

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl. ⁷
A61B 8/06

(11)
(43)

2002 - 0005110
2002 01 17

(21) 10 - 2000 - 0039084
(22) 2000 07 08

(71)

114

(72)

2 317 - 40

106 - 120

309 - 303

(74)

:

(54)

, , , ,

1

2

3 2 (108)

4

5 , , 3

6 , , 5 (501)

7

8

9

10 가

11 (PRF)

12 , ,

13 , ,

< >

304 :

501 :

502 :

601 : 1

602 :

603 :

604 :

605 :

607 :

1 (transducer array; 103) (101) 1 (101) , 2N (101) (101) v 1
 , t=t₀
 t₀

1

$$v = \frac{\Delta_\theta \lambda_0}{2\pi T_{PRF}}$$

0 , T_{PRF} (Pulse Repitition Frequncy, PRF) 1
 v

2 (transducer array; 103) (103)
 (pre - amp, 104) TGC (105) TGC (10
 5) A/D (107) (gain) (104) (quadrature demodulator, 106)
 (2N) (108) (108) 2N (109)

(103) 가 가 (108)
 (spectral Doppler) — (108) —
 (109)

3 2 (108) (301) ,

(301) forming part, 302) 2N (high - pass filter) , 2N . FFT (Fast Fourier Trans
 ion; 303) (base line shifting) 2N (109) . (post - processing port
 (log compression) (108) (304)
 (109)

4 y 4 x 가 4 가
 4 가
 (401) (402) 가 가 4
 (noise threshold) , 가
 (403) 4 (f_p) 가

가 4 가
 (Pulse Repetition frequency, PRF)가

가 (aliasing)

5 , 3 (304) ((

501) 2N (502) (

109) 5 가 (

2N N N

가

6 , 5 (501) 1 (601) 2N (

(603) (605) (608) (602) (6

04) (602) 1 (601) 2N N (6

(505) (504) (603) N (605) (

(602) 가 (603) (605) (

605) 1 (601) , L L (

(607) 가 L (607) L (

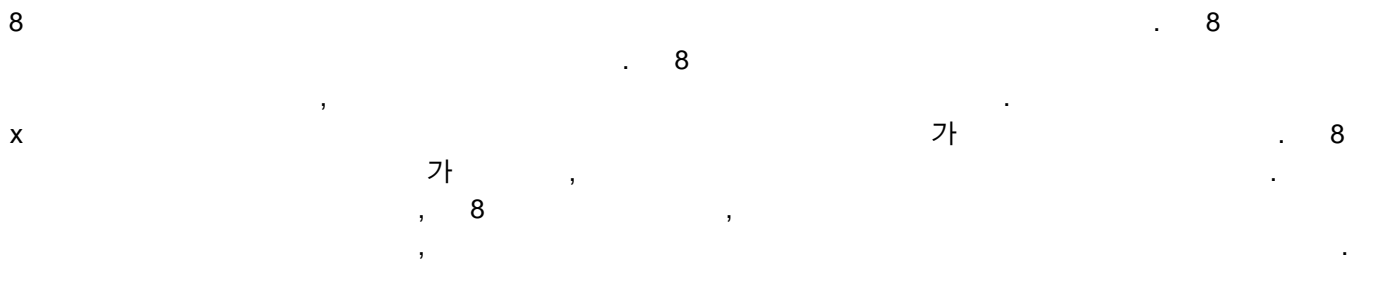
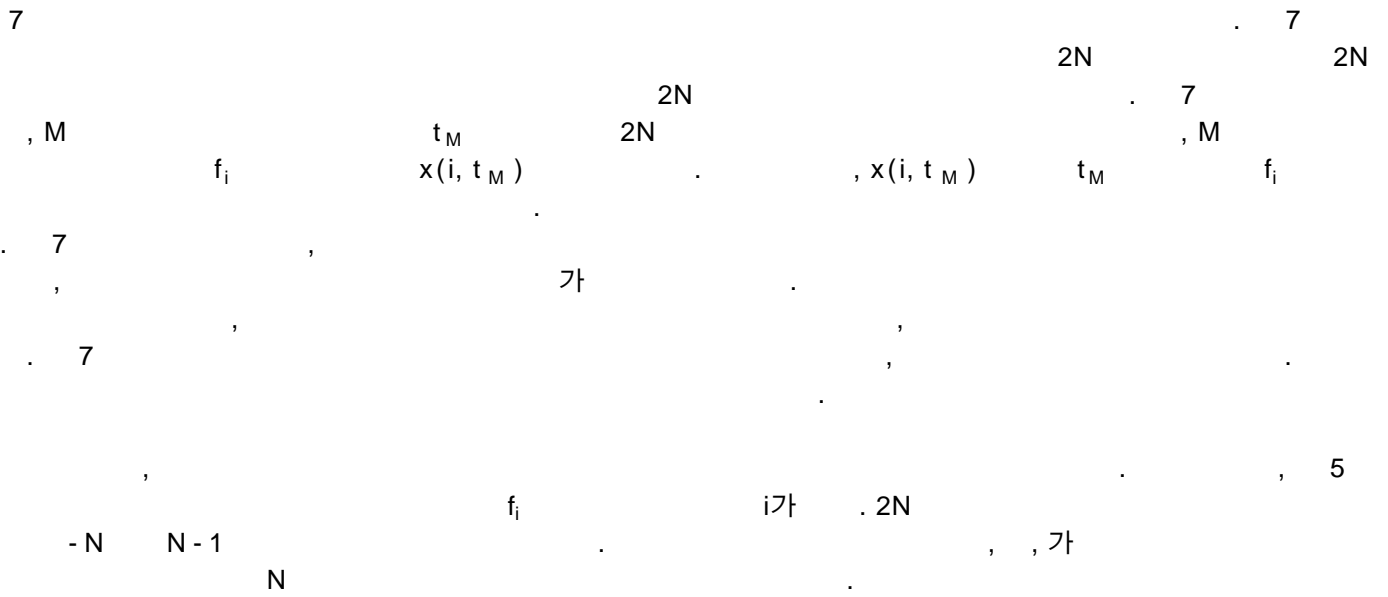
(502) 2N , 5 , ,

가 , 가

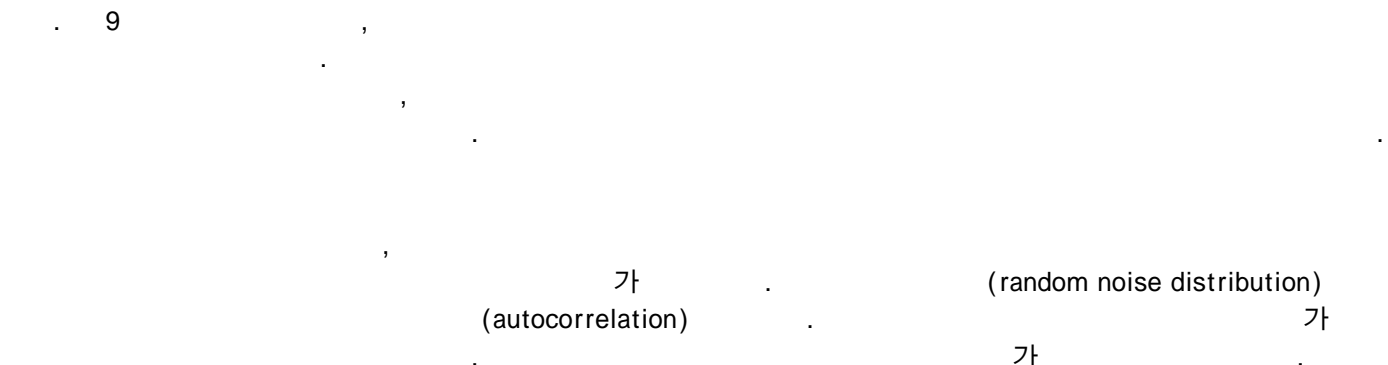
2N

N

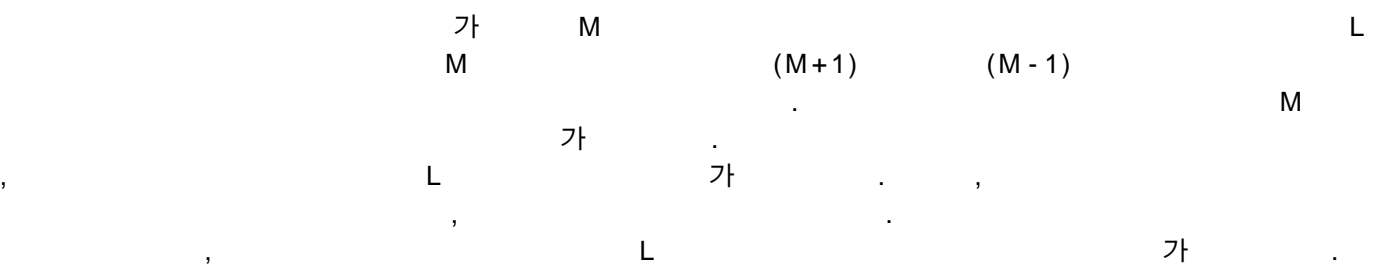
N



(PRF, Pulse Repitition Frequency)가



가 (autocorrelation) (random noise distribution) 가



, M
M - 1

10 가 (501) 가 (1000) 6
(1001) M (605) 2
M (1002) 2 (1001) 2
, M L M+1 L
2

2

$$\rho = \frac{\frac{1}{L} \sum_{i=N-L}^{N-1} x(f_i, t_m) x(f_i, t_{m+1})}{\sqrt{\frac{1}{L} \sum_{i=N-L}^{N-1} (x(f_i, t_m))^2} \sqrt{\frac{1}{L} \sum_{i=N-L}^{N-1} (x(f_i, t_{m+1}))^2}}$$

2 N - L N - 1
(605) - N (605) - N + L - 1 가
(605) (607) 10

(PRF)

11 (PRF) 11 7
, x , y
가
가 가 , 가
가 ,

11 j , 80 . j
 . i , -80 . i -80 ,
 가 .

11 , 2N N 128 . 가
 j , 가 11 가 ,
 i 가 , 가 3

3

$$N_{new} = N_{old} + (N_{old} - \text{abs}(\text{peak_index})) = 2N_{old} - \text{abs}(\text{peak_index})$$

3

N_{new} 11 N_{old} 128 , i , N_{old} , N_{new} 176가 . ,
 N_{new} 176 가

4

4

$$PRF_{new} = PRF_{old} S \frac{N_{new}}{N_{old}}$$

12 , x[i] i . 12 i N-1 ,
 7 -N . 1210 가 , 0 N-1 ,
 -N -1 1 가 , 1220 x[i]가
 (Noise_Threshold) . x[i]가 1225

(peak_index) i . 1230 i가 -1 . i가 -1
 , 1232 i -N . N-1

11 j , i가 0 80 , 1220 x[i]가
 , peak_index가 . i가 81 N-1 , -N -1
 , 1220 x[i]가 , peak_index가
 . , peak_index 80 . i , i가 0
 N-1 , -N -80 peak_index가 ,
 . , peak_index -80 .

12 1210 가 . , i가 0 1 -N , N-1
 1 .

13 , ,
 1310 , ,
 12 , 1320 ,
 1330 , 가 ,
 1330 가 , , 1350 3
 (N_{new}) , 1360 4
 (PRF_{new}) .
 , 가 가 가

(57)

1.

,

-

,

,

,

-

.

2.

1 ,

3.

1 ,

4.

1 ,

가 가

5.

4 , 가

가 가 .

6.

5 , 가 가 ,

가

7.

1 ,

8.

9.

8 ,

10.

8 ,

11.

8 ,

가

12.

11 , 가

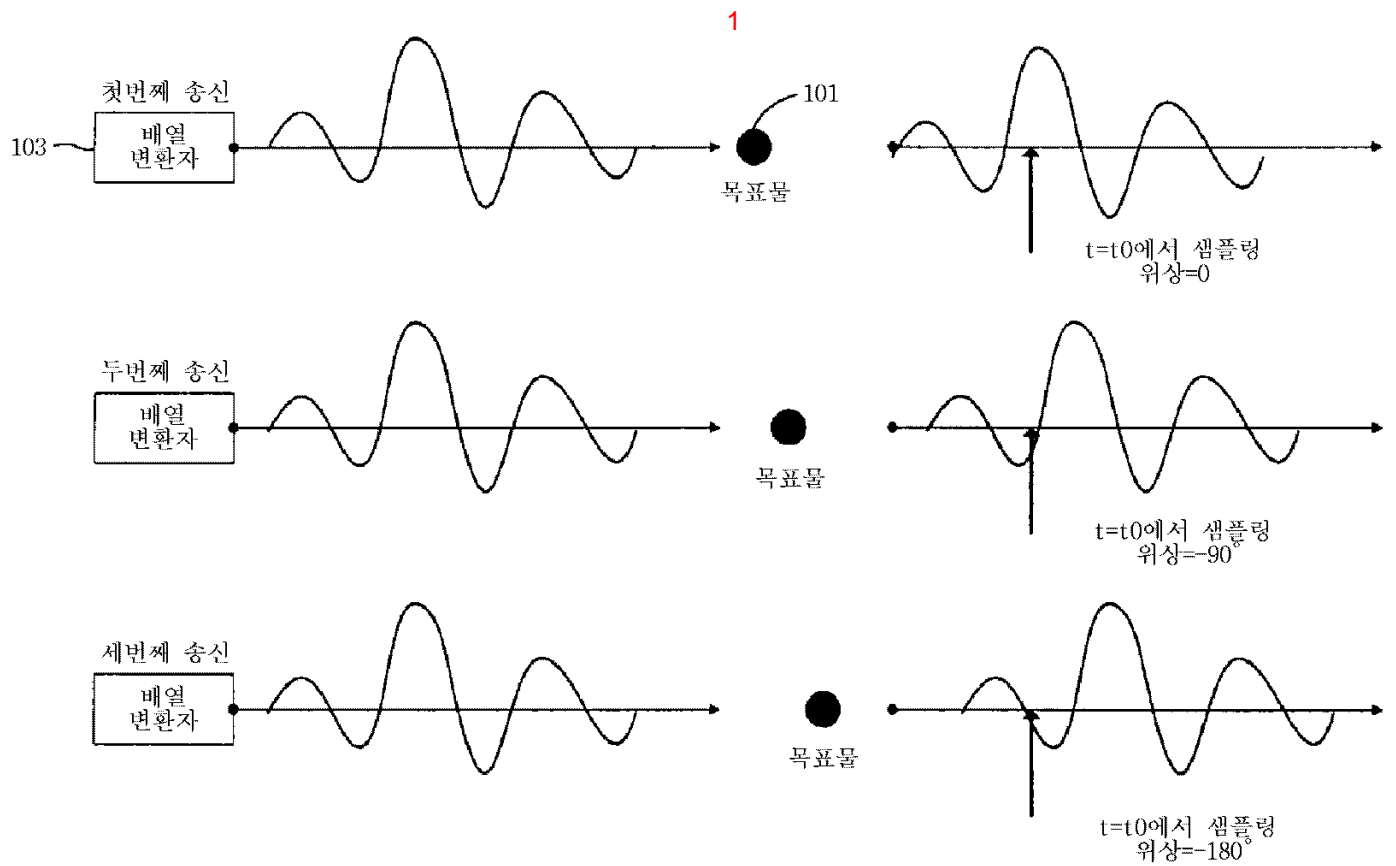
가 , 가

13.

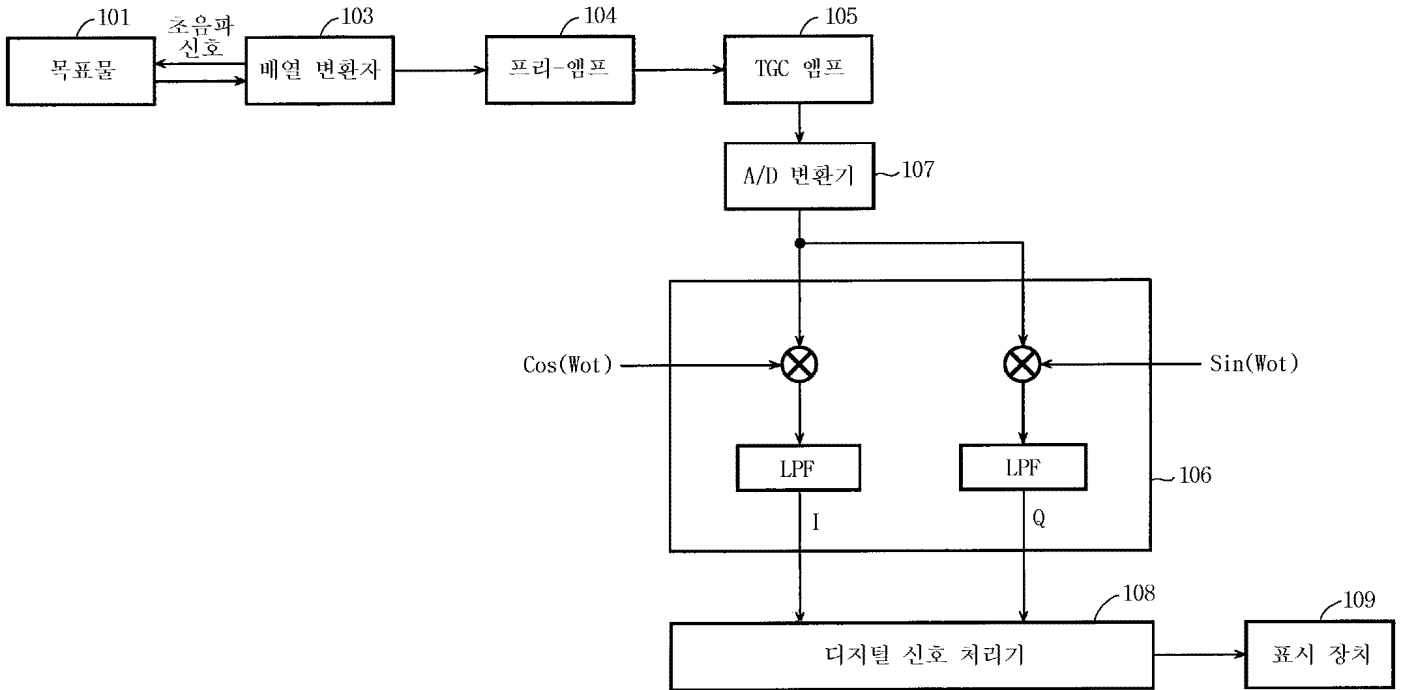
12 , 가 가 , 가

14.

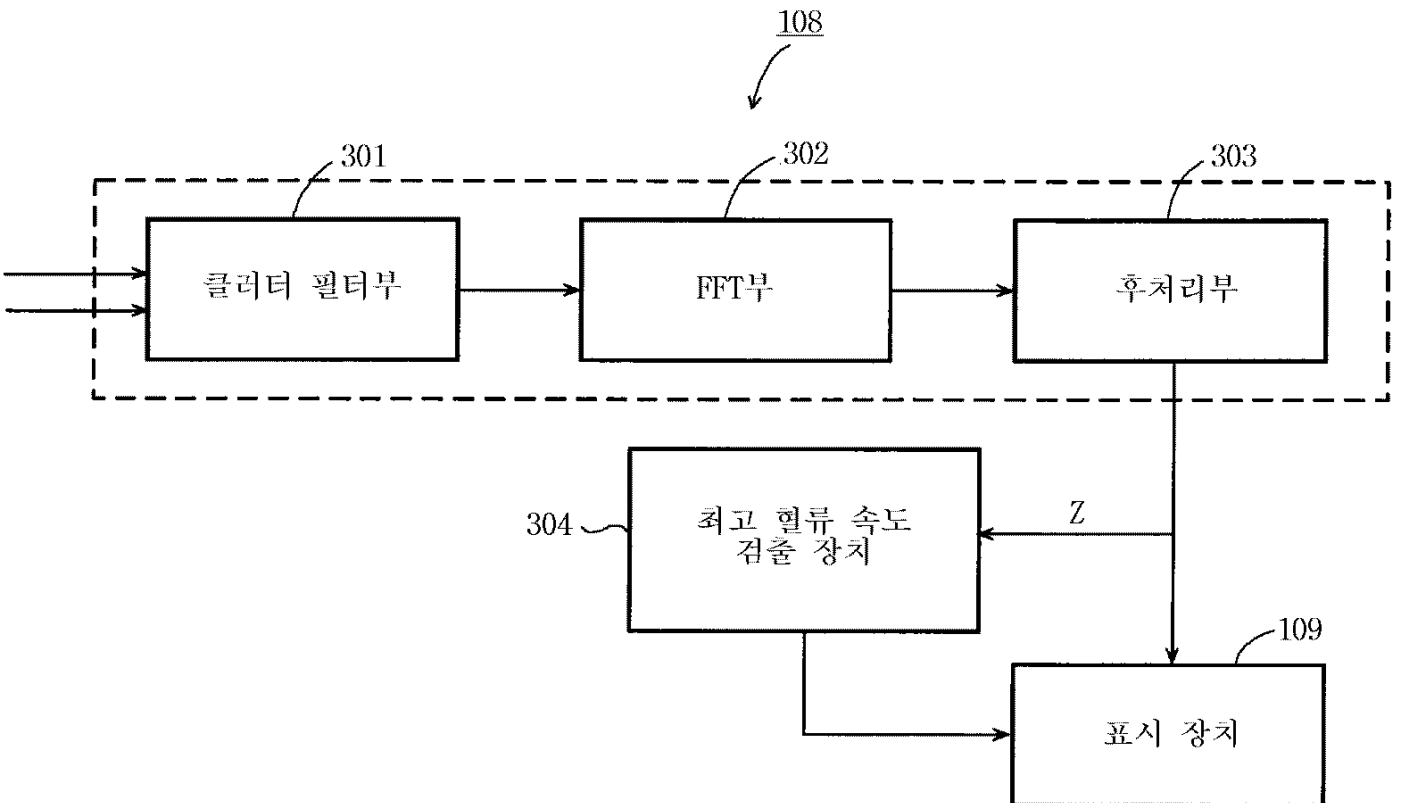
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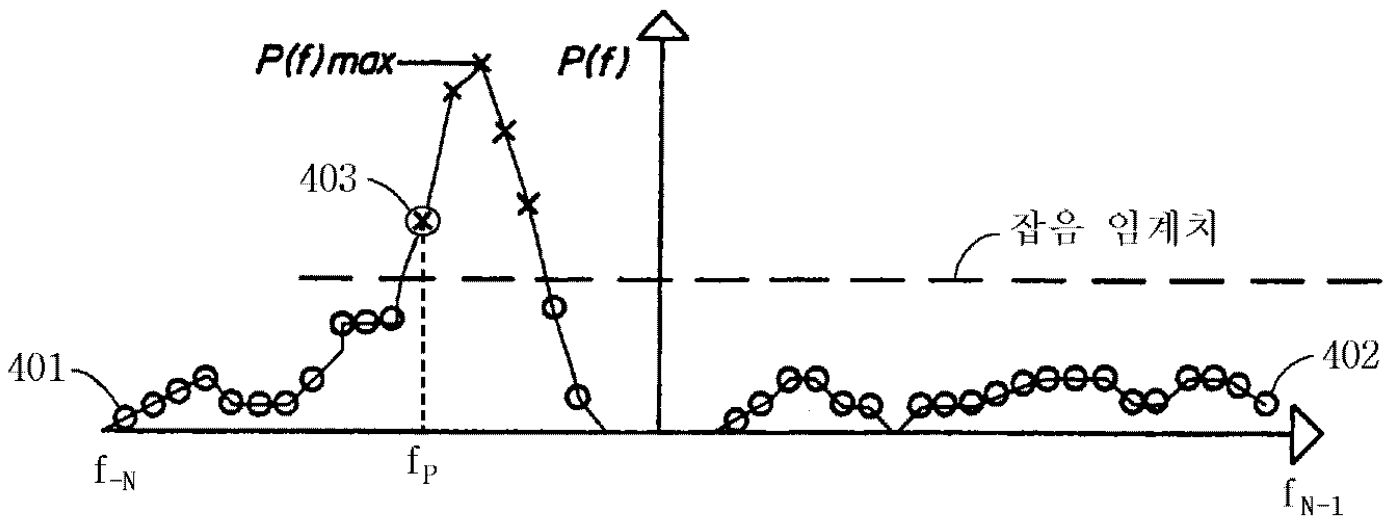
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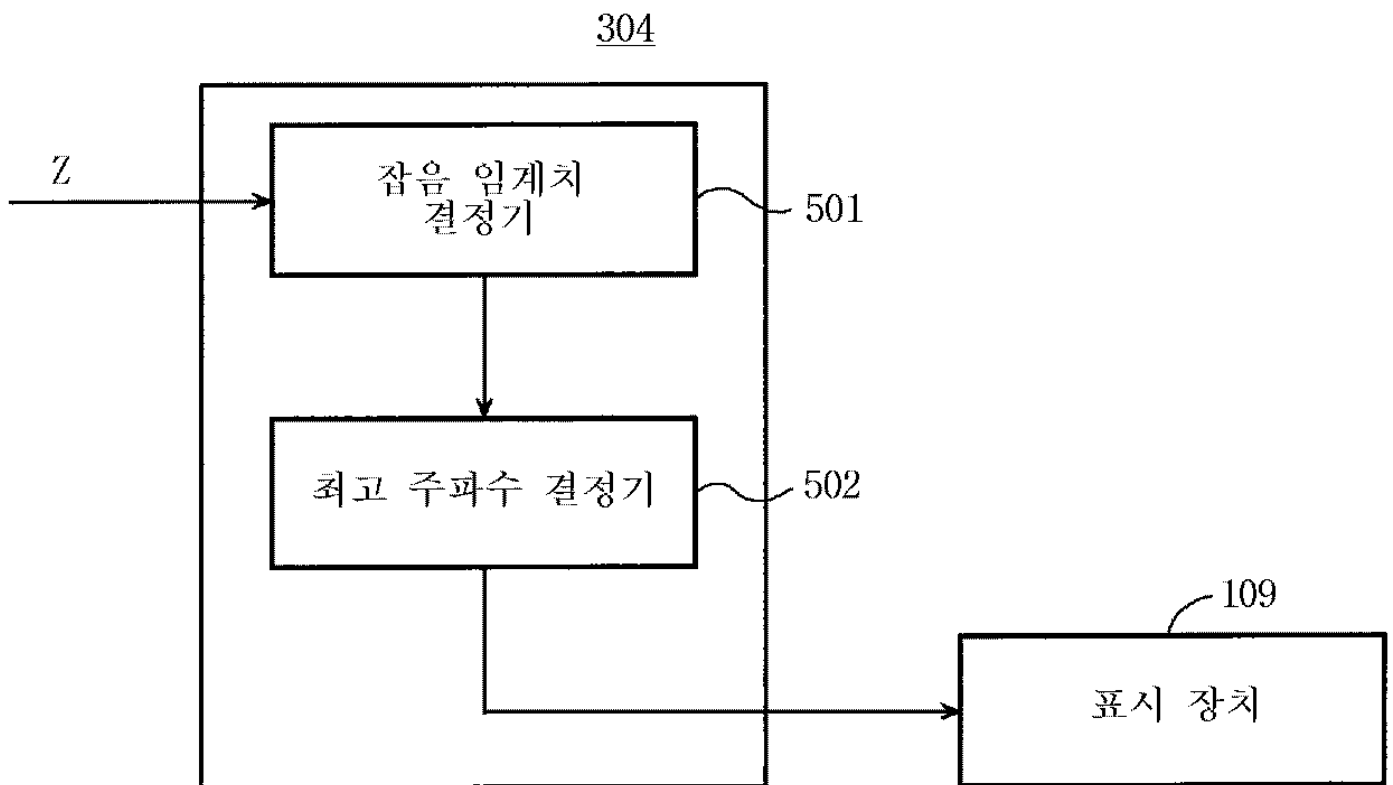
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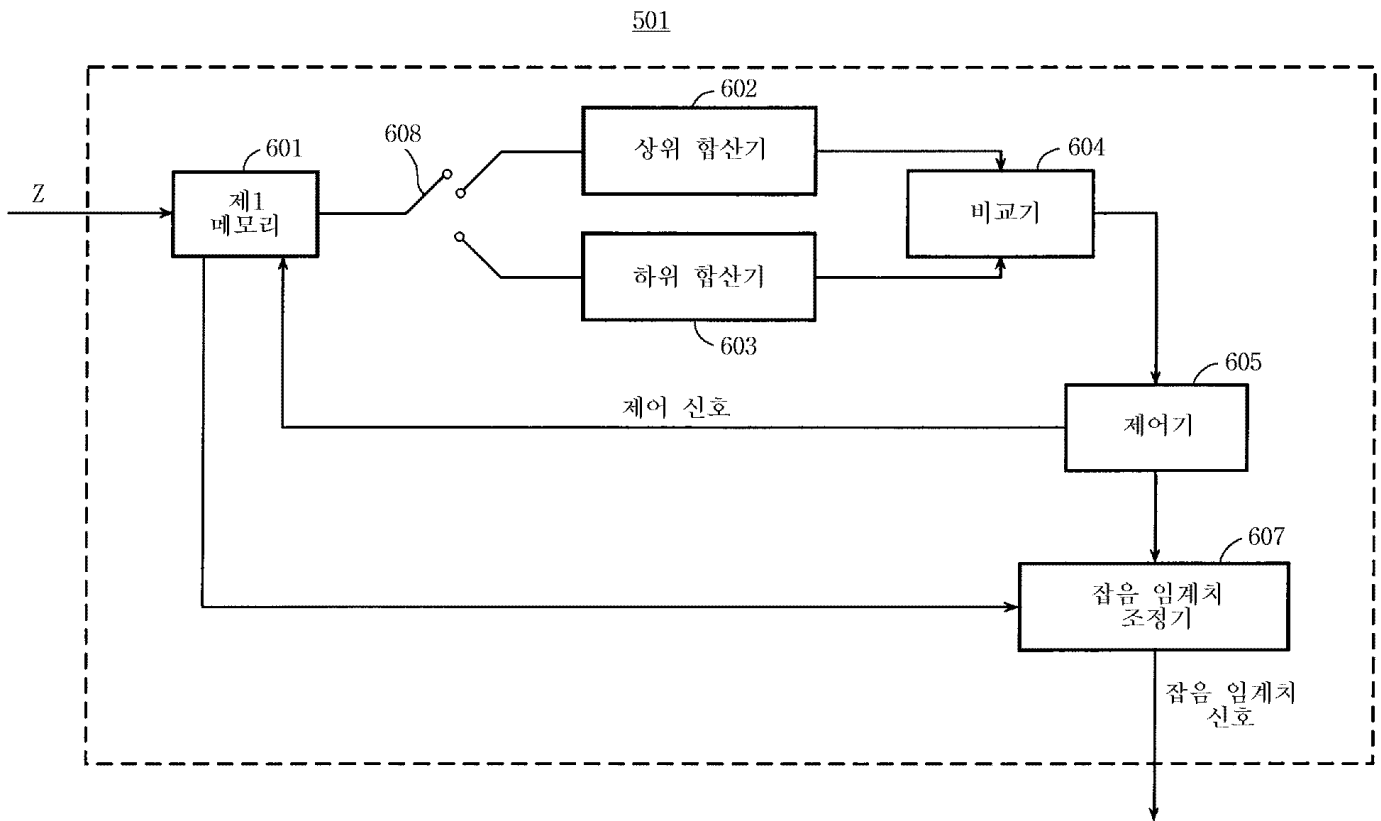
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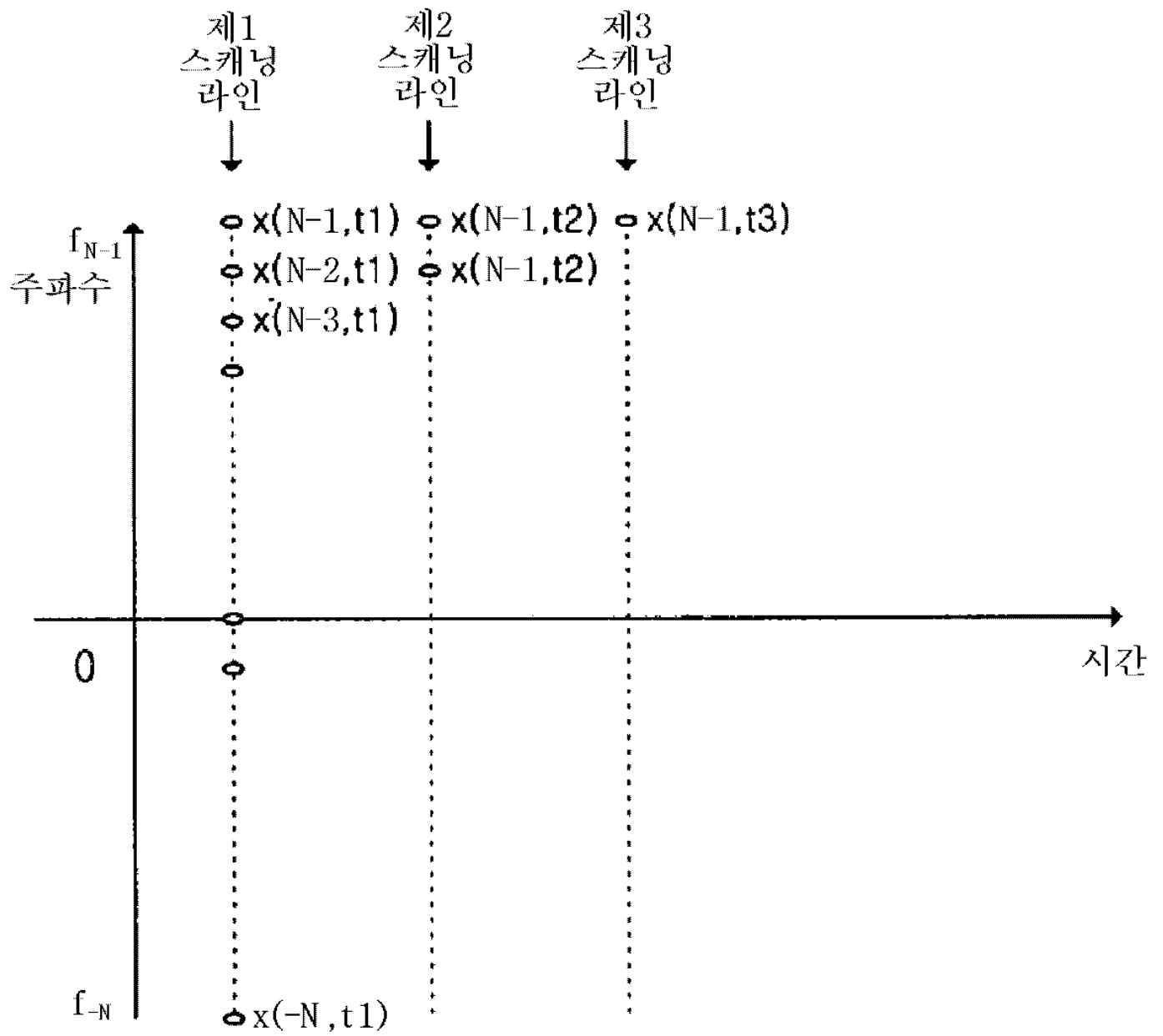
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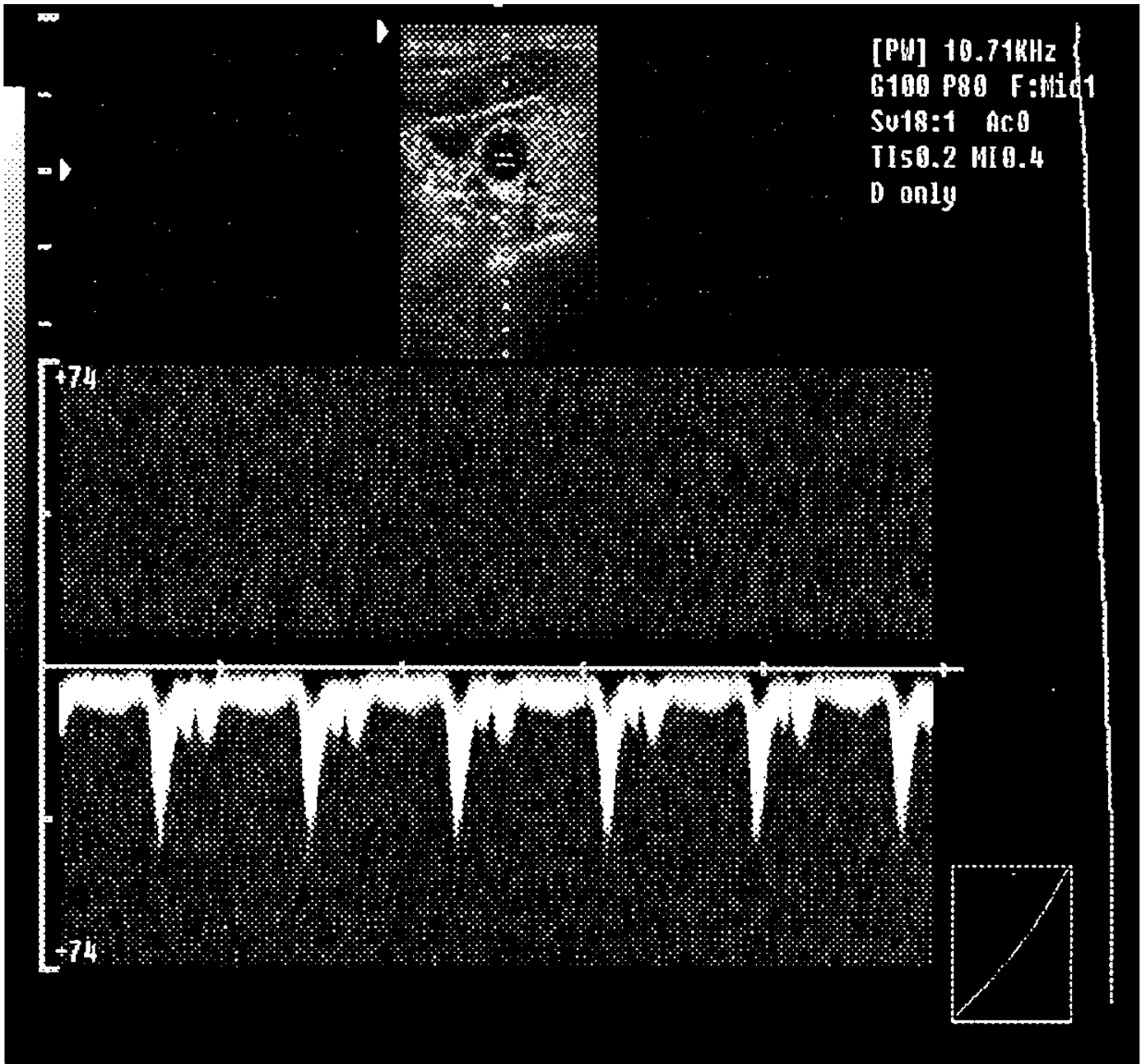


6

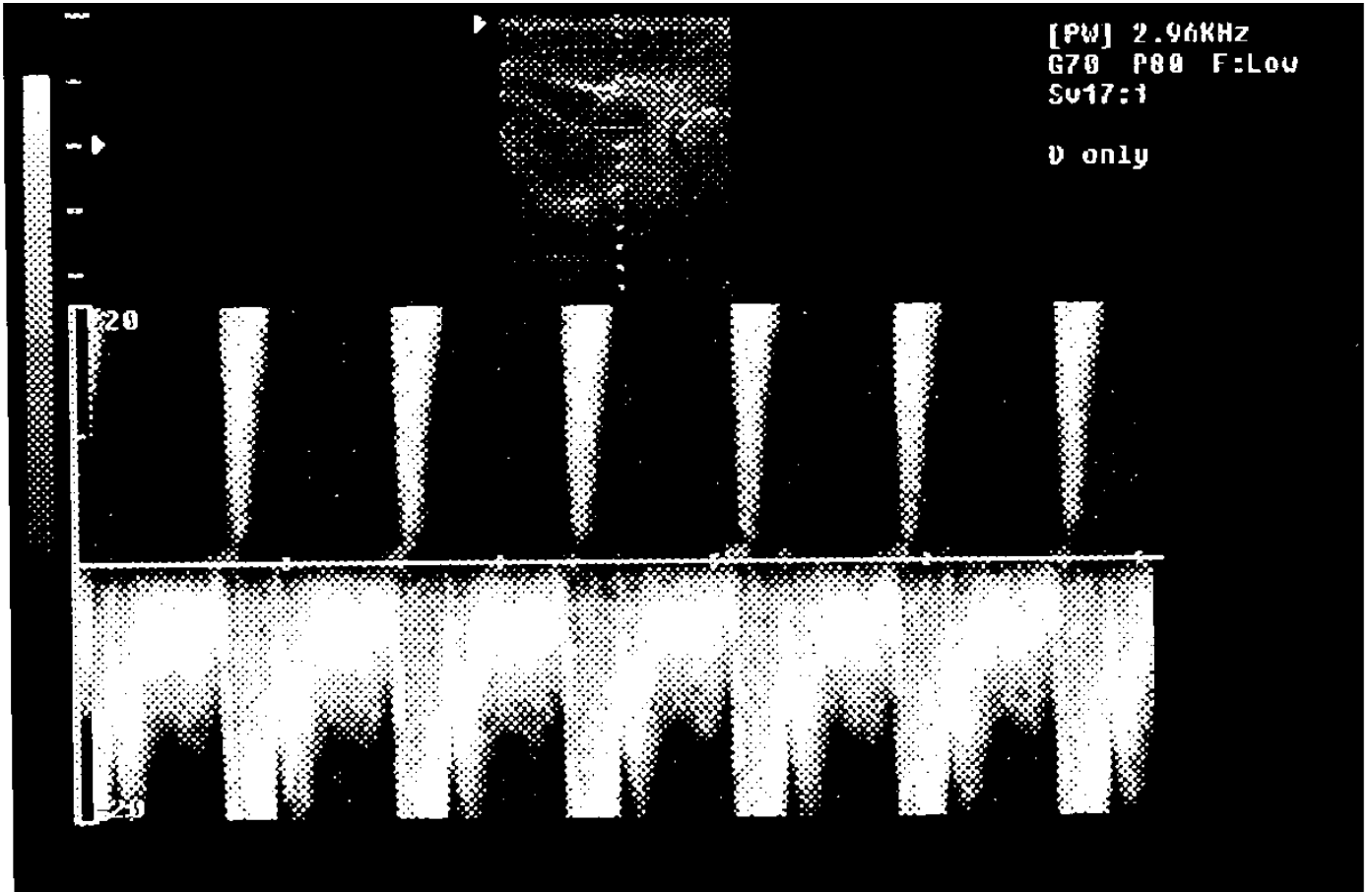


7

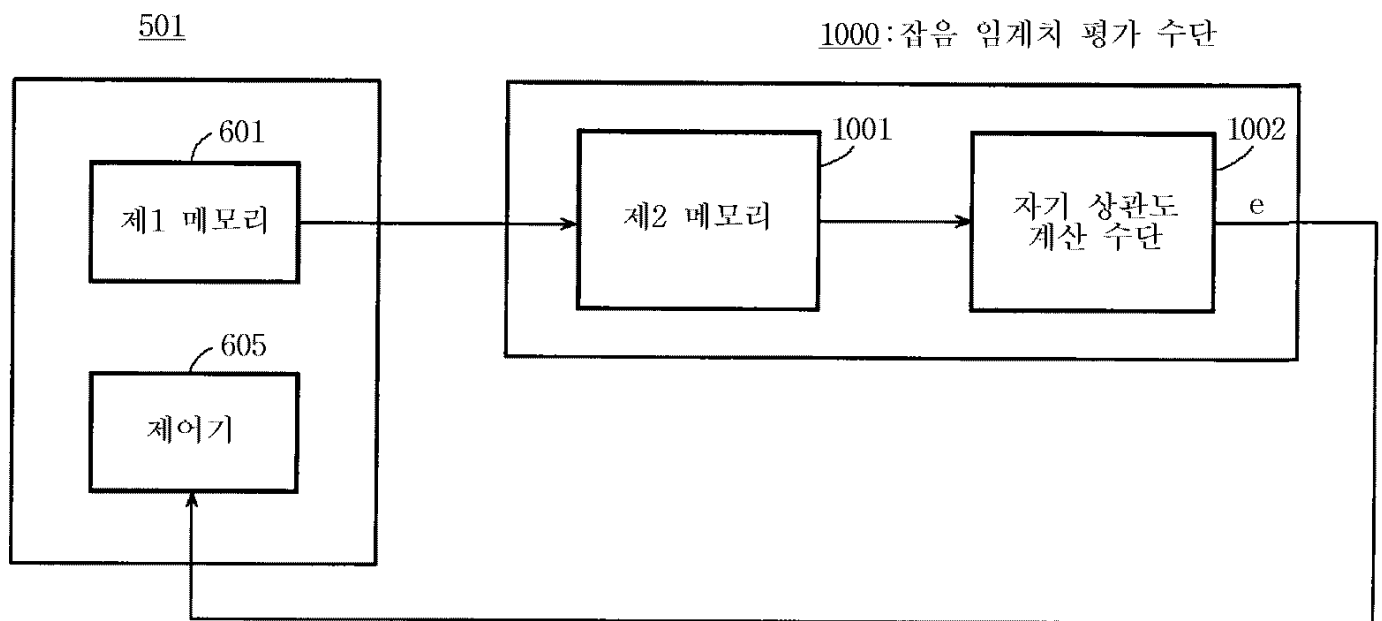


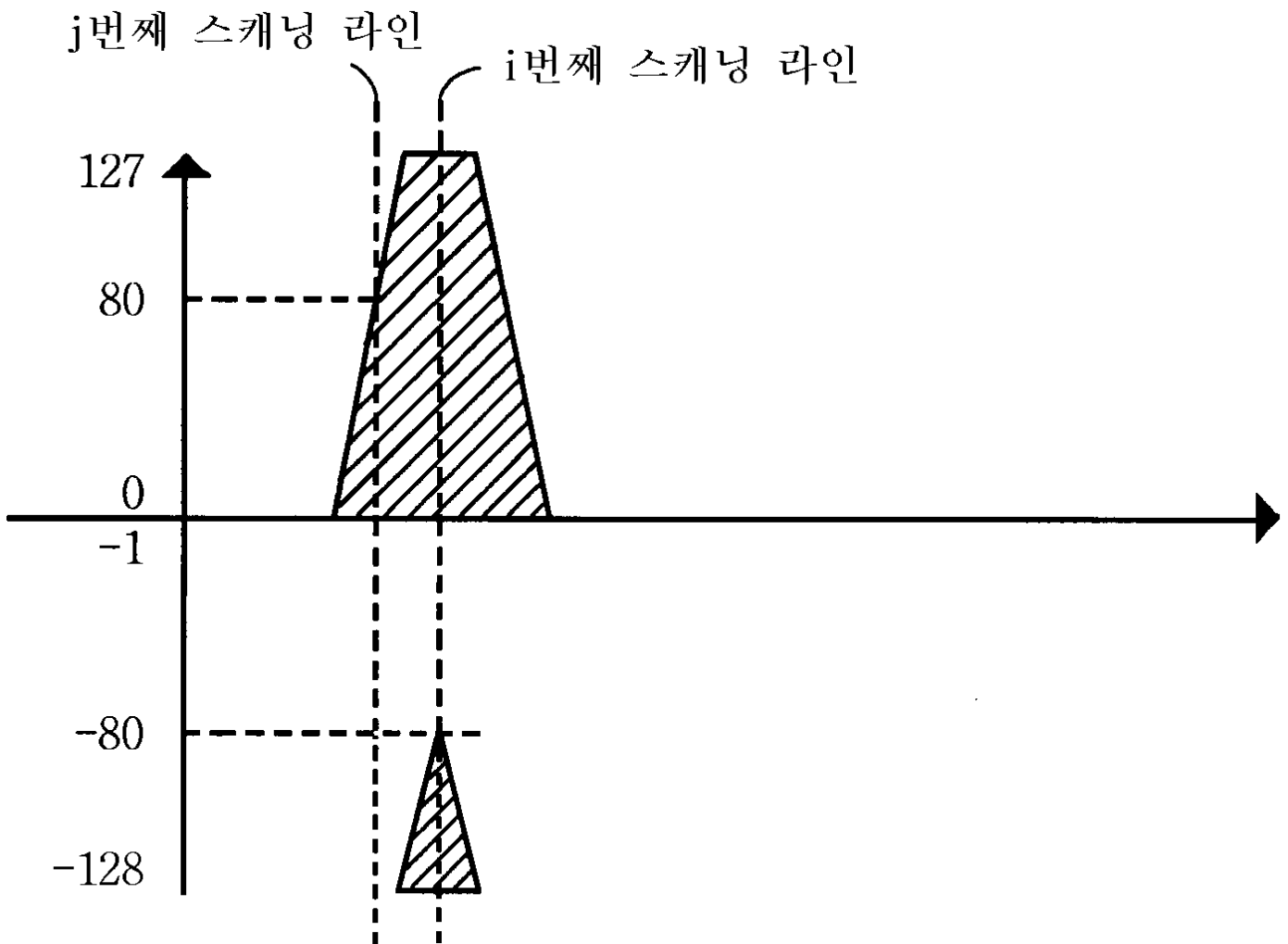


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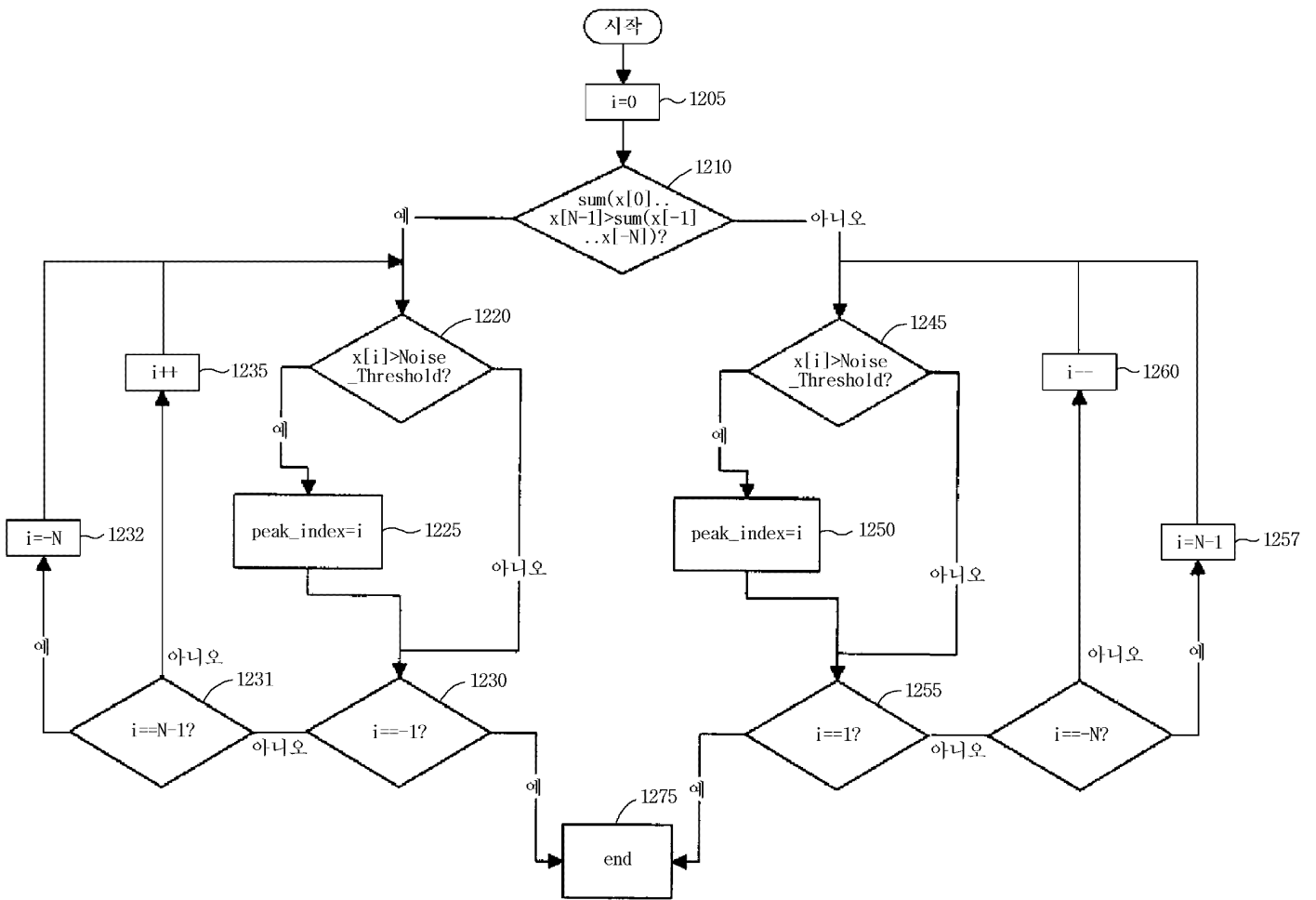


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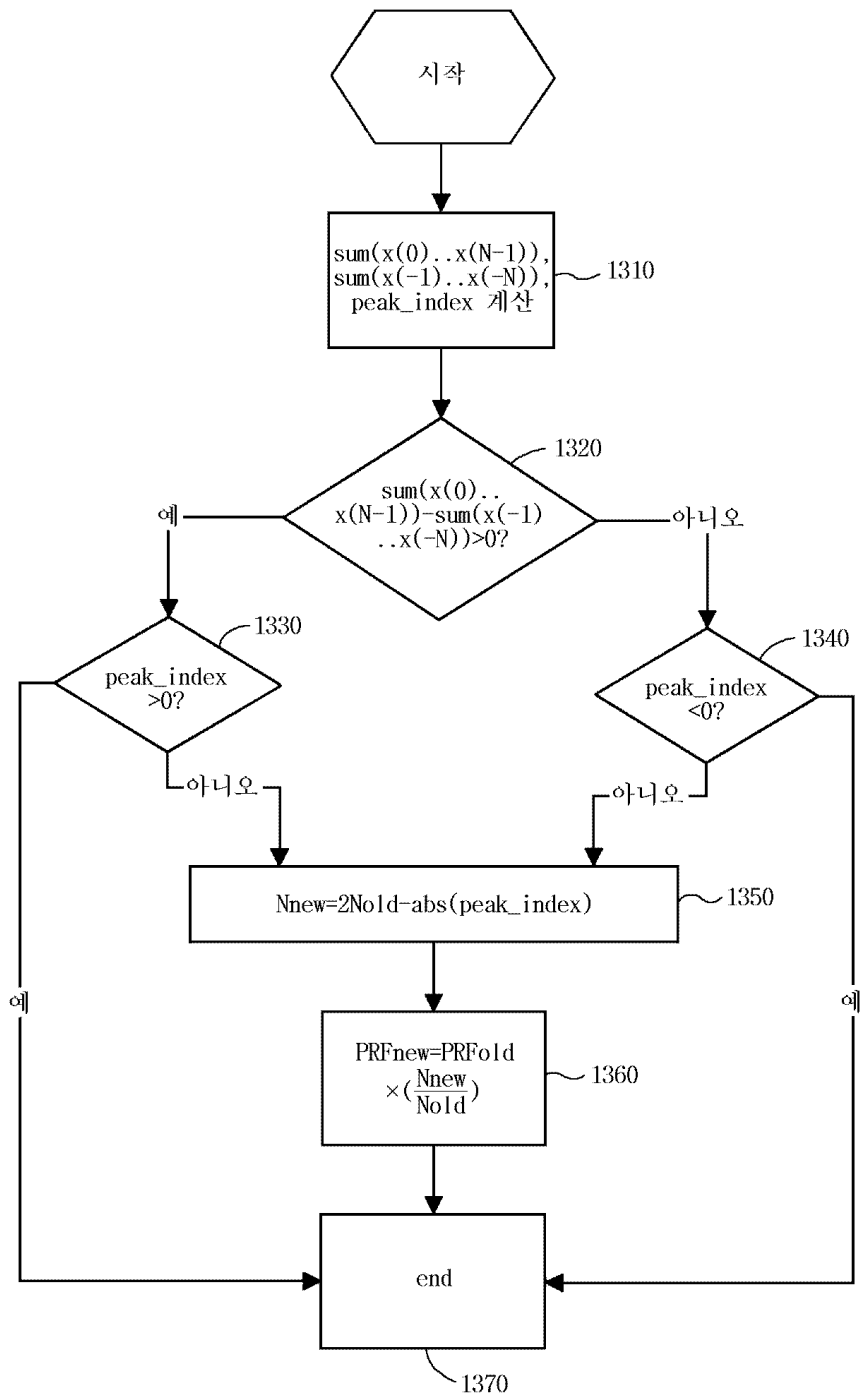




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专利名称(译)	使用多普勒效应测量血流速度的超声诊断设备和方法		
公开(公告)号	KR1020020005110A	公开(公告)日	2002-01-17
申请号	KR1020000039084	申请日	2000-07-08
[标]申请(专利权)人(译)	三星麦迪森株式会社		
申请(专利权)人(译)	三星麦迪逊有限公司		
当前申请(专利权)人(译)	三星麦迪逊有限公司		
[标]发明人	KIM CHEOL AN 김철안 BANG JI HOON 방지훈		
发明人	김철안 방지훈		
IPC分类号	G01S7/524 G01S15/50 A61B8/08 A61B8/06 G01S7/52 G01S15/89		
CPC分类号	A61B8/08 A61B8/06 G01S7/52026 A61B8/488 G01S15/8979		
代理人(译)	CHU,晟敏 CHANG, SOO KIL		
其他公开文献	KR100381875B1		
外部链接	Espacenet		

摘要(译)

本发明涉及超声诊断设备和使用多普勒效应测量血流速率的方法。根据本发明的超声诊断设备包括转换装置，它包括用于产生样本数据的样本数据产生装置，以及处理样本数据的多个频率分量，并且具有各自对应于功率电平的频率分布数据 - 频率分布数据。样本数据显示多个血流速率分量，通过对发送的信号进行采样，并将超声信号反射到人体内的预定脉冲重现频率进行生成，以及频率分布数据量的频域和噪声决定。领域意味着用于确定噪声性质中负原理的频域之间的区域，并且噪声结束阈值用于使用确定的噪声区域处的频率分量来确定噪声阈值，并且最大速度决定意味着最大频率。康波nent - 具有噪声阈值的频率分布数据处具有大功率电平的最大频率分量表示用于决定的最大血流速率。超声诊断装置，血流速度测量，多普勒效应，噪声阈值，自相关。

