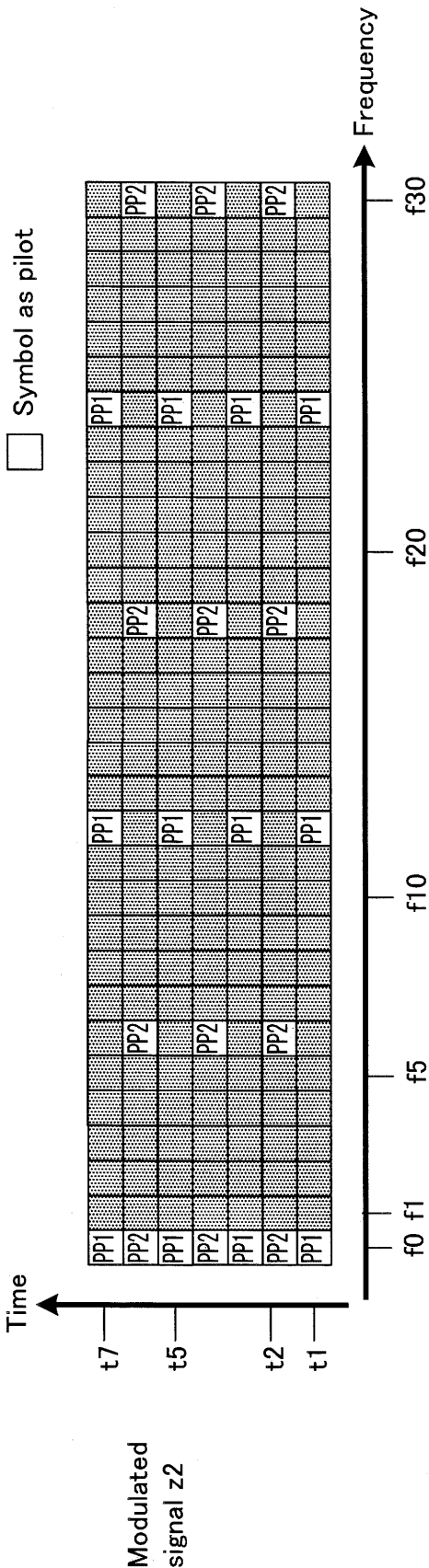


FIG. 78A

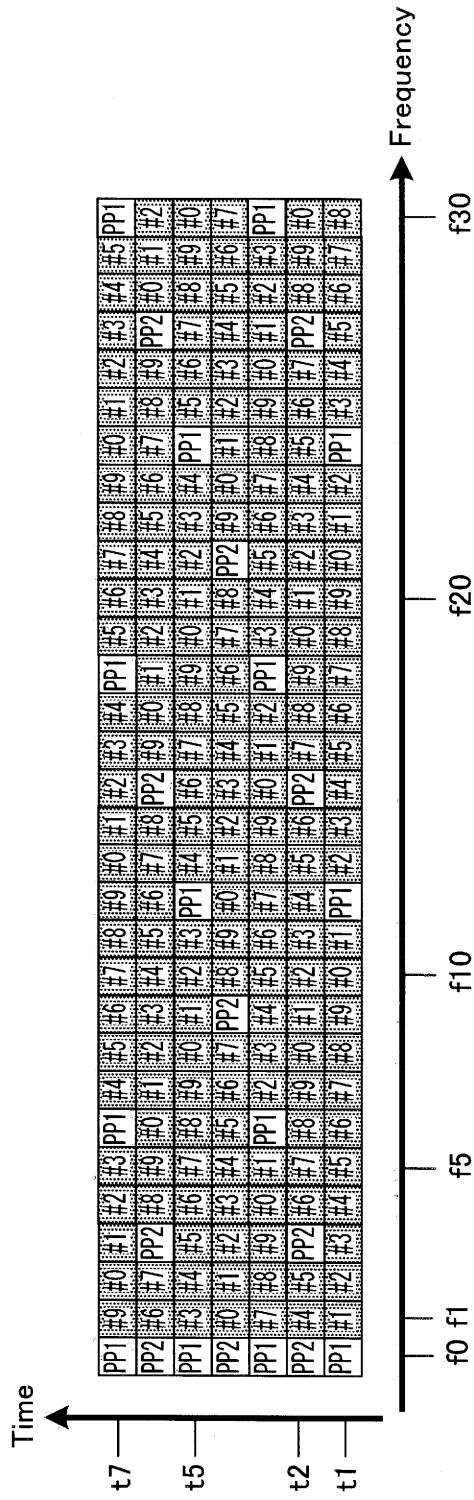


FIG. 78B

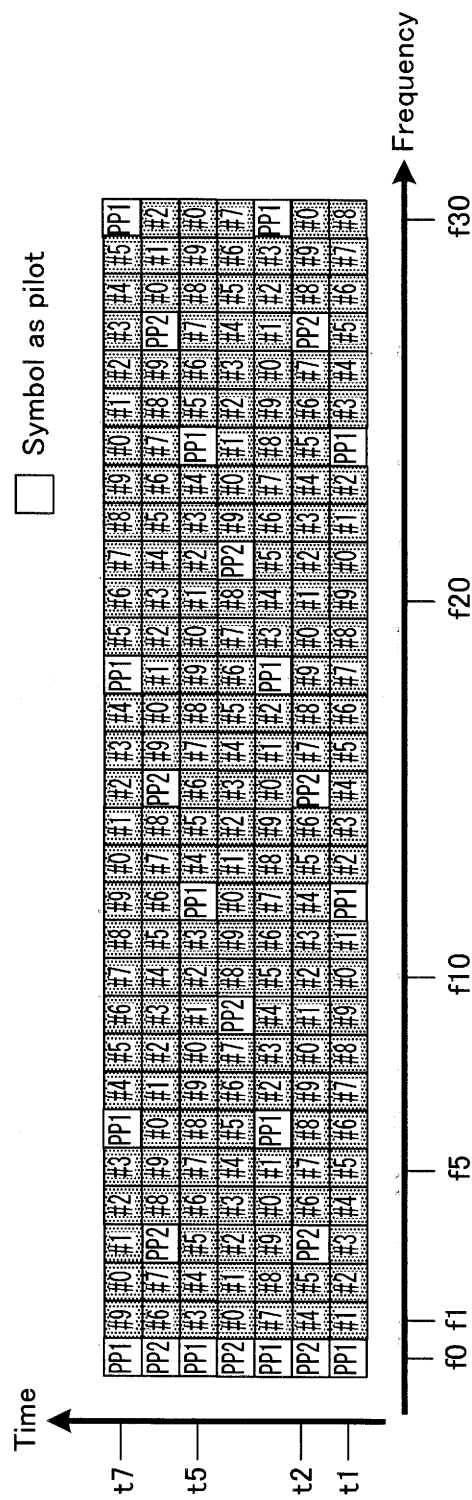


FIG. 79A

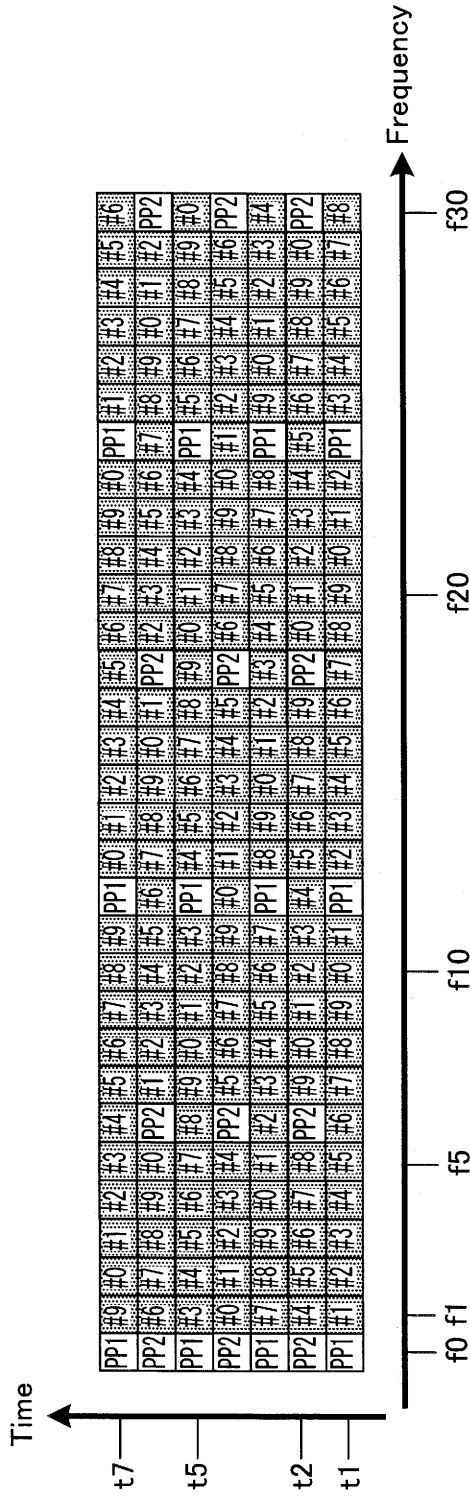


FIG. 79B

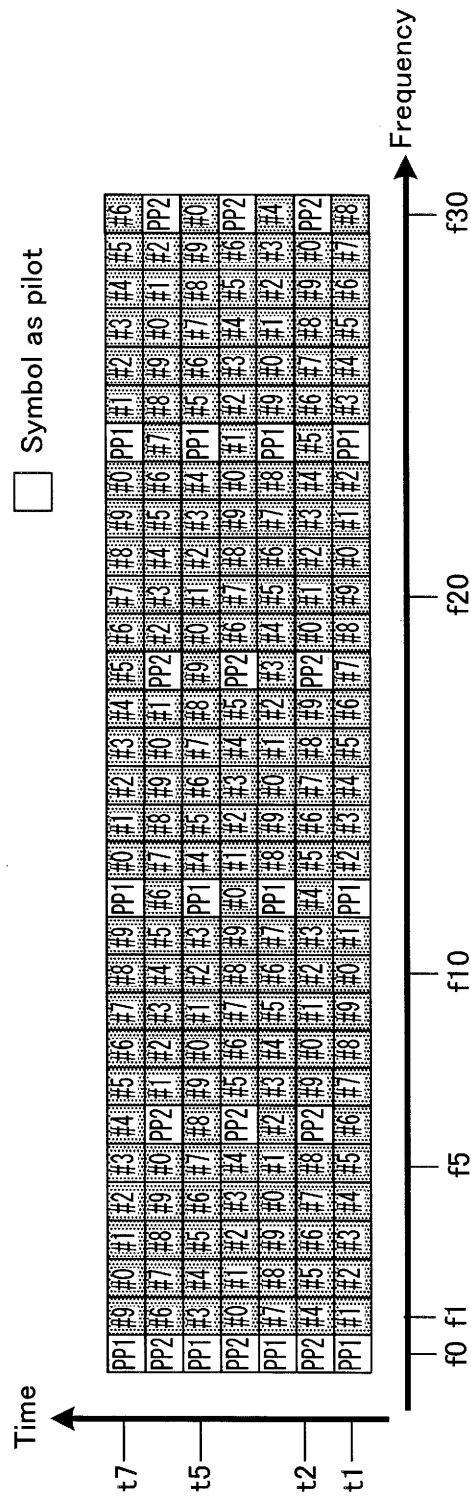


FIG. 80A

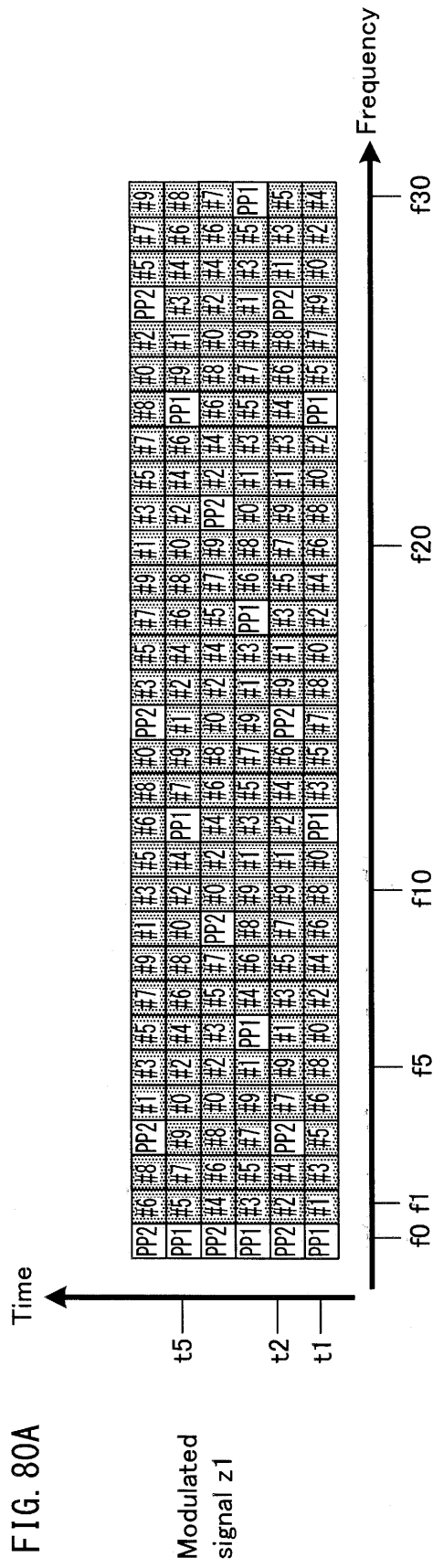


FIG. 80B

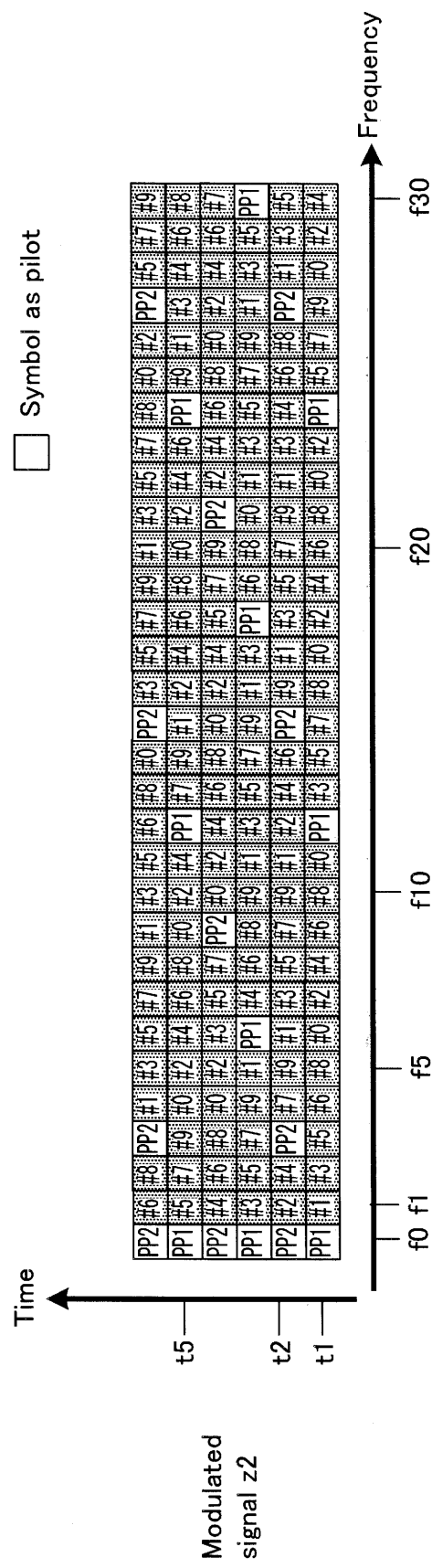


FIG. 81

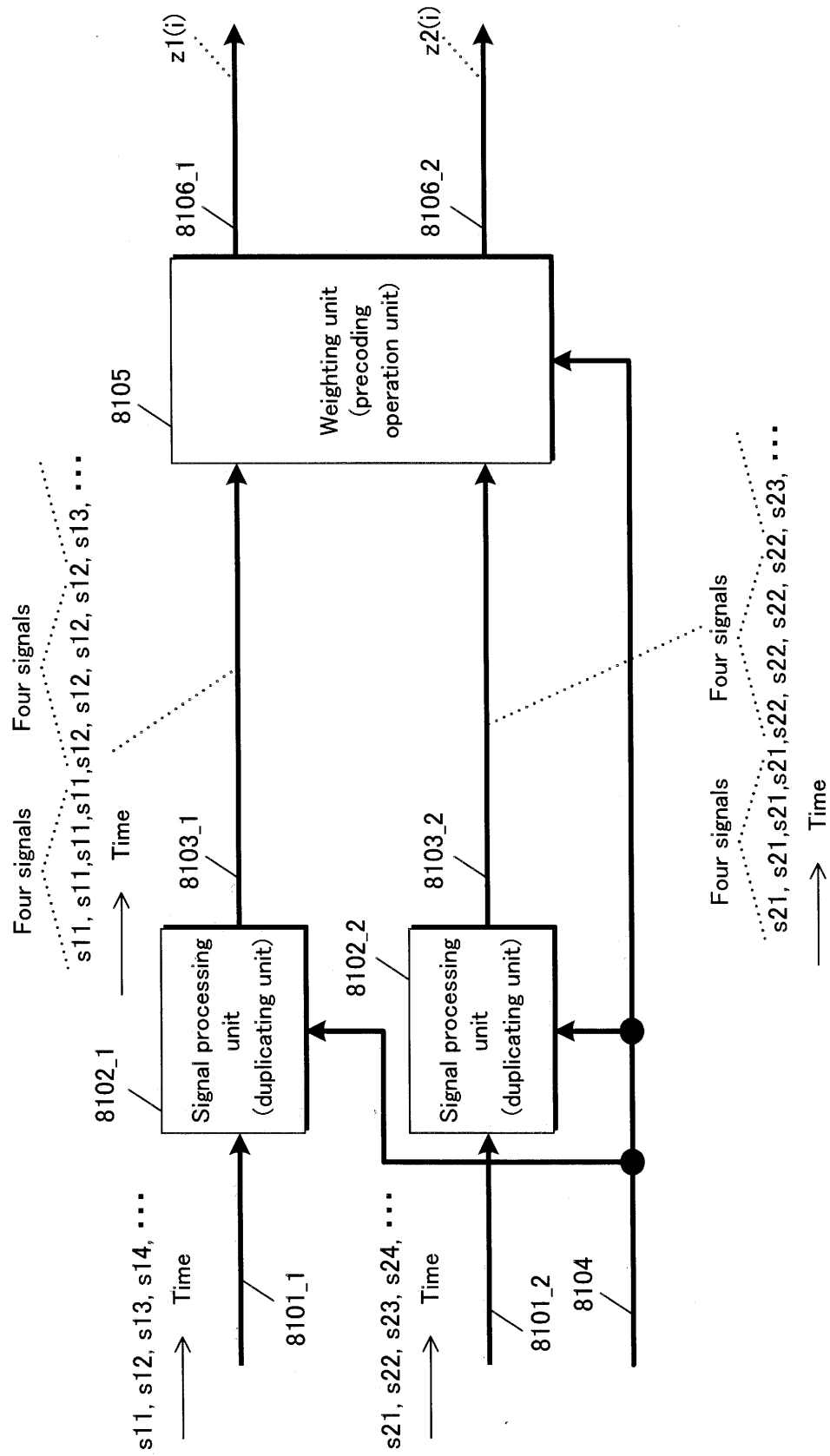


FIG. 82

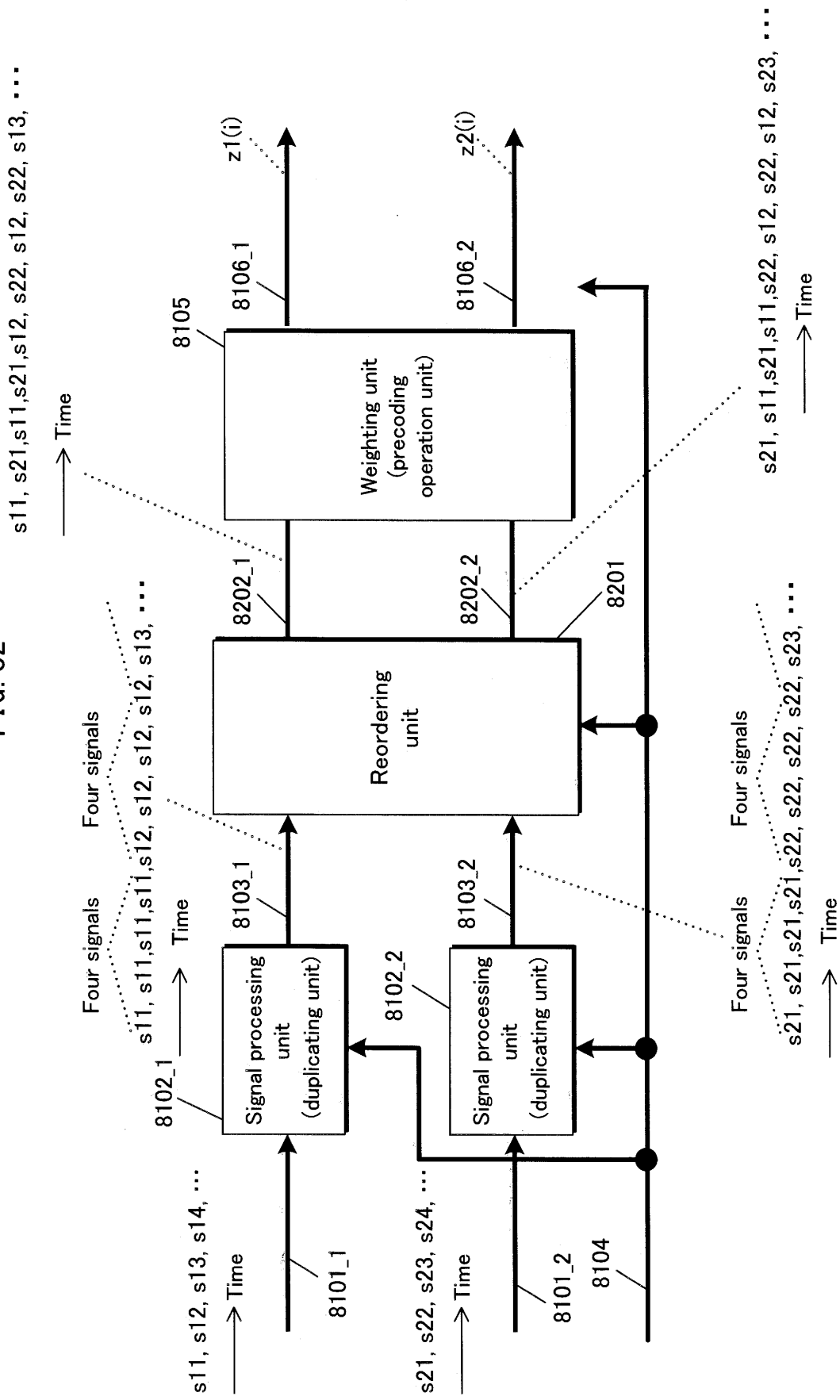
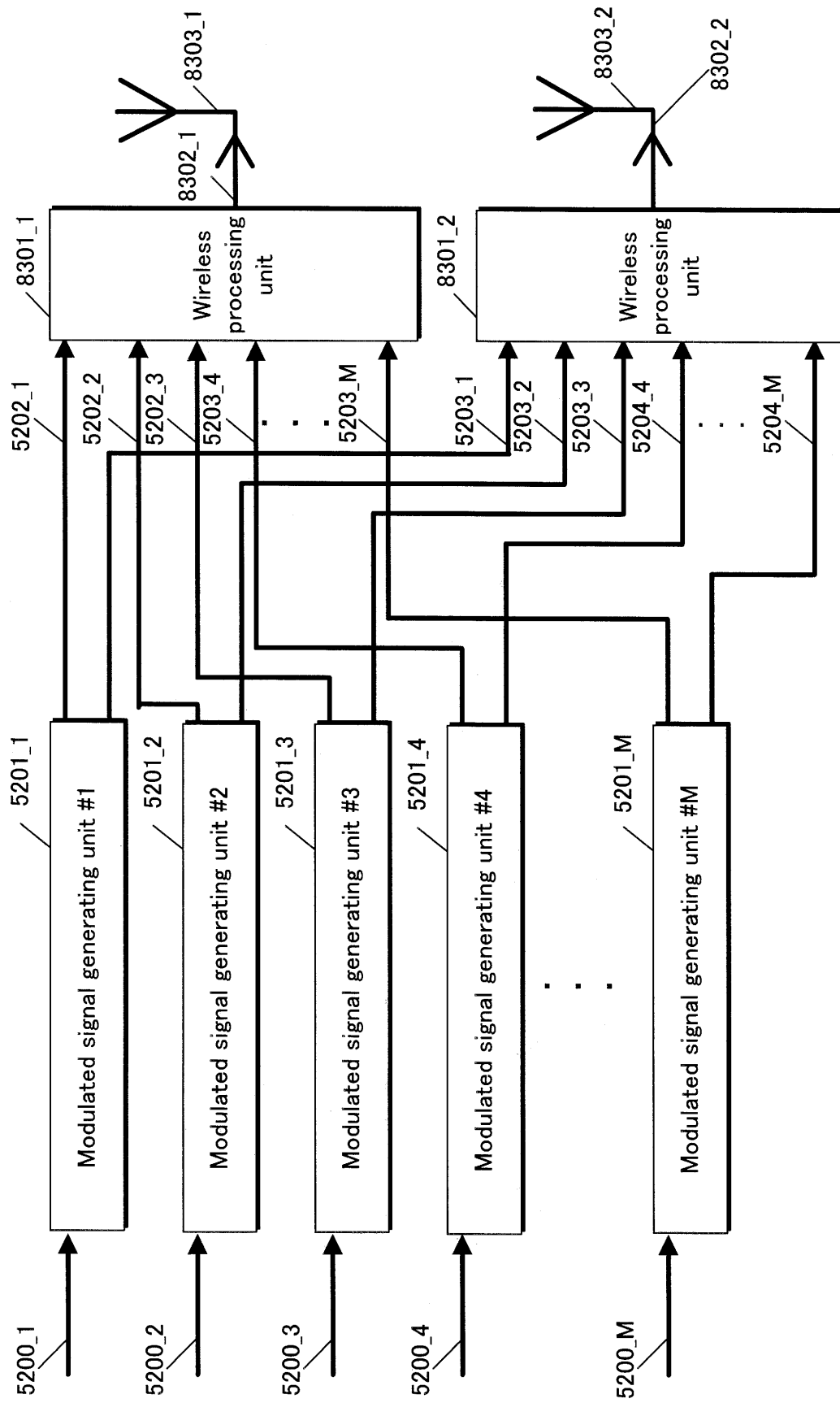


FIG. 83



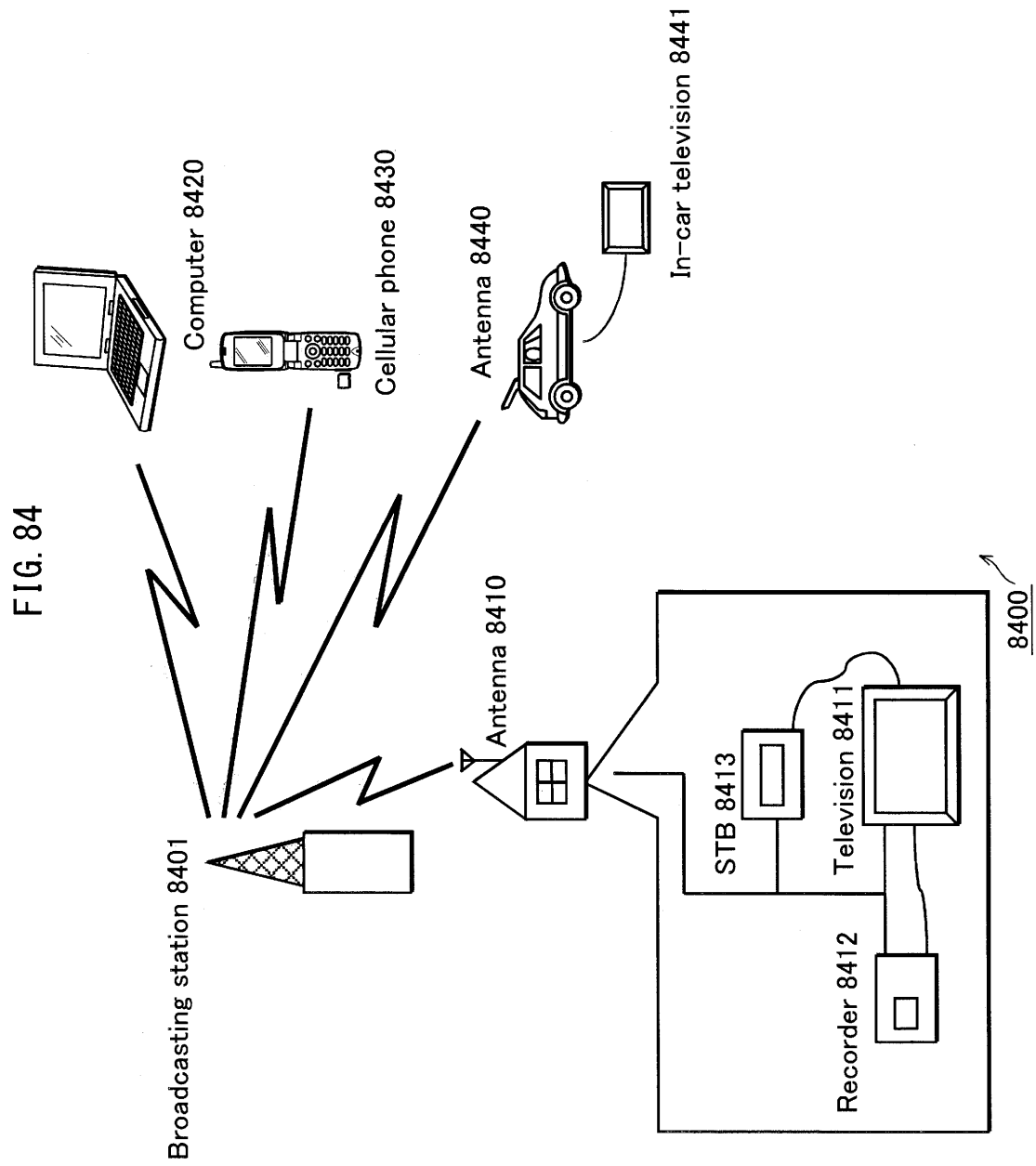


FIG. 85

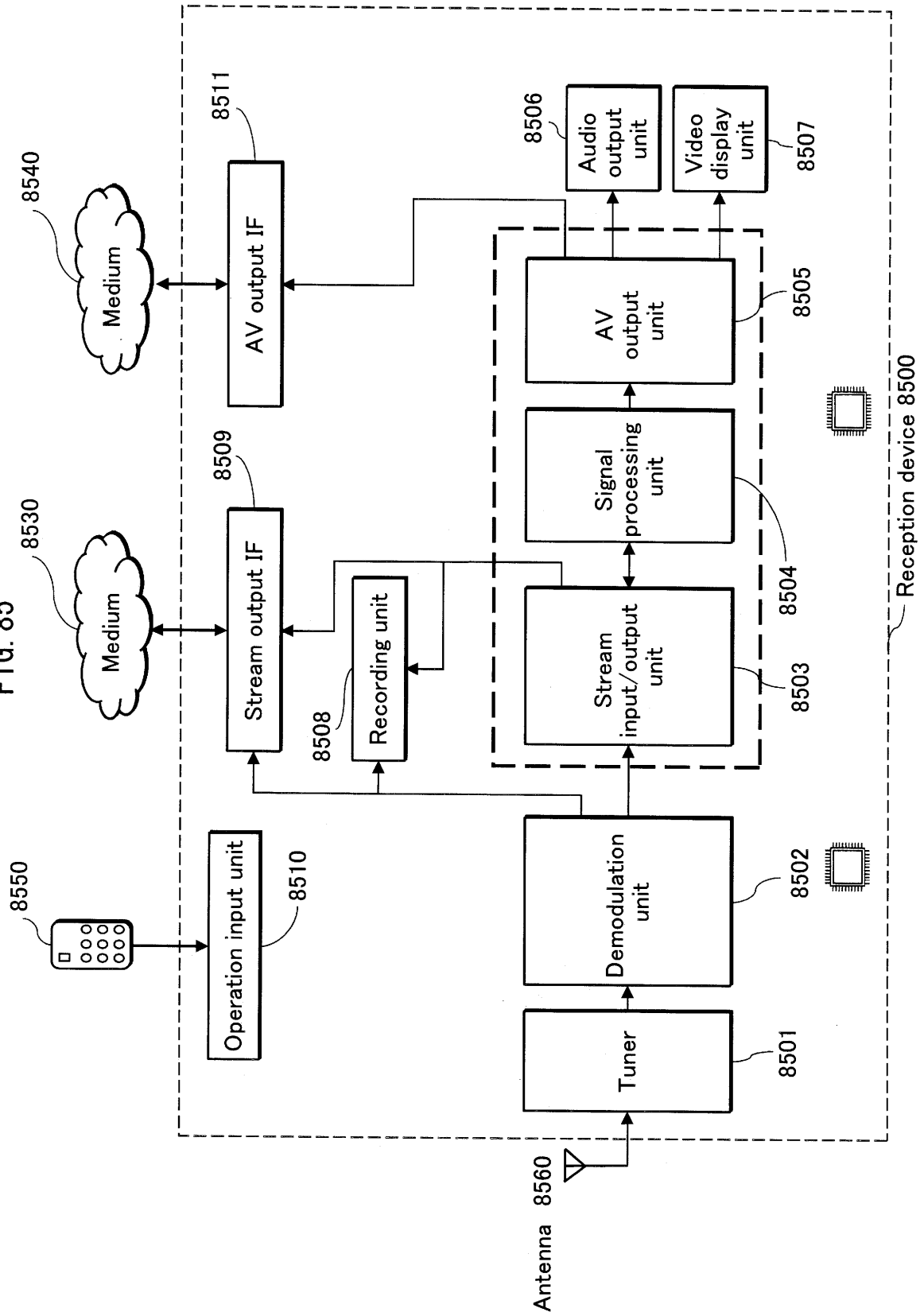


FIG. 86

Video stream (PID=0x1011 primary video)
Audio stream (PID=0x1100)
Audio stream (PID=0x1101)
Presentation graphics stream (PID=0x1200)
Presentation graphics stream (PID=0x1201)
Interactive graphics stream (PID=0x1400)
Video stream (PID=0x1B00 secondary video)
Video stream (PID=0x1B01 secondary video)

FIG. 87

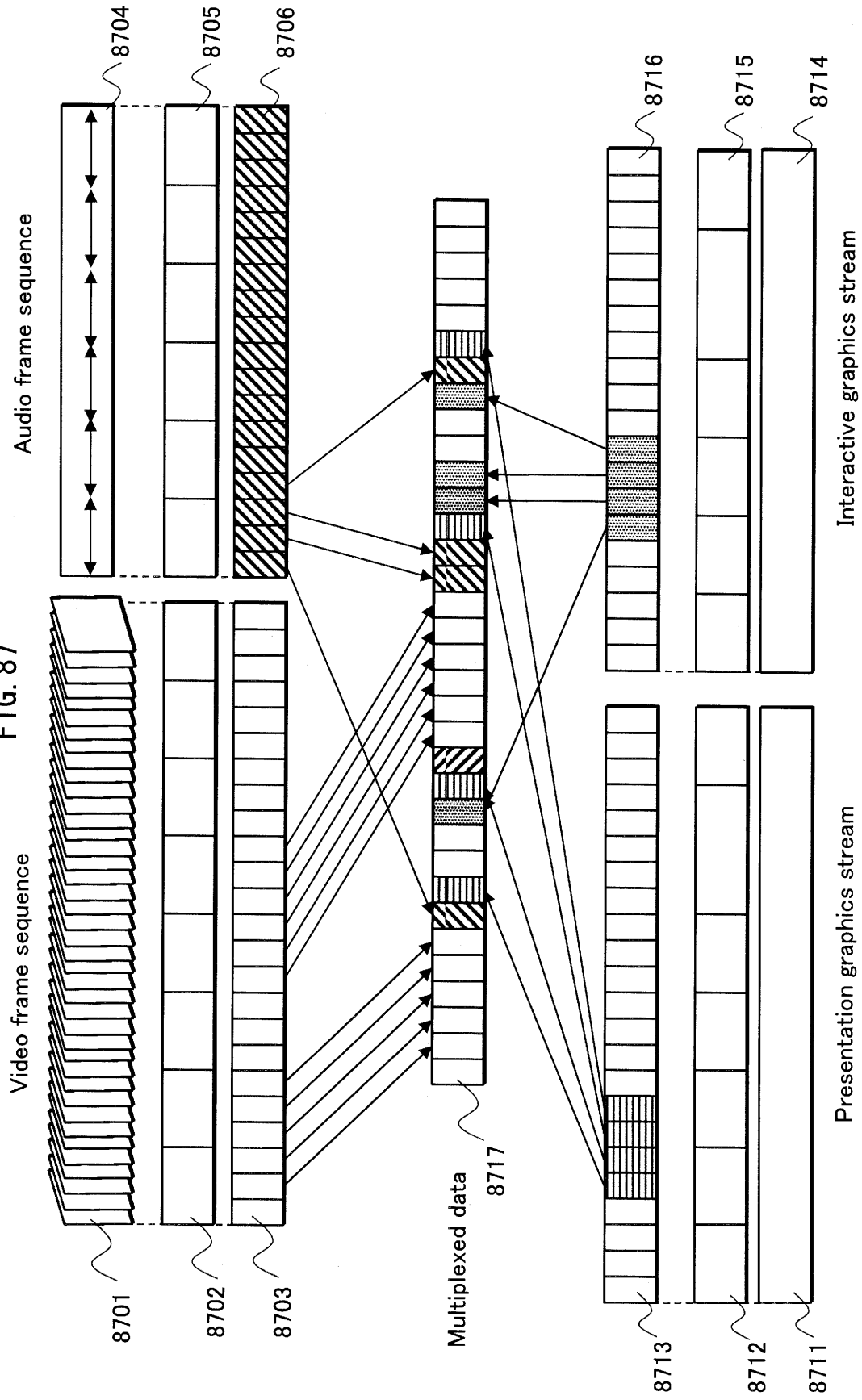


FIG. 88

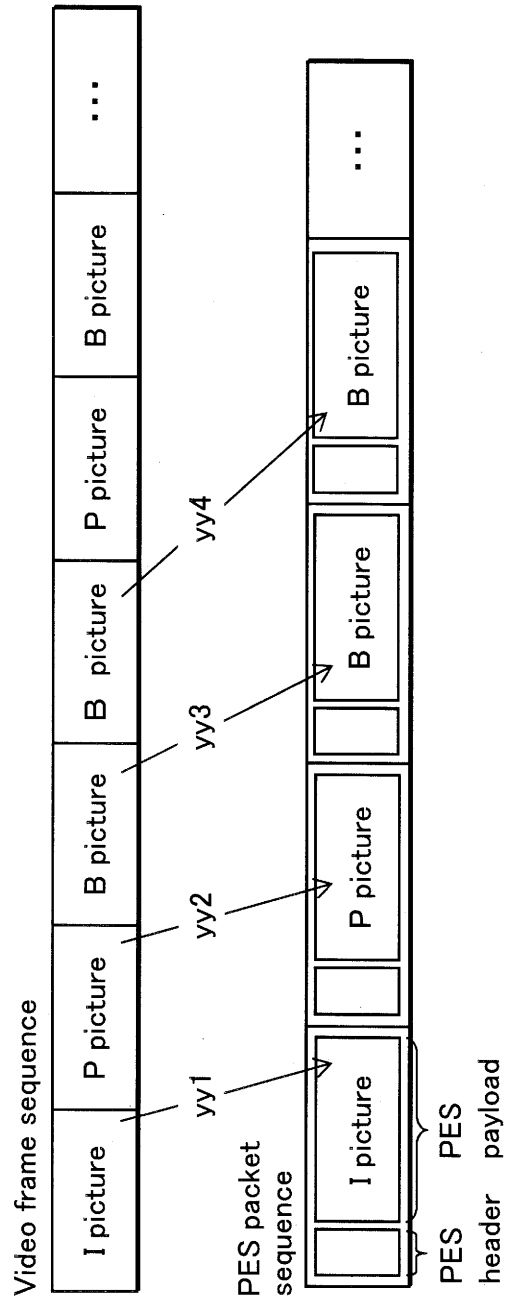


FIG. 89

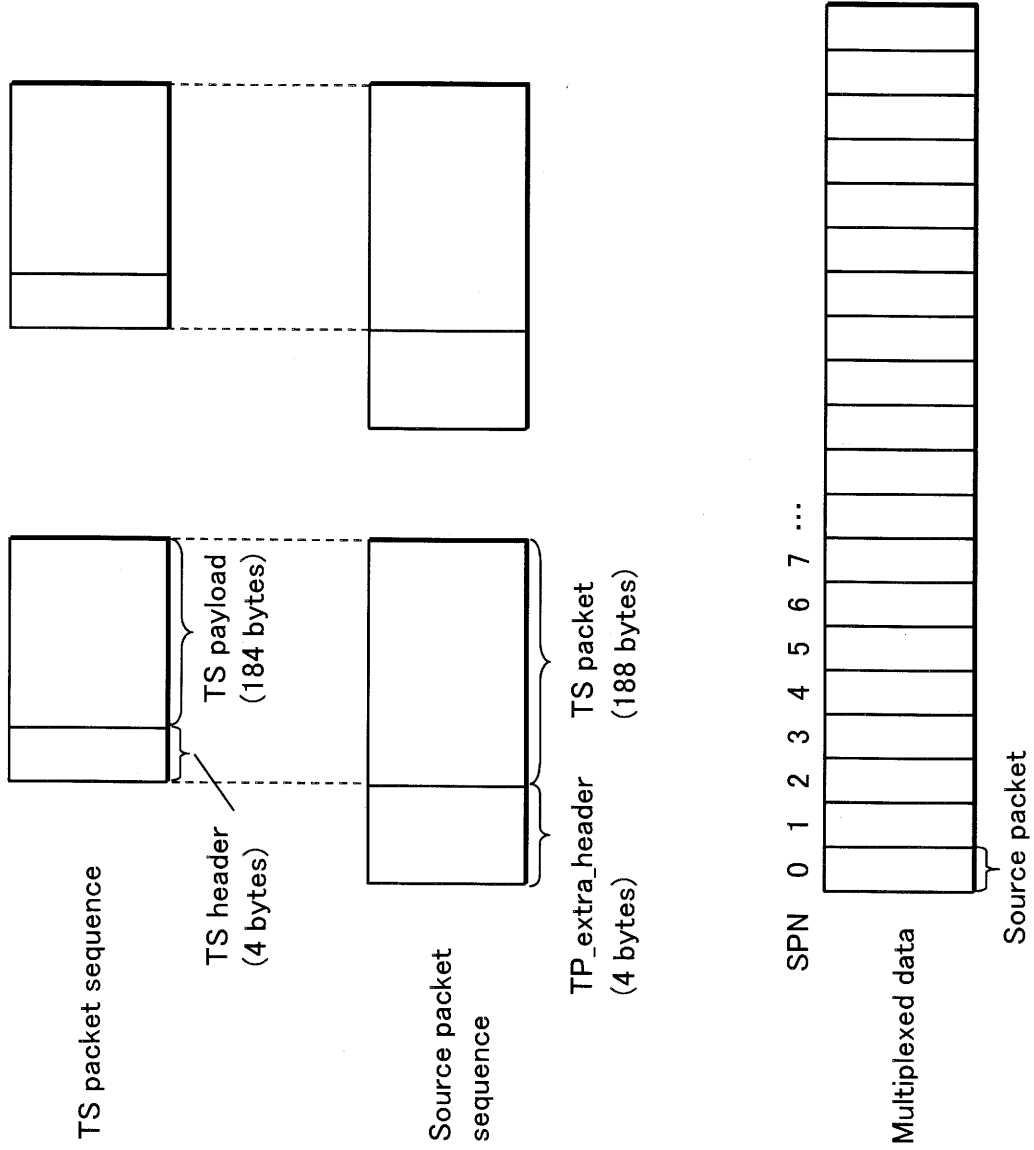


FIG. 90

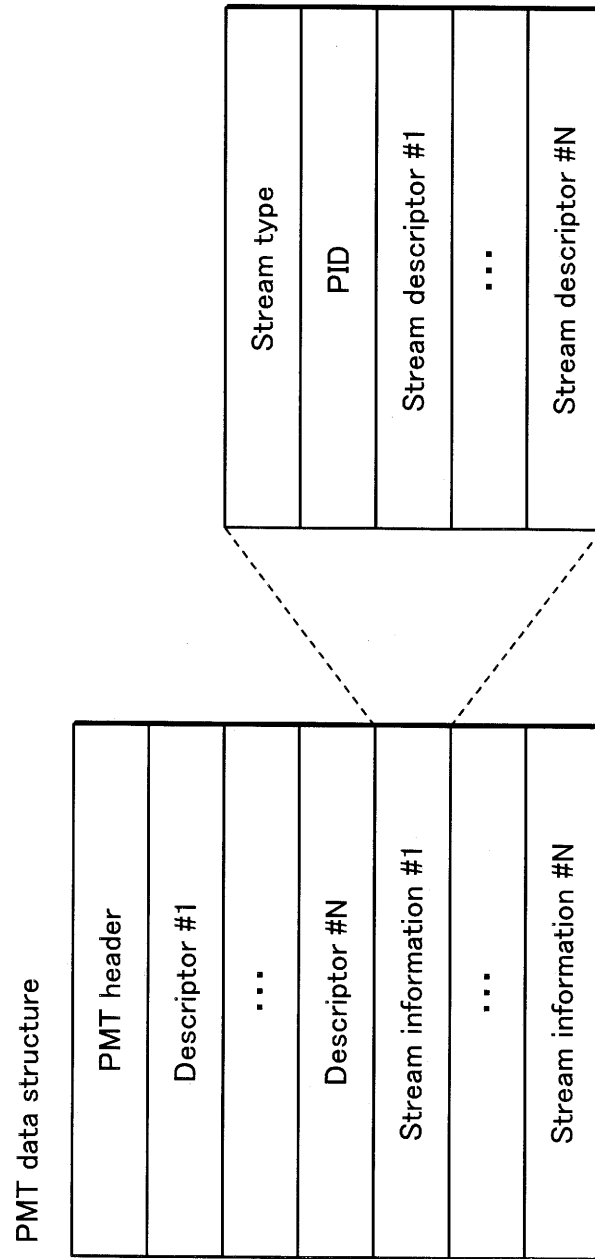


FIG. 91

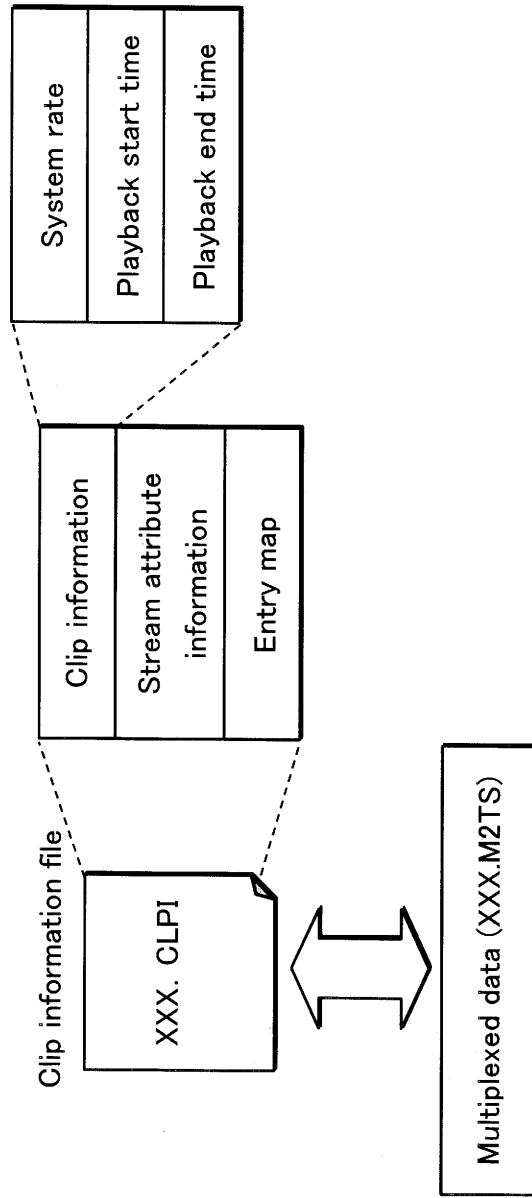
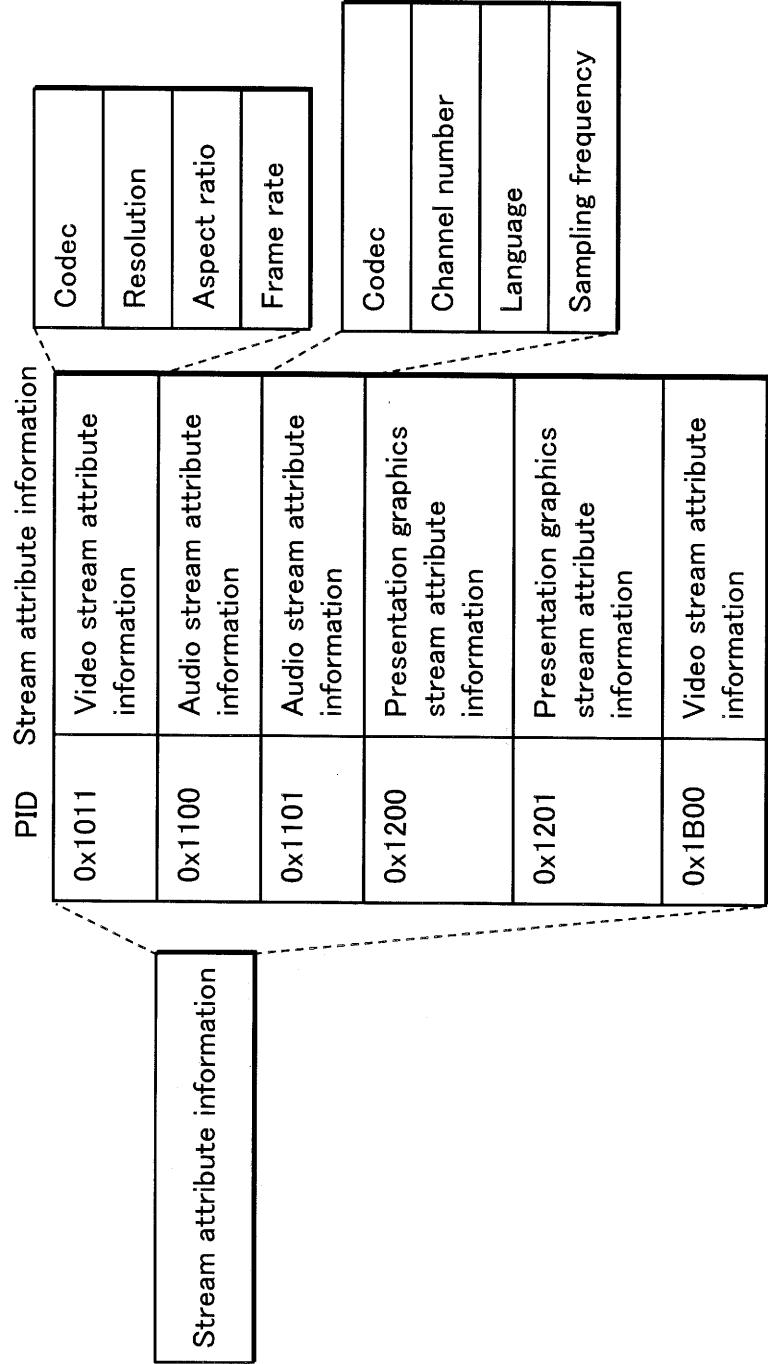


FIG. 92



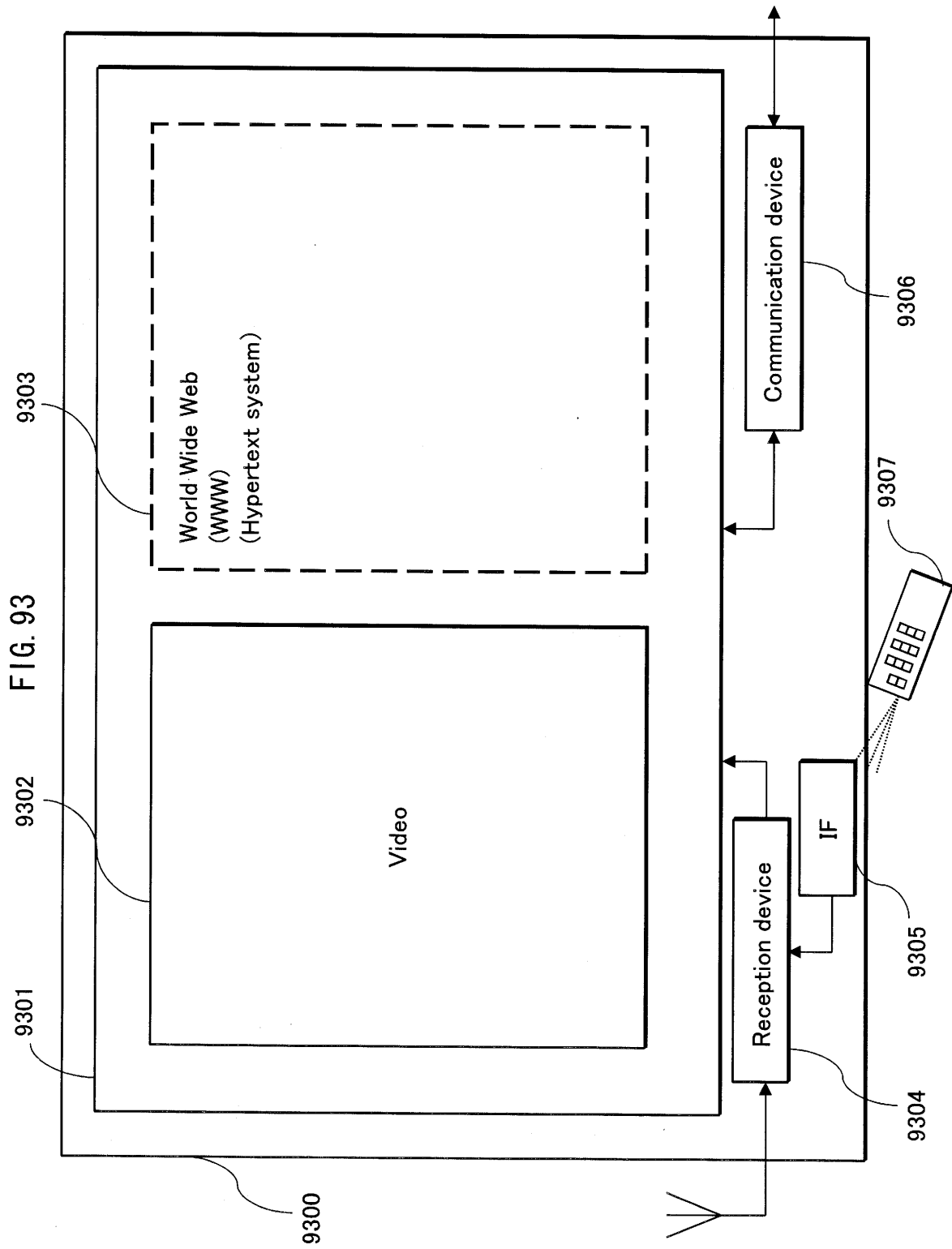


FIG. 94

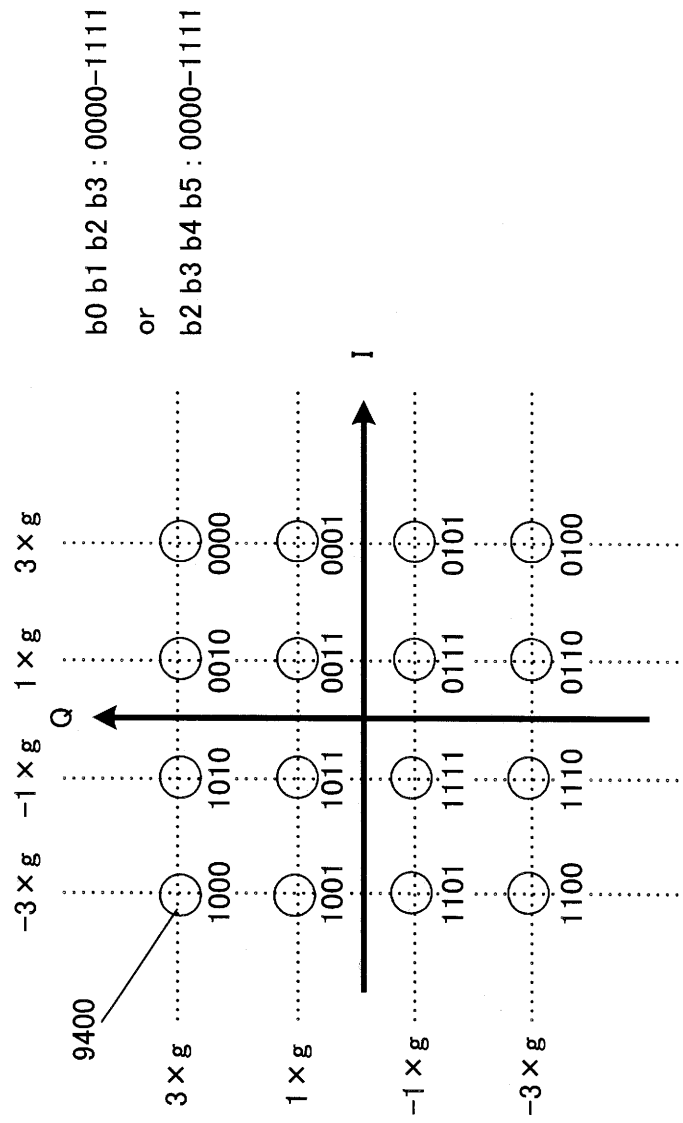


FIG. 95

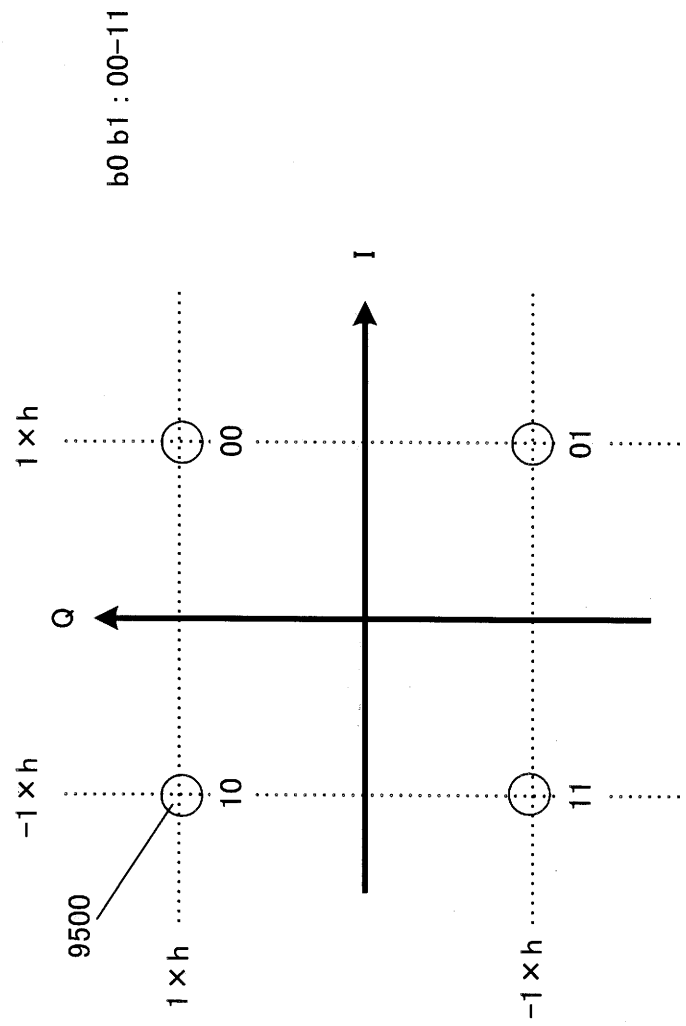


FIG. 96

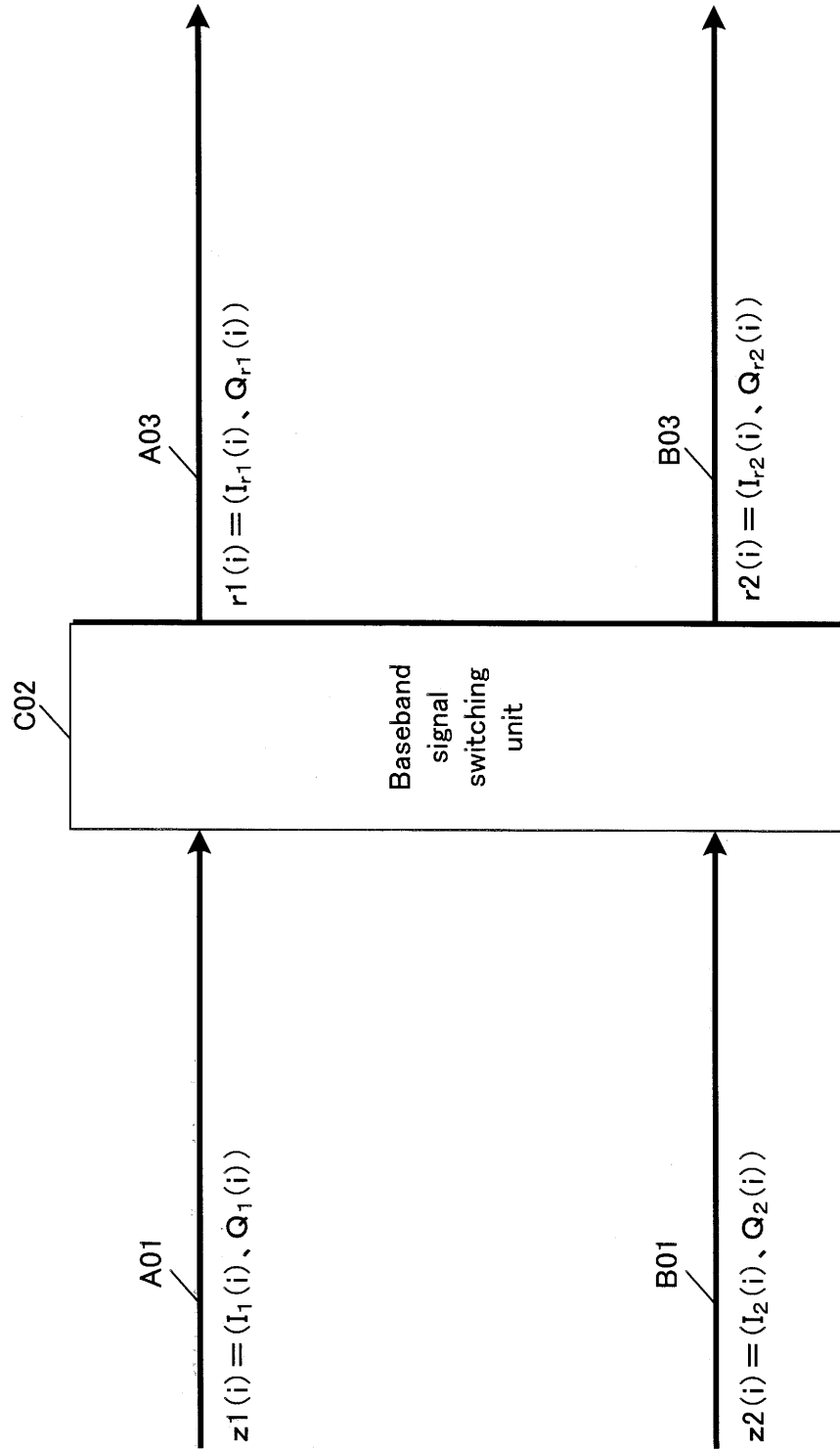


FIG. 97

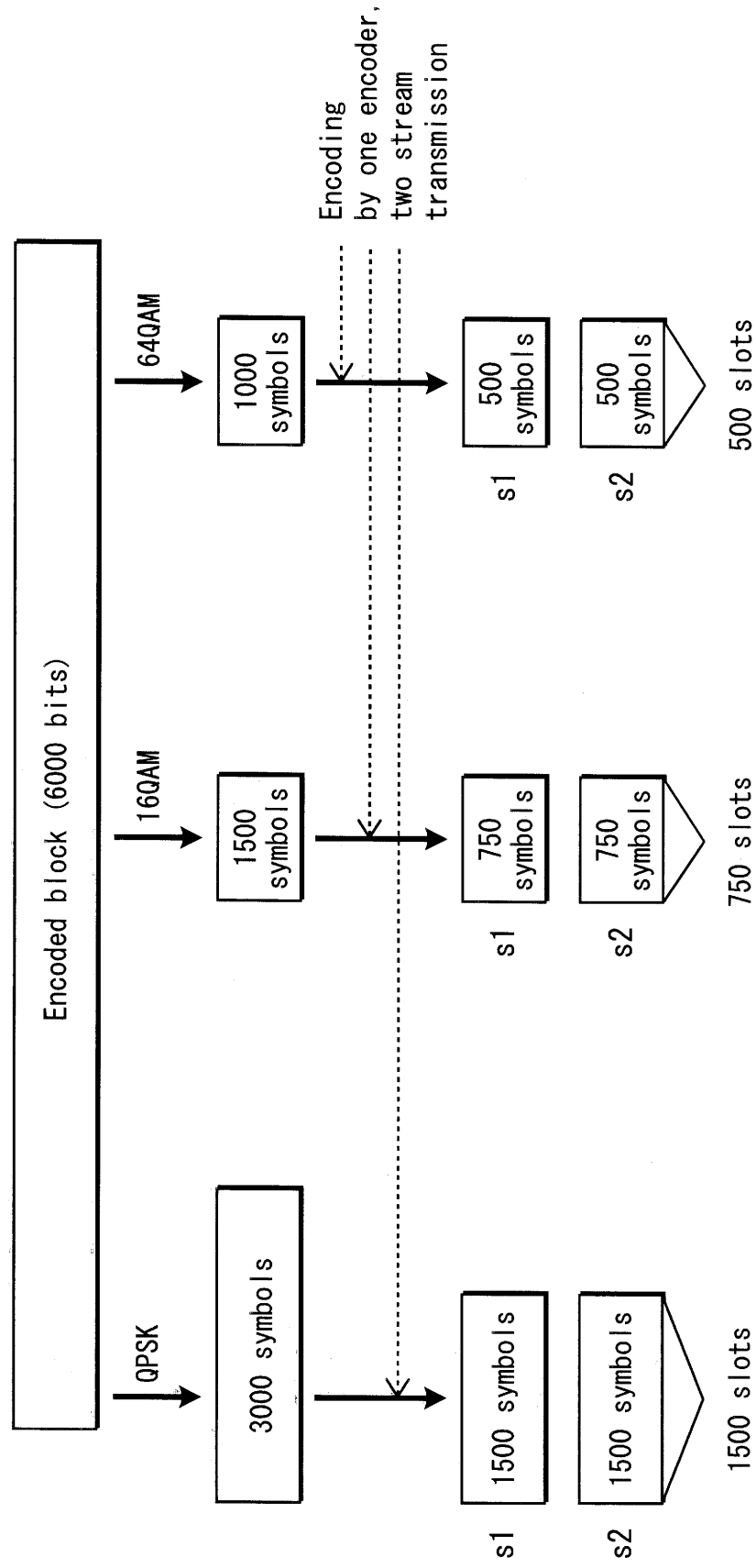
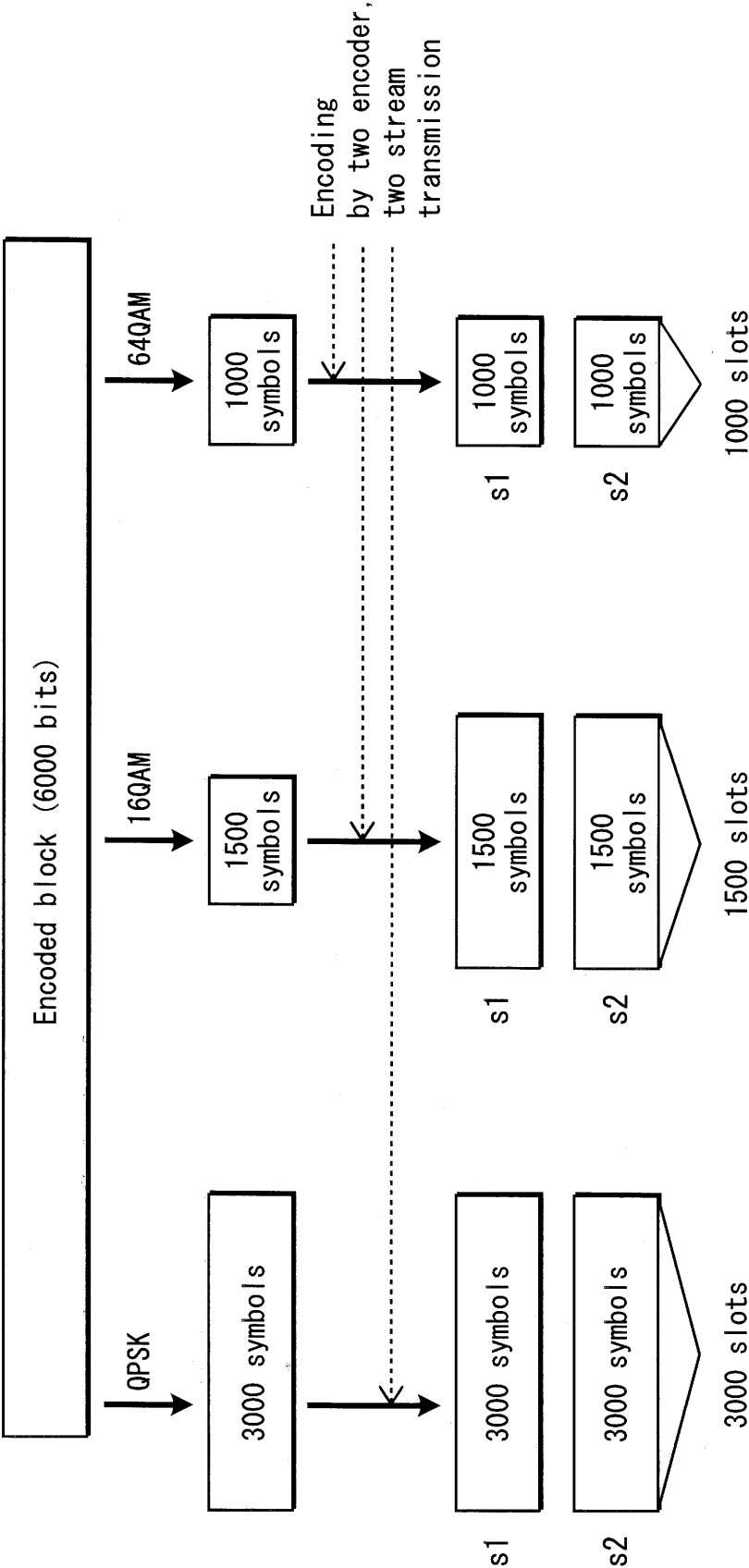


FIG. 98



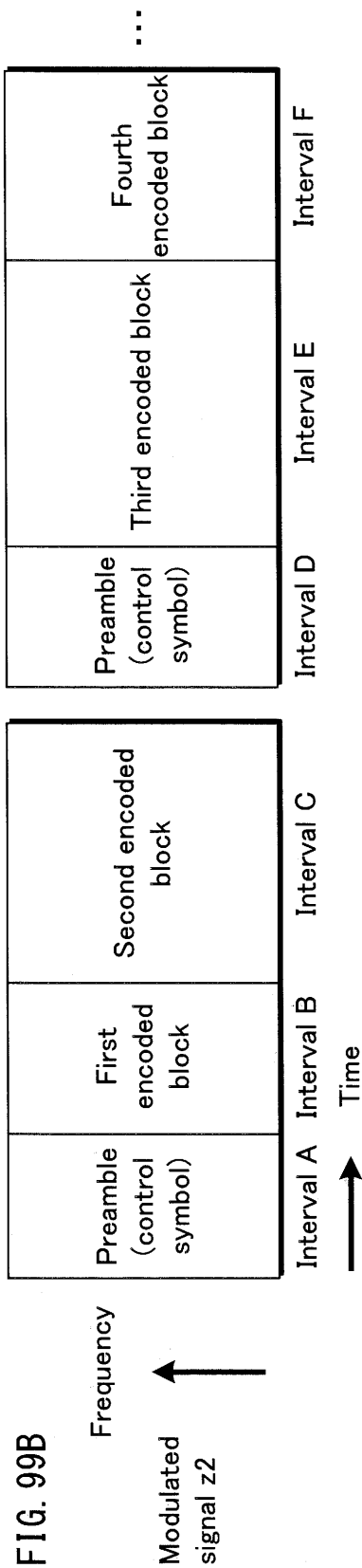
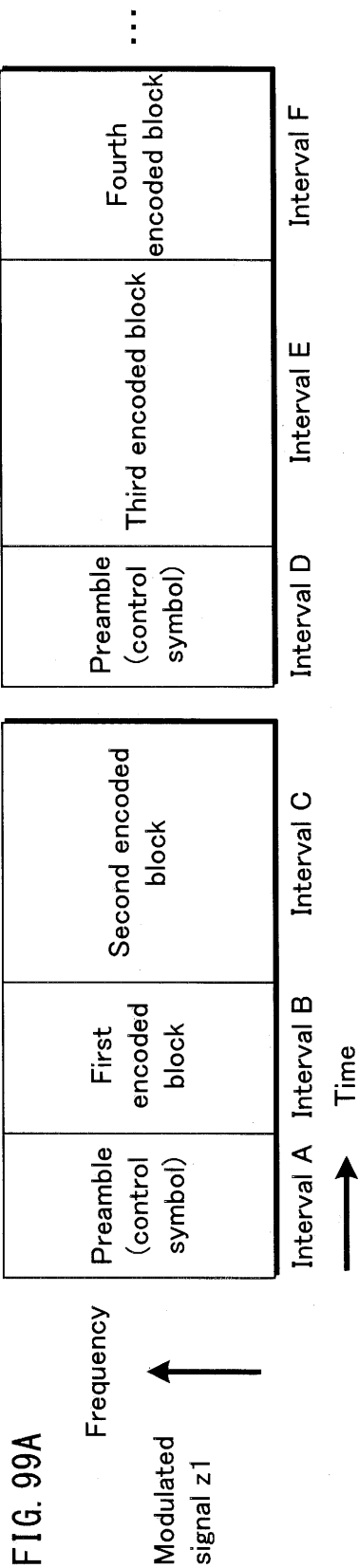


FIG. 100

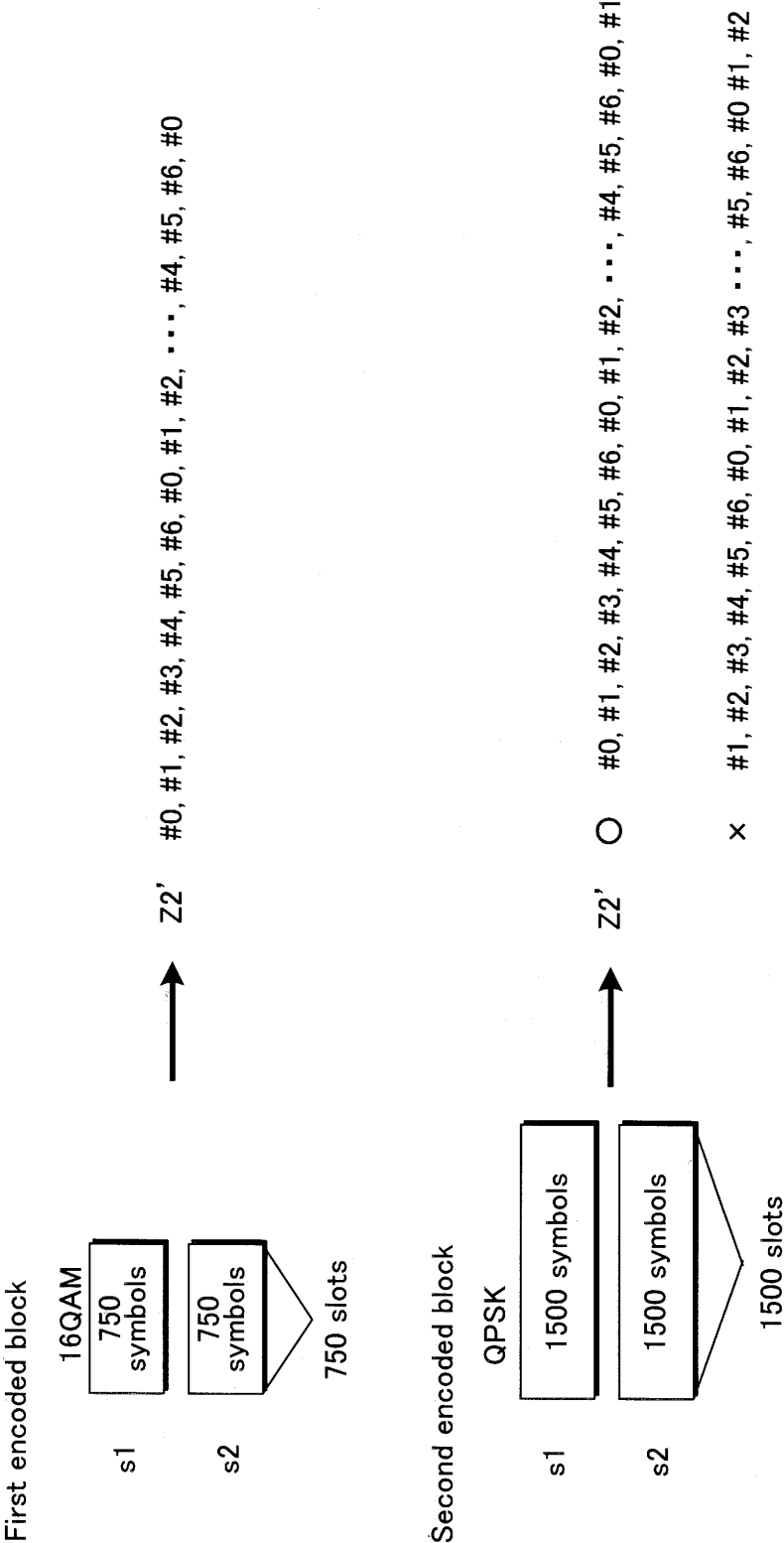


FIG. 101

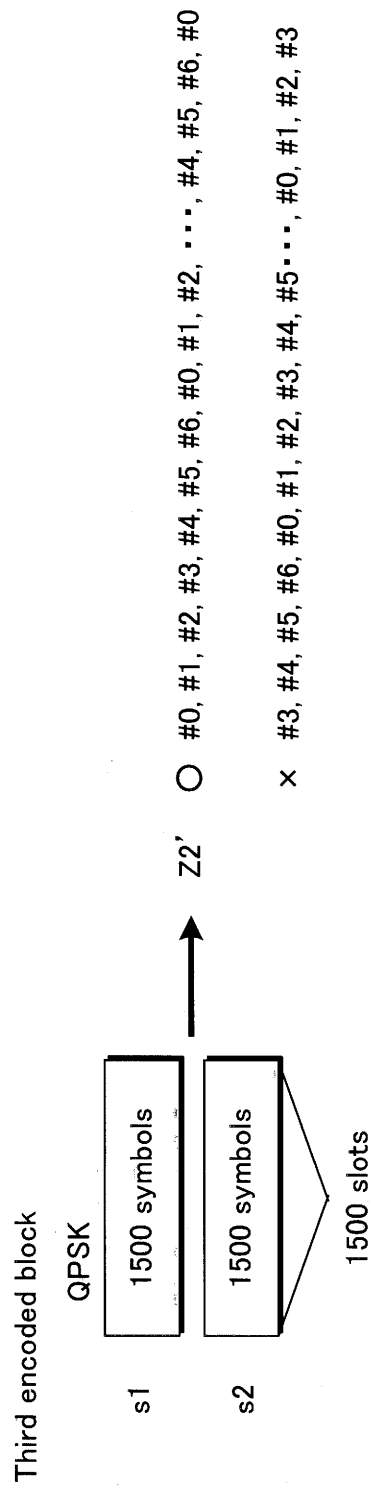


FIG. 102

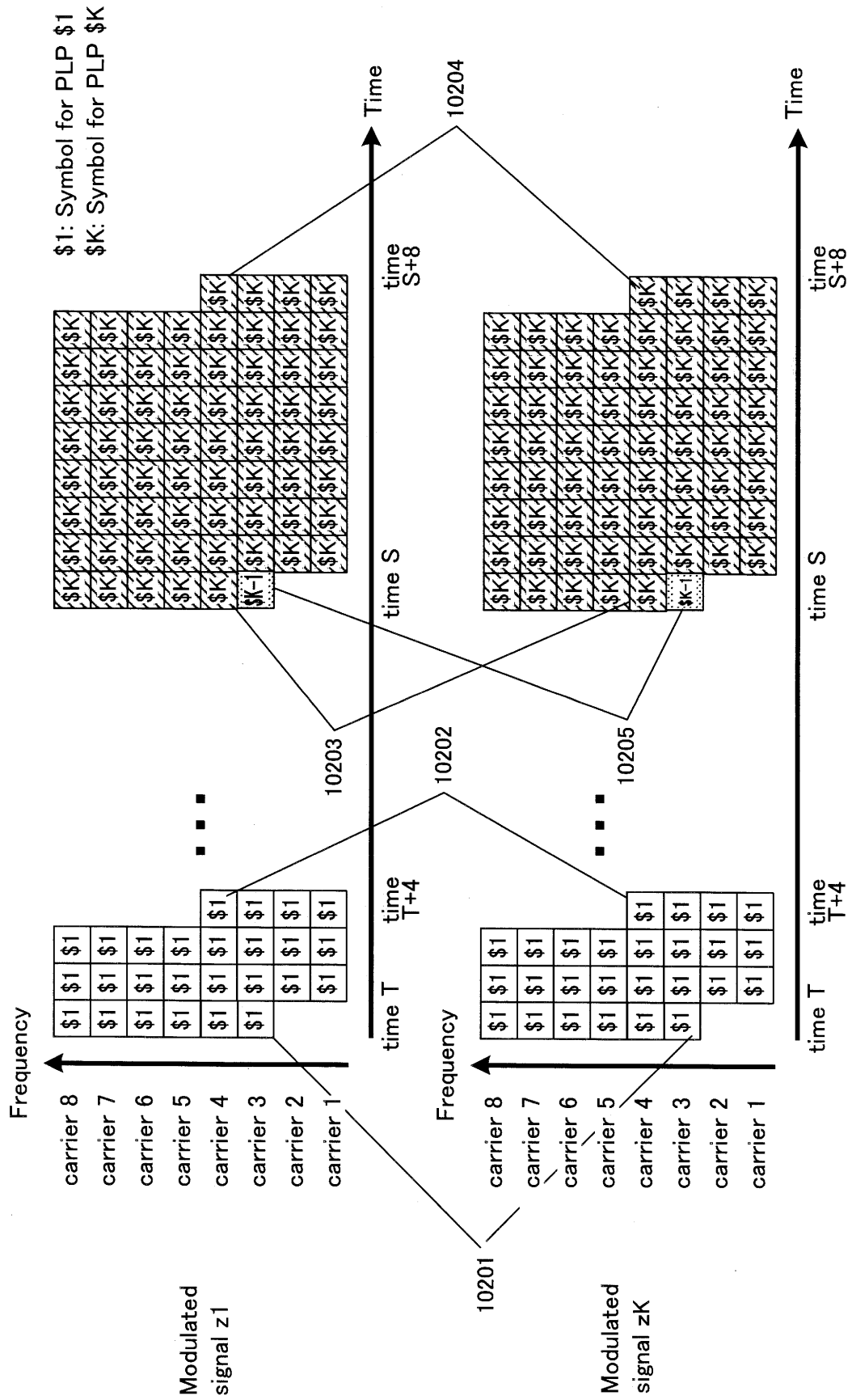


FIG. 103

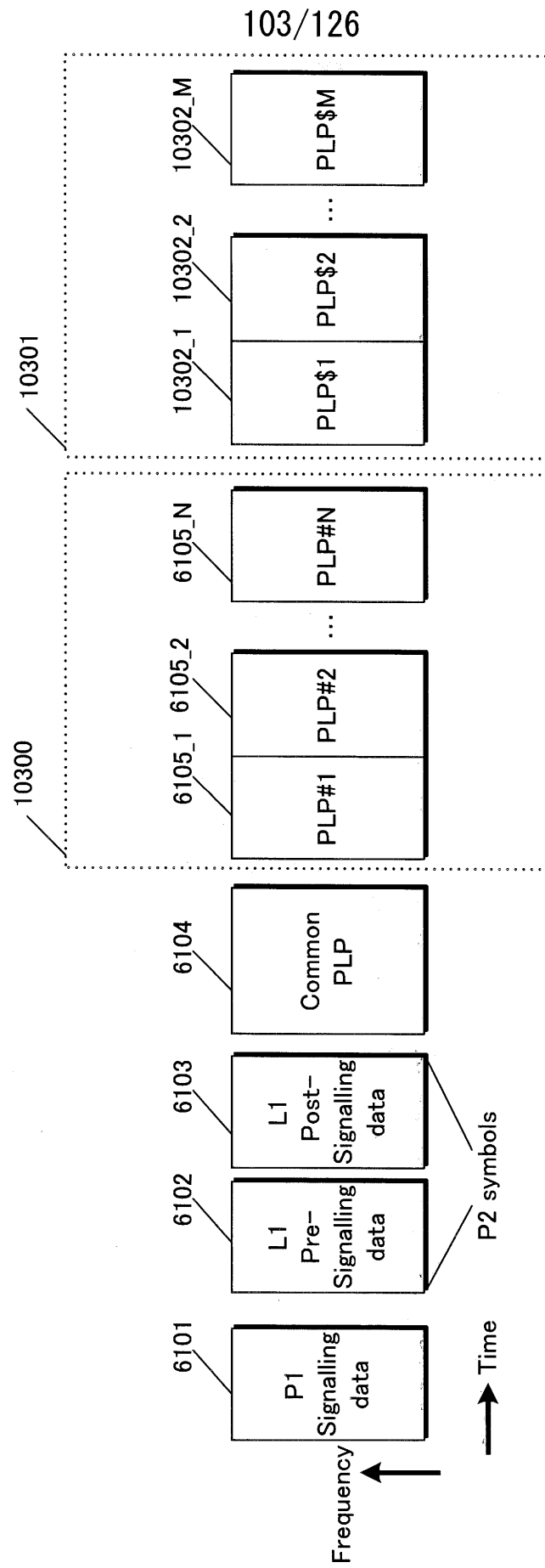


FIG. 105

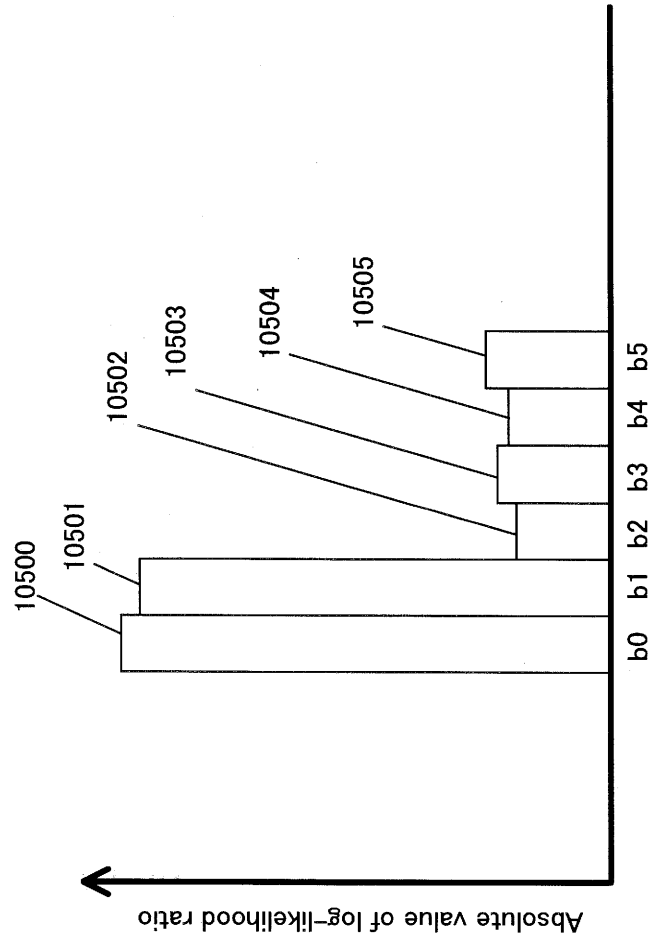


FIG. 106

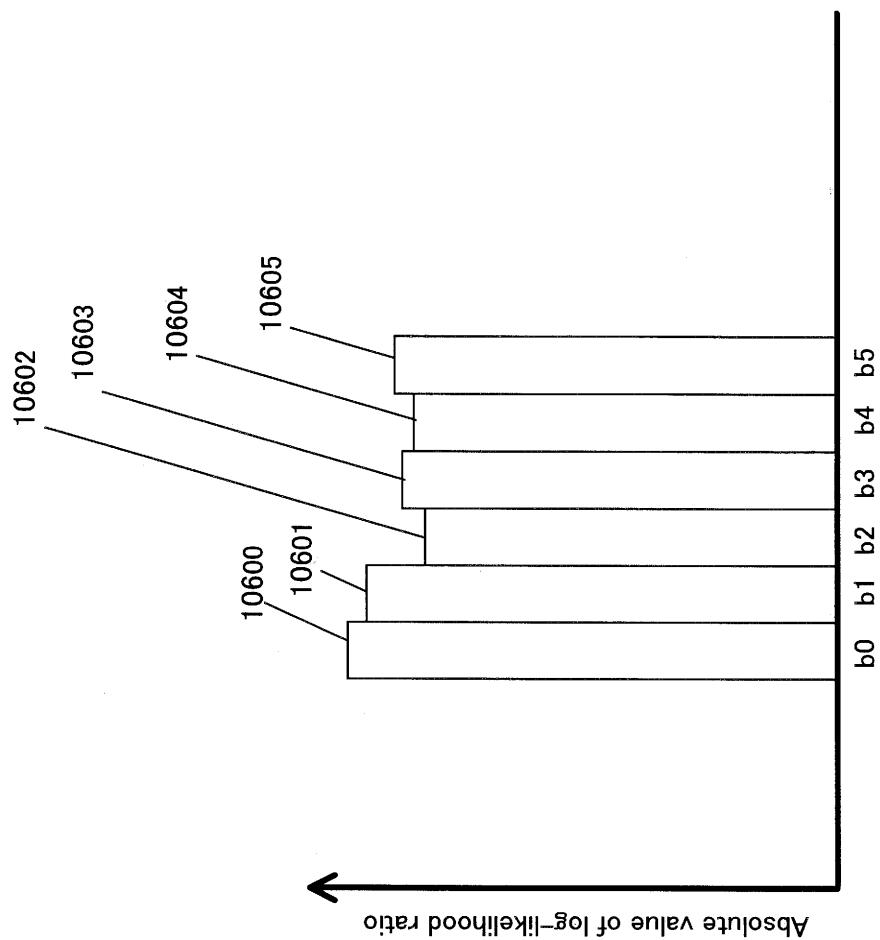


FIG. 107

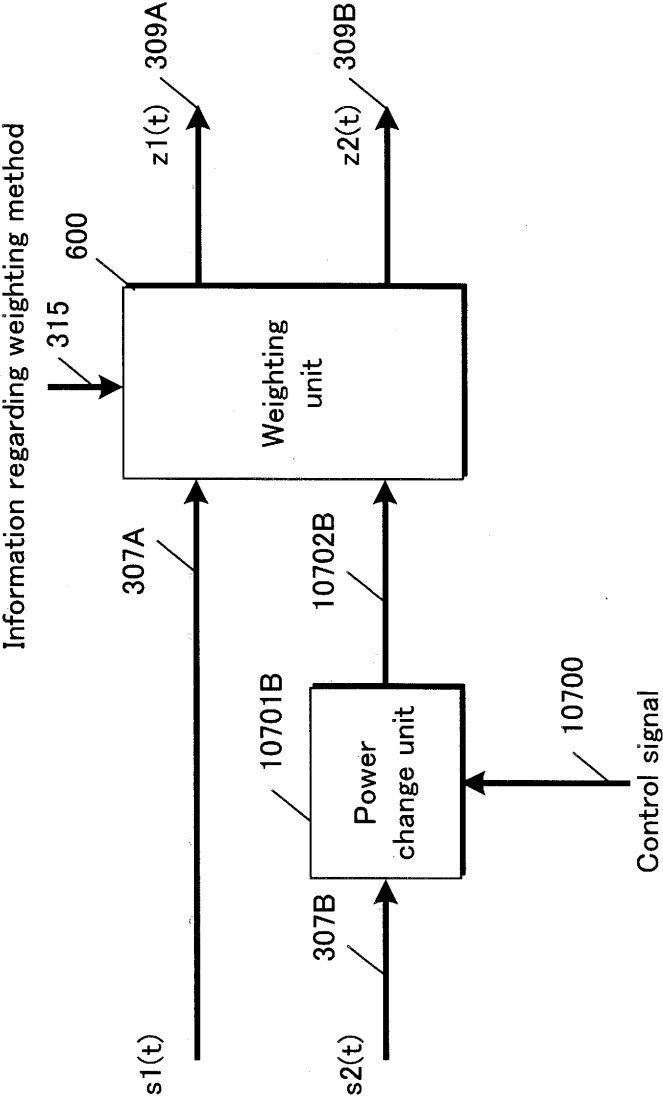


FIG. 108

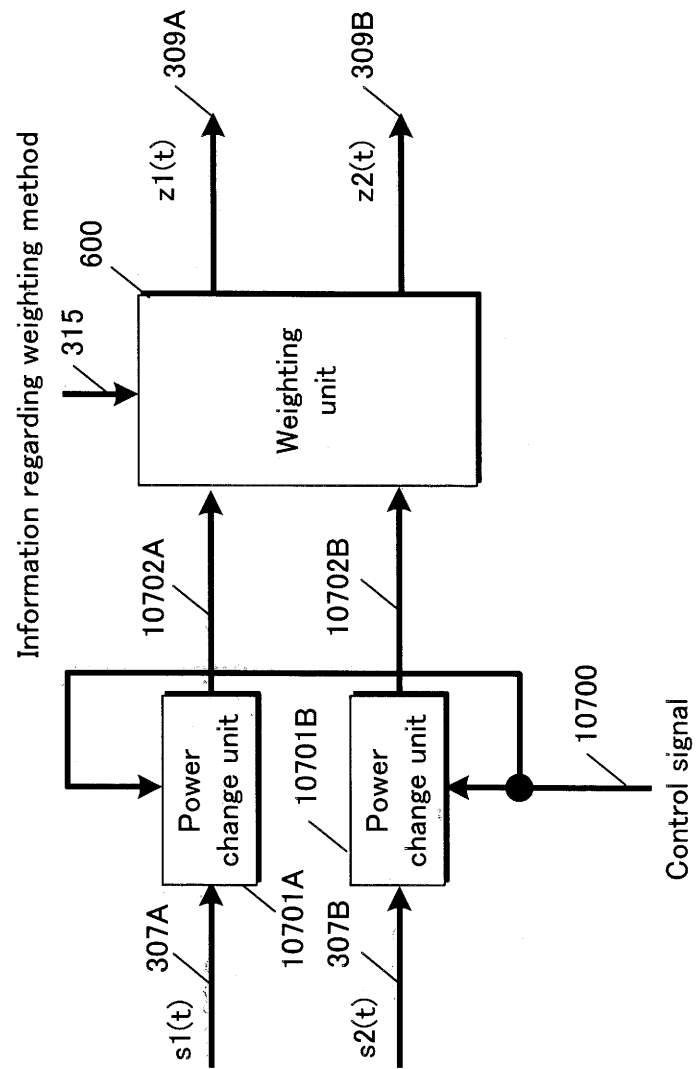


FIG. 109

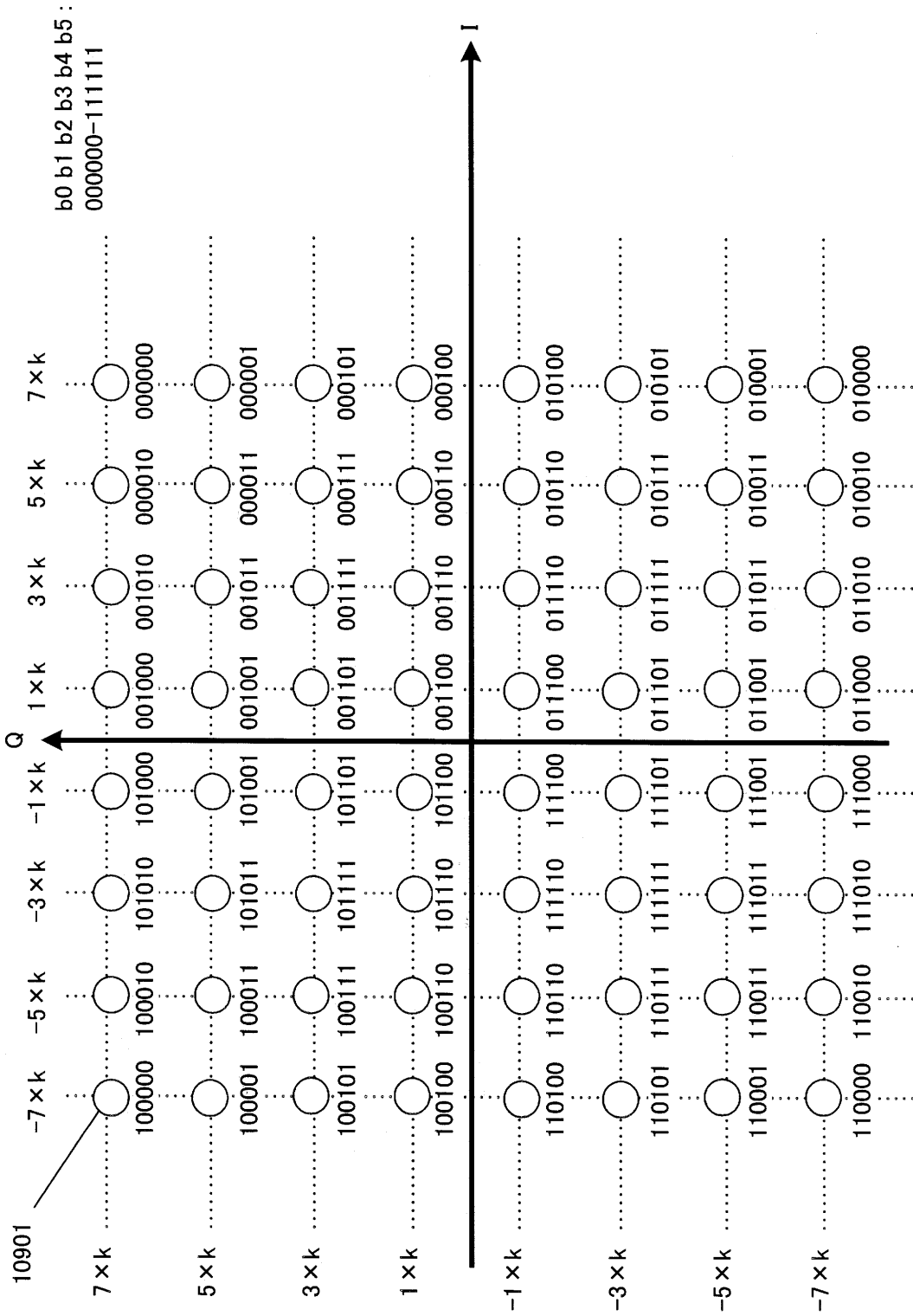


FIG. 110

$s_1(t)$	QPSK	QPSK	16QAM	16QAM	16QAM	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	16QAM	...
	16QAM	16QAM	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	QPSK	QPSK	QPSK	QPSK	...
Power change unit (10701A)	$v=a$	$v=a$	$v=b$	$v=b$	$v=b$	$v=a$	$v=a$	$v=a$	$v=b$	$v=b$	$v=b$	$v=b$	...
Power change unit (10701B)	$u=b$	$u=b$	$u=a$	$u=a$	$u=a$	$u=b$	$u=b$	$u=b$	$u=a$	$u=a$	$u=a$	$u=a$	...
Precoding matrix	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	...
Time (Frequency)	$t=0$ ($f=f_0$)	$t=1$ ($f=f_1$)	$t=2$ ($f=f_2$)	$t=3$ ($f=f_3$)	$t=4$ ($f=f_4$)	$t=5$ ($f=f_5$)	$t=6$ ($f=f_6$)	$t=7$ ($f=f_7$)	$t=8$ ($f=f_8$)	$t=9$ ($f=f_9$)	$t=10$ ($f=f_{10}$)	$t=11$ ($f=f_{11}$)	...

Cycle of precoding matrices: 3
 Cycle of precoding matrices: $6=3 \times 2$
 (when taking precoding matrices and switching
 between modulation schemes into consideration)

FIG. 111

Cycle of precoding matrices: 3																			
$s_1(t)$	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	...
$s_2(t)$	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	...
Power change unit (10701A)	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	...
Power change unit (10701B)	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	...
Precoding matrix	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	...
Time (Frequency)	$t=0$ ($f=f_0$)	$t=1$ ($f=f_1$)	$t=2$ ($f=f_2$)	$t=3$ ($f=f_3$)	$t=4$ ($f=f_4$)	$t=5$ ($f=f_5$)	$t=6$ ($f=f_6$)	$t=7$ ($f=f_7$)	$t=8$ ($f=f_8$)	$t=9$ ($f=f_9$)	$t=10$ ($f=f_{10}$)	$t=11$ ($f=f_{11}$)	...	...	...	...	...	...	...

Cycle of precoding matrices: 6=3 × 2

(when taking precoding matrices and switching
between modulation schemes into consideration)

FIG. 112

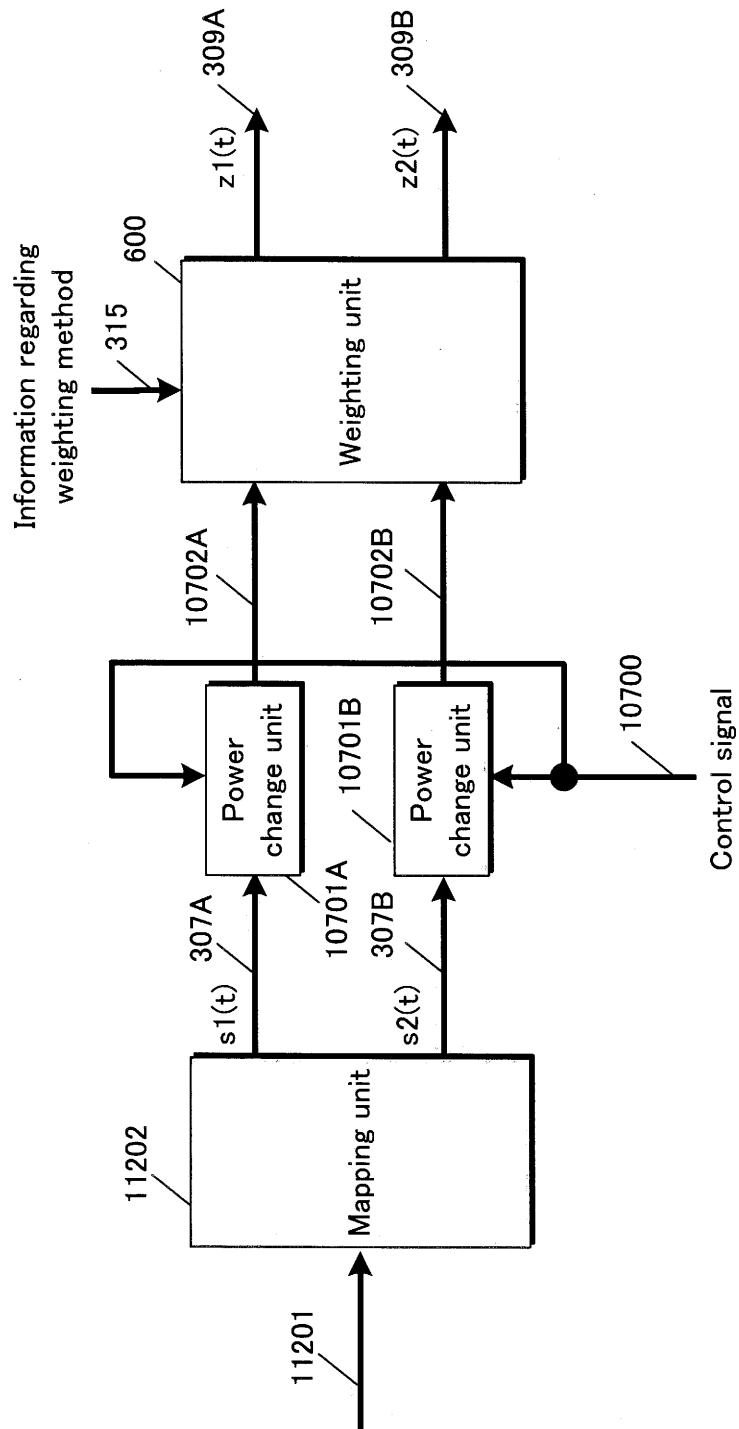
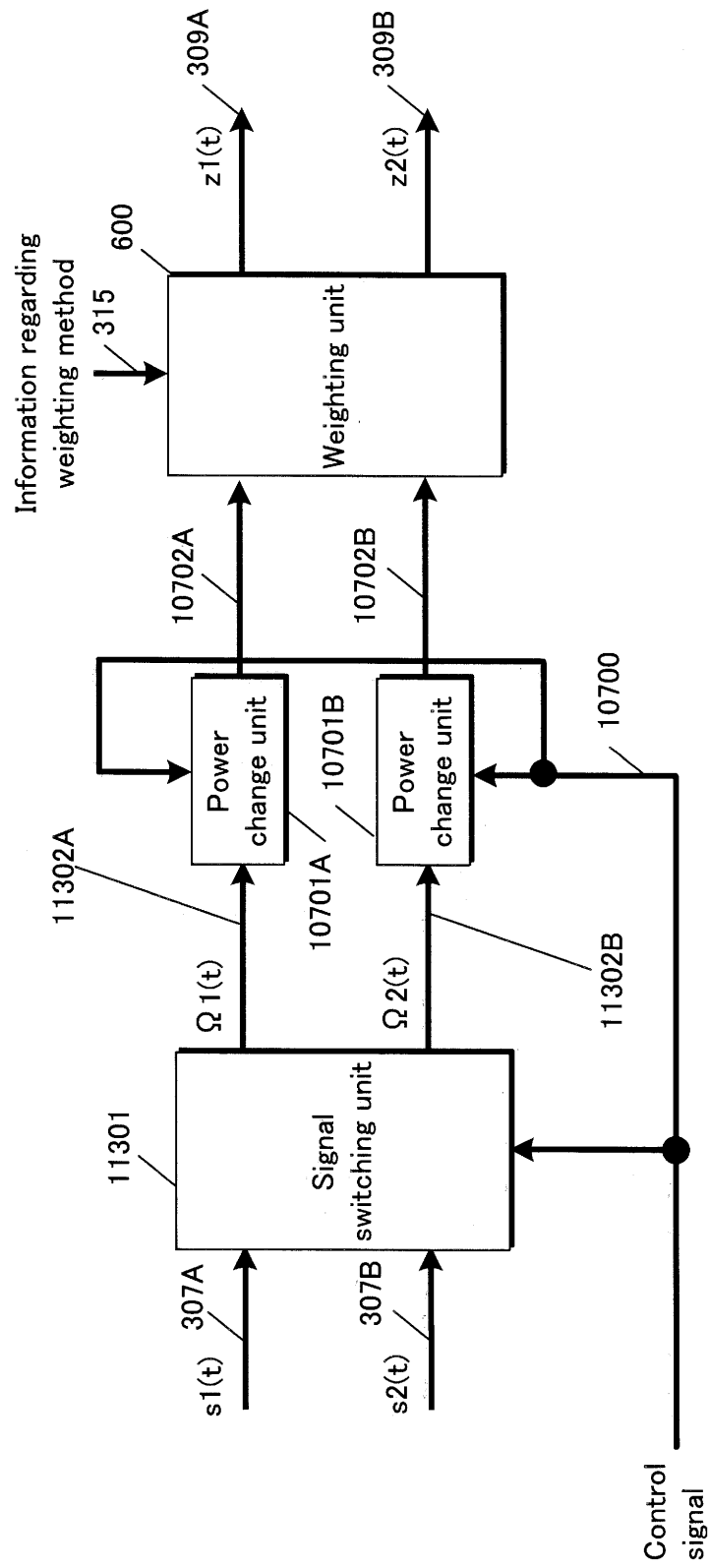


FIG. 113



Cycle of precoding matrices: 3

$s_1(t)$	QPSK												...
$s_2(t)$	16QAM												...
$\Omega_1(t)$	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	...
$\Omega_2(t)$	16QAM	16QAM	16QAM	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM	QPSK	QPSK	QPSK	...
Power change unit (10701A)	$v=a$	$v=a$	$v=a$	$v=b$	$v=b$	$v=b$	$v=a$	$v=a$	$v=a$	$v=b$	$v=b$	$v=b$	...
Power change unit (10701B)	$u=b$	$u=b$	$u=b$	$u=a$	$u=a$	$u=a$	$u=b$	$u=b$	$u=b$	$u=a$	$u=a$	$u=a$	...
Precoding matrix	F[0]	F[1]	F[2]	F[0]	F[1]	F[2]	F[0]	F[0]	F[1]	F[2]	F[0]	F[1]	...
Time (Frequency)	$t=0$ ($f=f_0$)	$t=1$ ($f=f_1$)	$t=2$ ($f=f_2$)	$t=3$ ($f=f_3$)	$t=4$ ($f=f_4$)	$t=5$ ($f=f_5$)	$t=6$ ($f=f_6$)	$t=7$ ($f=f_7$)	$t=8$ ($f=f_8$)	$t=9$ ($f=f_9$)	$t=10$ ($f=f_{10}$)	$t=11$ ($f=f_{11}$)	...

Cycle of precoding matrices: $6=3 \times 2$
(when taking precoding matrices and switching
between modulation schemes into consideration)

FIG. 115

Cycle of precoding matrices: 3

$s1(t)$	QPSK												...
$s2(t)$	16QAM												...
$\Omega 1(t)$	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	...
$\Omega 2(t)$	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	...
Power change unit (10701A)	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	$v=a$	$v=b$	...
Power change unit (10701B)	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	$u=b$	$u=a$	...
Precoding matrix	$F[0]$	$F[1]$	$F[2]$	$F[0]$	$F[1]$	$F[2]$	$F[0]$	$F[1]$	$F[2]$	$F[0]$	$F[1]$	$F[2]$	...
Time (Frequency)	$t=0$ ($f=f0$)	$t=1$ ($f=f1$)	$t=2$ ($f=f2$)	$t=3$ ($f=f3$)	$t=4$ ($f=f4$)	$t=5$ ($f=f5$)	$t=6$ ($f=f6$)	$t=7$ ($f=f7$)	$t=8$ ($f=f8$)	$t=9$ ($f=f9$)	$t=10$ ($f=f10$)	$t=11$ ($f=f11$)	...

Cycle of precoding matrices: $6=3 \times 2$ (when taking precoding matrices and switching
between modulation schemes into consideration)

FIG. 116

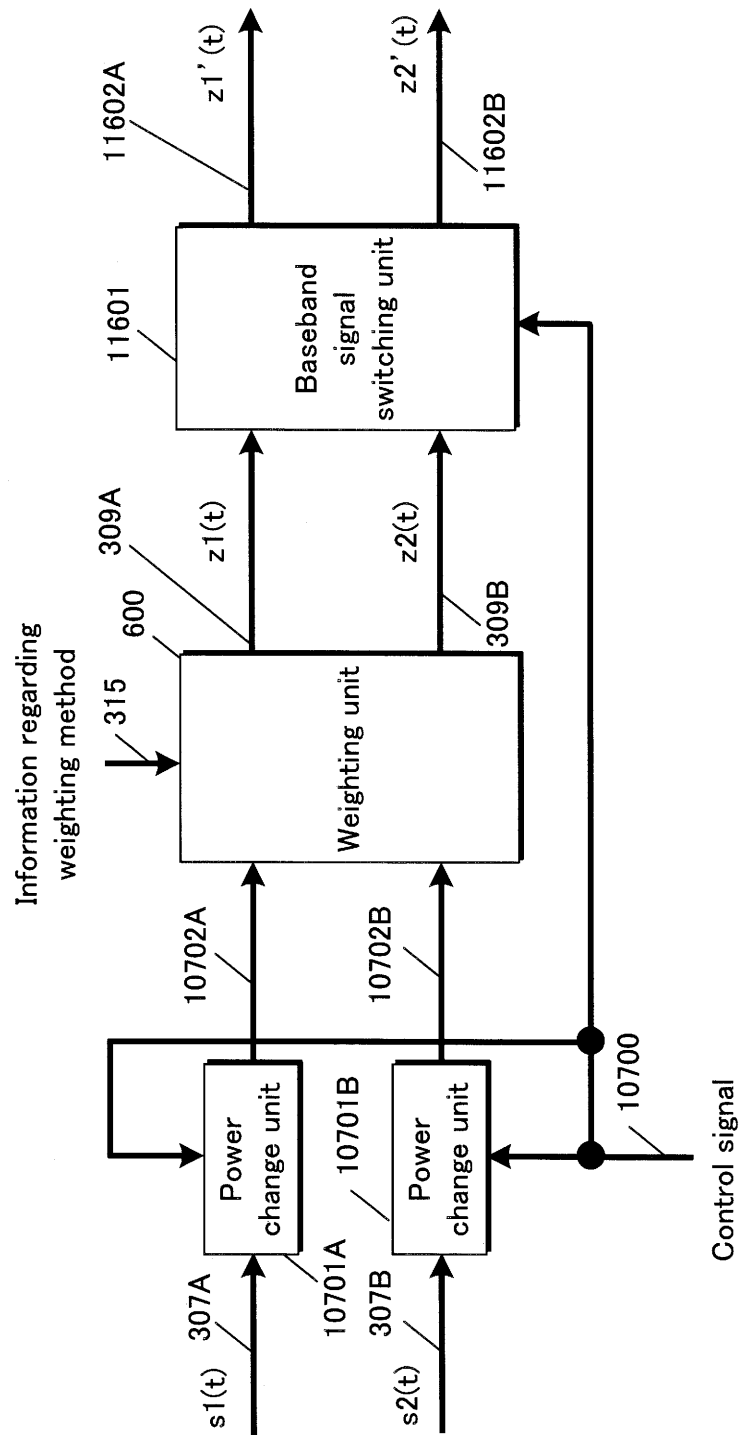


FIG. 117

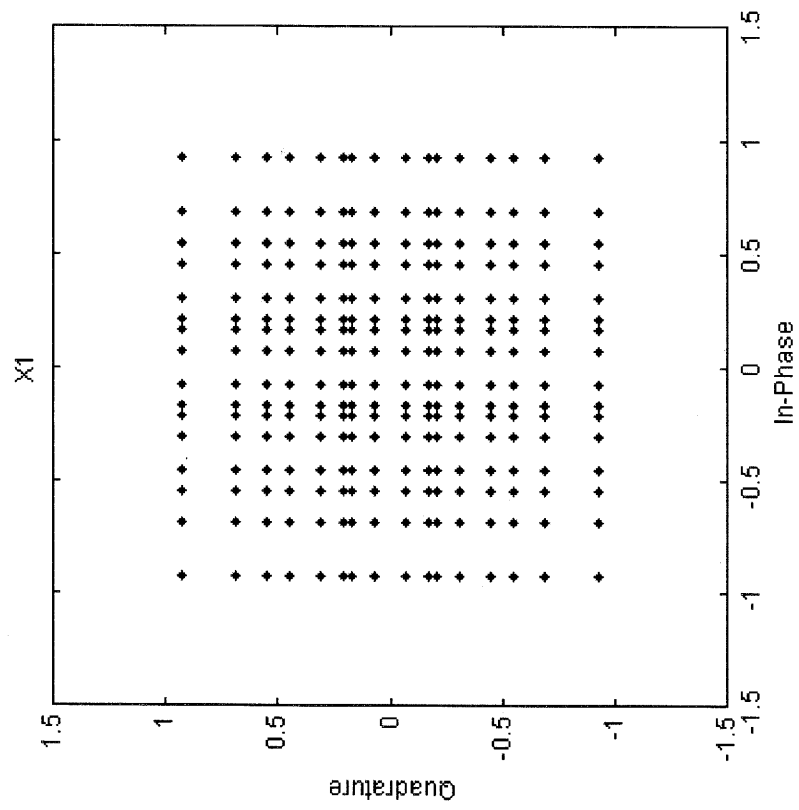


FIG. 118

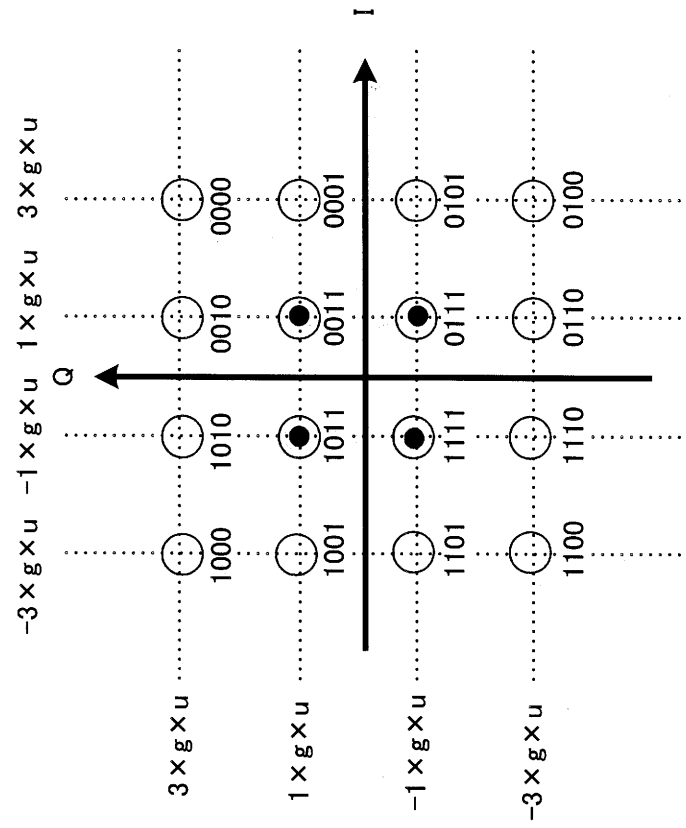


FIG. 119

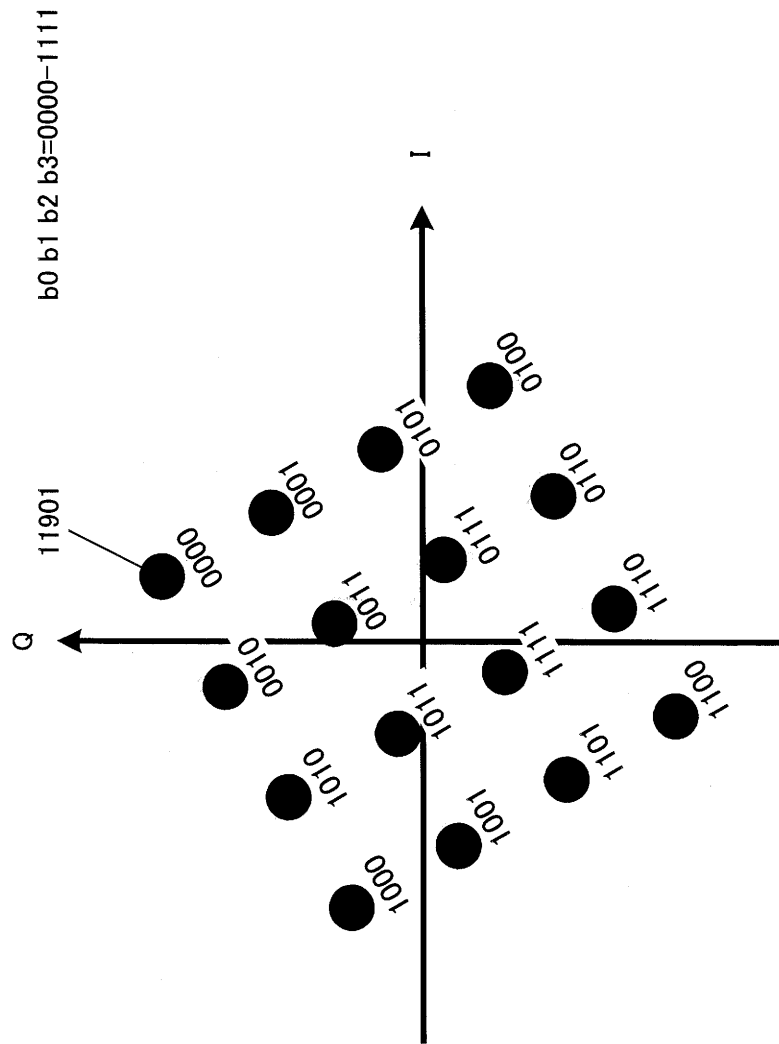


FIG. 120

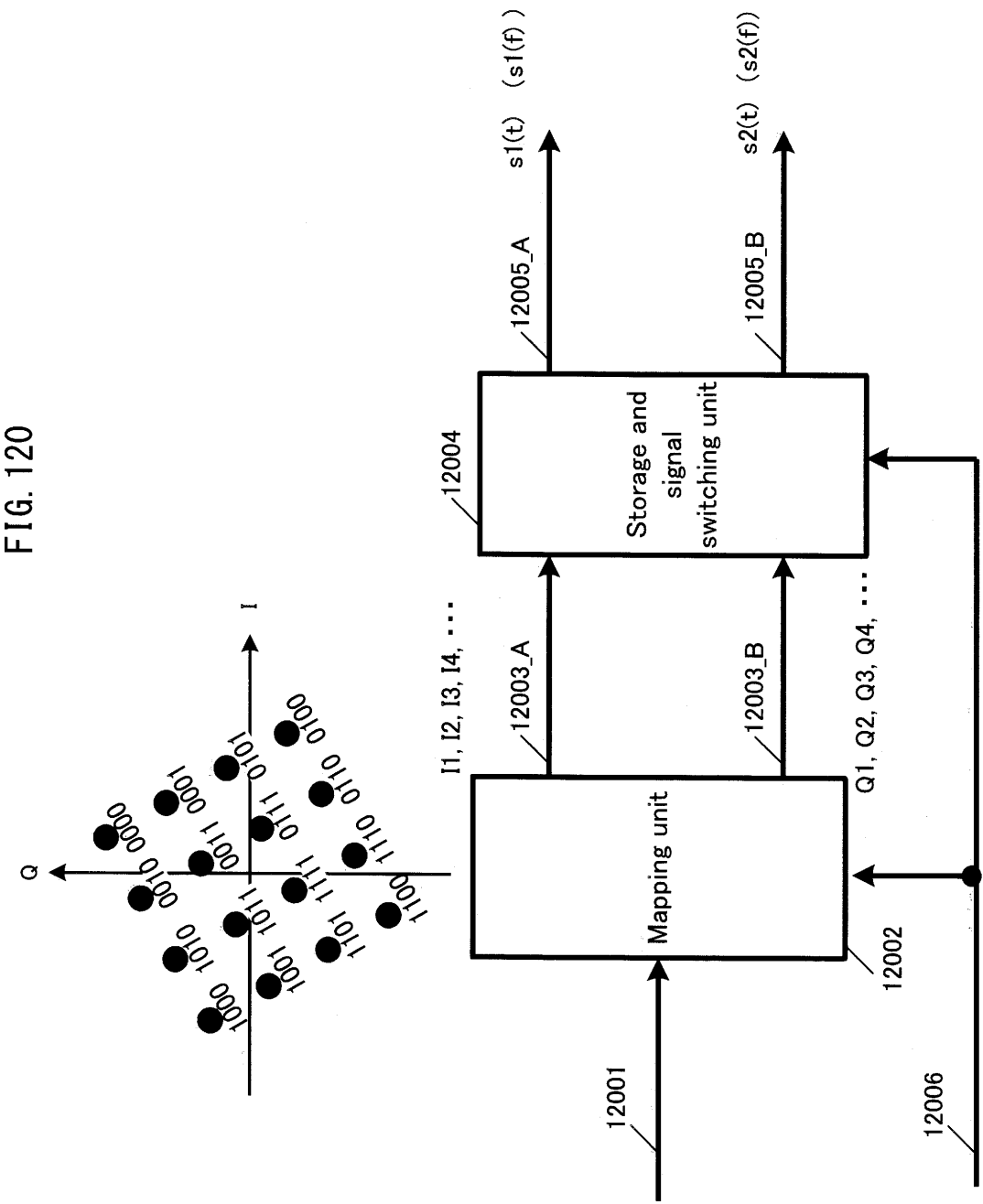


FIG. 121

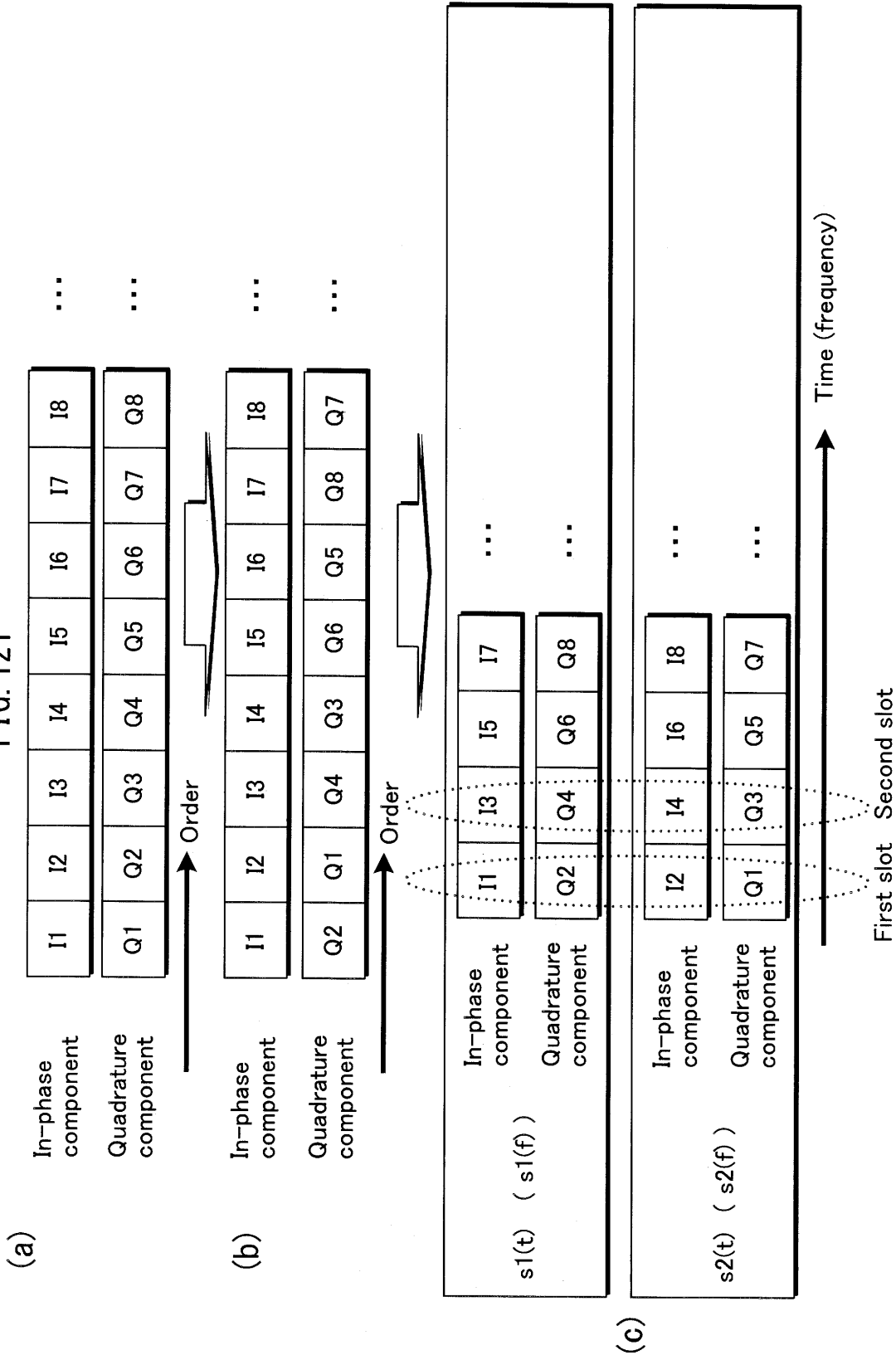


FIG. 122

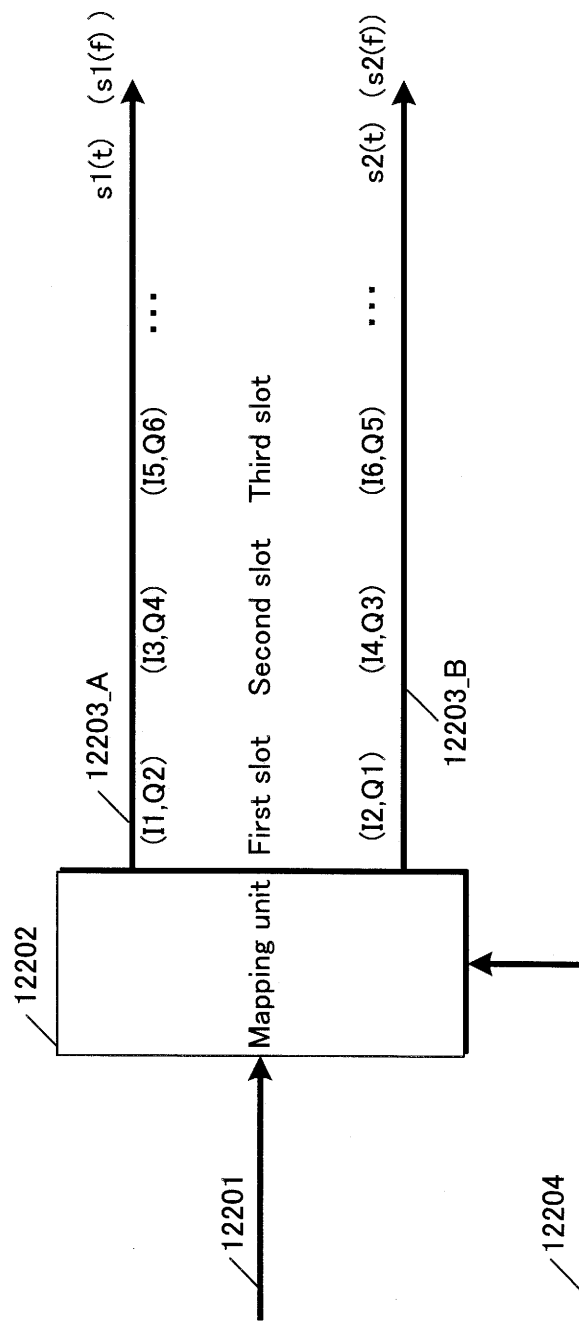


FIG. 123

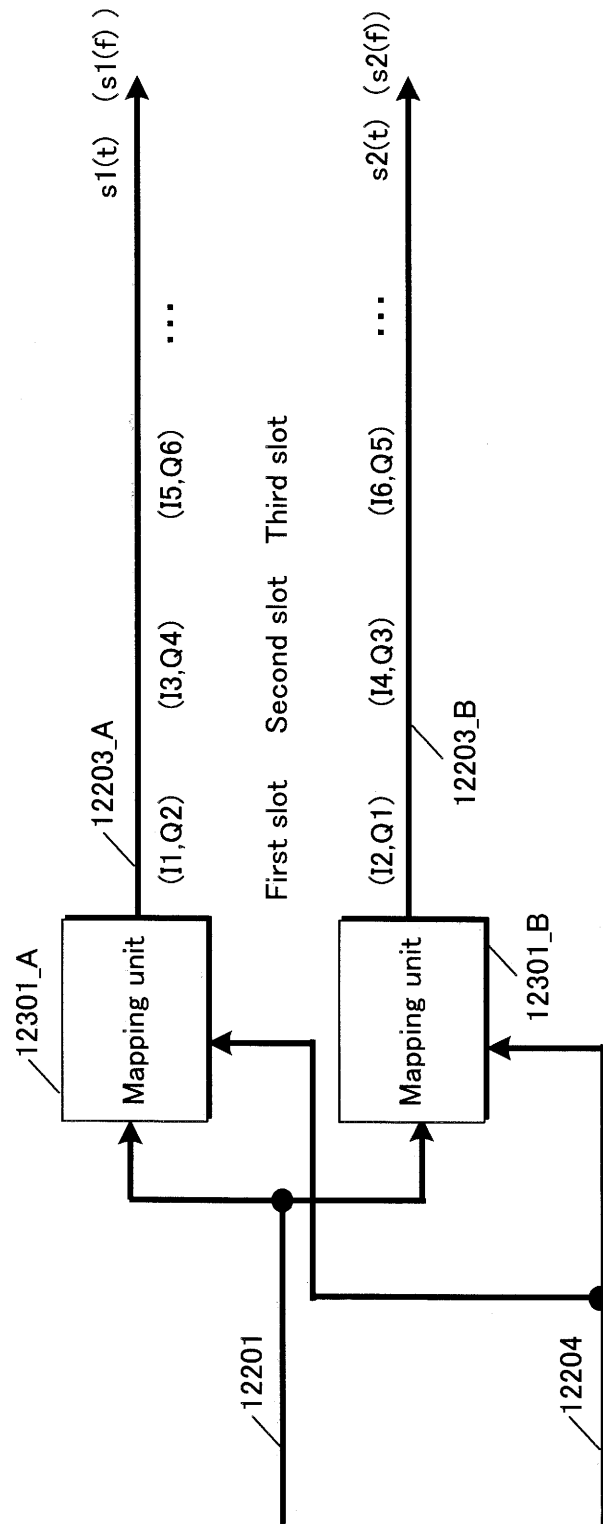


FIG. 124

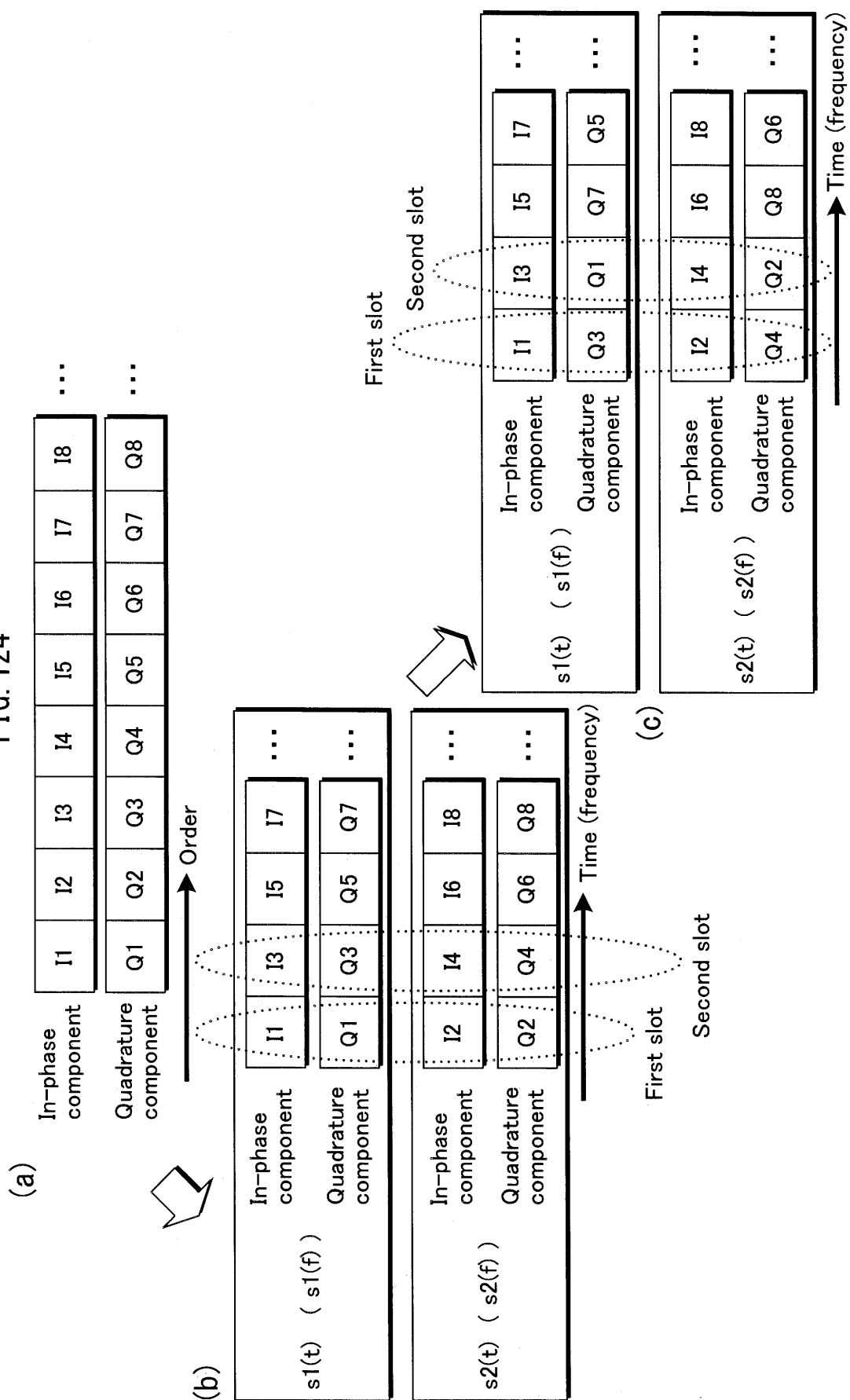


FIG. 125

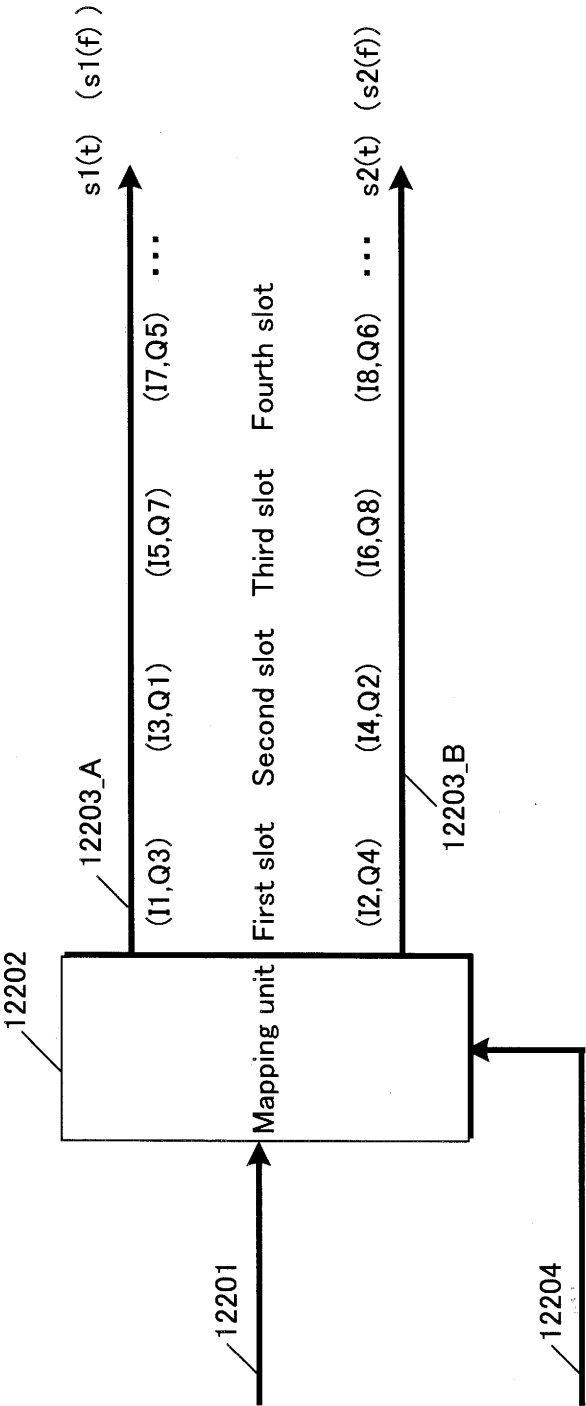


FIG. 126

