

(19)
(12)(KR)
(A)(51) 。 Int. Cl. ⁷
A61B 8/12(11)
(43)2002 - 0043588
2002 06 10(21) 10 - 2002 - 7003731
(22) 2002 03 21
2002 03 21
(86) PCT/JP2000/06559
(86) 2000 09 25(87) WO 2001/21074
(87) 2001 03 29(81) : , , , , , , , ,
EP : , , , , , , , ,(30) JP - P - 1999 - 0027 1999 09 24 (JP)
1454(71) 가가
가
가 4 1 8(72) 가 가 1 - 8 111 - 106
가
2773 - 106

(74)

:

(54)

2(a) , , , 0.58mm, 가
가 0.3 mm, , 0.68mm , 가 38cm (20)
(20) (10) L(0, 3)
(50) (20) , 가

가 . 2(b) , .

2

, ,
 .
 , 가 (受波) ,
 , 가
 . FM (,
 (chirp signal)),
 S/N ,
 , (transducer)
 , 가 .
 , 가 (可撓性) , (導波路)
 , 20MHz , 100 μ
 , 가 , 25 MHz
 가 ,
 (sonar) , 가 ,
 가 ,
 ,
 (side lobes) , 가
 , , μ ,

2

3

4

5

6 2

7

8

9

10

11

12

13

14

15

16

17

18

[]

,

[]

,

,

가

1 (Pochhammer - Chree waves) L(0, 1) L(0, 2) L(0, 3) (, Vol.J69 - A, No. 8, pp.1006 - 1014, 1986, , Vol.109 - C, No.8, 1989, pp.581 - 586,), L(0, 1) L(0, 2) L(0, 3) ,

. 가 L(0, 1) L(0, 2) L(0, 3) ,
가 .

[] [1 B, D] ,
 ,
 . 1 A, C E ,
(Japanese Journal of Applied Physics, Vol.27, Supplement 27 - 1, pp.117 - 119, 199
8).
 , 가 , 가
[] 가 [] .

L(0, 3) E , 가
 , L(0, 3) E 20 MHz , 0.5 mm
(收束)) 가 . , ((20MHz
75 μ m , 10 0.75mm) . , 가
가 가 가 . , ,
가 .

[]

, C D ,
가 ,
2(a) , , , 0.58mm, 가 ,
가 0.3mm, (20) 0.68mm , 가 38cm (20) .
(50) (20) (10) L(0, 3) , ,
 , 가 .

, 18MHz 21MHz ,
 . 2(b) . , 29MHz 33MHz
 .

[]

(20) ,
가 1 가 . , .
 , [가
] , [가]가
 . 3 .

3(a) , (30) , , (20) , (20) , (10) , (20) , (50) , (20) , (10) 3(b)(1) (2) .

, 가 , , L(0, 3) 1 , 1 180 μ 가 , 가 . [] , [.] L(0, 3) E , , , . , H(), (Fouri er transform) C() , C()/(H()+ k) , k 가 가 . []

, 가 가 . , , 4 , , (41) , (41) , (43) , (41) , 2 , , .

5(a) , (41) , 5(b) (42) , 가 . 가 . [2]

M () , , M , M , M 가 가 . , M

6 . 6 A , , 1, 1, 0 . . . , M , 「1」 , 「0」 , 가 , M (32) , (33) . (46)

(48) M M 가 , 1 (短) , S/N 가 가

2

가 .

2

[]

, 7

(10) , (catheter)

7 , 20 MHz L(0, 3) 0.3 mm 0.7 mm

(20) 가 ,

(10) 가 (24) (20) (20) 가 가

(20) (10) A/D 가 (44)

(45) 가

가 ,

2

[]

가 ,

8 13

8 10

가 $f_2 = f_1 + f$ 가 8(a) FM 가 f_1 9(a) t_2 가 f_2 $t_1 = t_2 - T$ 10(a) T_0

가 8(a) 가 8(b) f_d $f_1 + f_d$ $f_2 + f_d$ 9(a) $f_1 + f_d$ $t_2 - d$ 9(b) $d = T \cdot f_d / f$ 10(b) $T_0 - d$ 11 13

가 11(a) 가 f_2 $f_1 = f_2 - f$ 12(a) f_2 $f_1 = f_2 - f$ 13(a) T_0

가 11(a) 가 12(a) $f_2 + f_d$ $f_1 + f_d = f_2 - f_1 + f$ 12(b) $T_0 + d$ $T_0 + d$ 12(b)

10 12 가 10(a) $F_u(\)$ 10(b) $F_u(\)e^{j d}$ 13(a) $F_D(\)e^{-j d}$ 13(b) $F_D(\)$ $F_U(\)e^{j d}$ F_D $d = T \cdot f_d \cdot f$ f_d 가 가

14

14 , (1) (2)가 (61) (64) , 1
(66) 가 (1) (2) (65) ,
2(67) 가 .
, , 1 (66) 2(67)
가 () . , (1) (
2) , . ,
. , 1(66) 2(67)
(70) [(1) (2)] , 1(68)
2 (69) . , , 2
(71) , . , 2
1(66) 2(67) (窓關數)
. , 2
, ,
, ,
(:tracer)
, 가 . ,
, 가
15 , 14 1 2
. , , 가
, , 15 (b) 가
가 , 15(a) ,
가 , 15(b) ,
가 .
16 , . ,
, 가 0 , 16(b) , 10kHz . 가
, 16(a) , , 가 , 16(c)
, . ,
() 가 .
[]

, 17 .

, (10) , 7 가 .
 , 가 가 , L(0, 1) .

17 , 20MHz L(0, 1) 125 μ m .
 125 μ m , 가 60cm (20) (matching layer) (22) ()
 150 μ m, 가 37 μ m (Stycast 2651mm) .
 , (24)
 , 가 , 가
 (10) 가 (11) (10)
 (20) , (20) (55) ,
 , 가 가
 , (44) 1 18 .
 (45) A/D 가 .

18(a) A ,
 B 18(b) , 18
 (c) 125 μ m \varnothing A ,
 C, D 가 .

, 가 ,
 , 2 .

가

, 가
 , 가 .

가 가 ,
 가 .

, ,
 , 2 가 가 , S/N 가

가, , 가 .

(57)

1.

가 ,

,

,

,

가 ,

.

2.

1 ,

가 ,

가

가

.

3.

1 2 ,

,

.

4.

1 3 ,

,

,

,

.

5.

1 4 ,

, 가 가

.

6.

,

,

가 가

가

,

.

7.

,

, 가 가 가 ,

, ,

.

8.

6

7

,

, 1 4

.

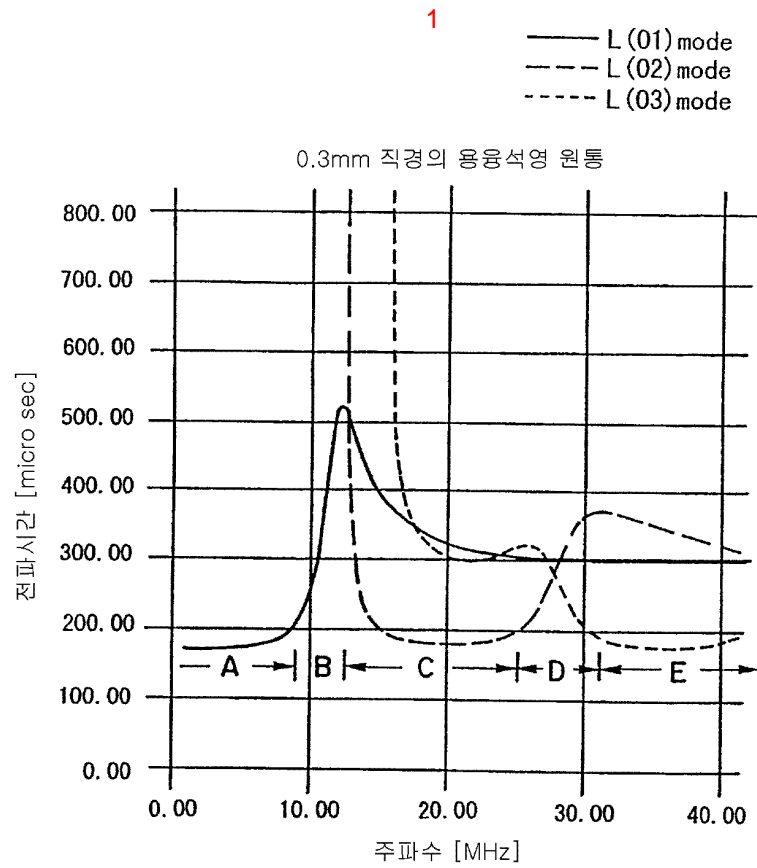
9.

1

5

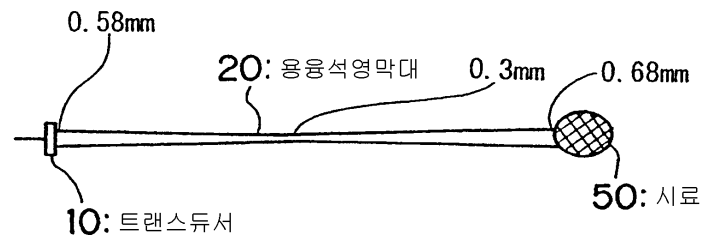
,

.

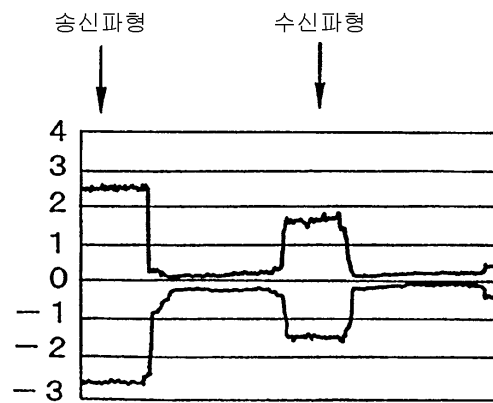


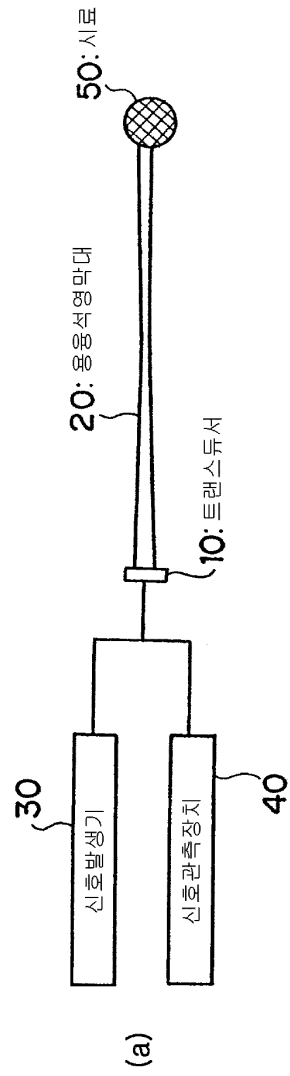
2

(a) 트랜스듀서와 석영막대의 구성



(b) 송신파형과 수신파형의 분리





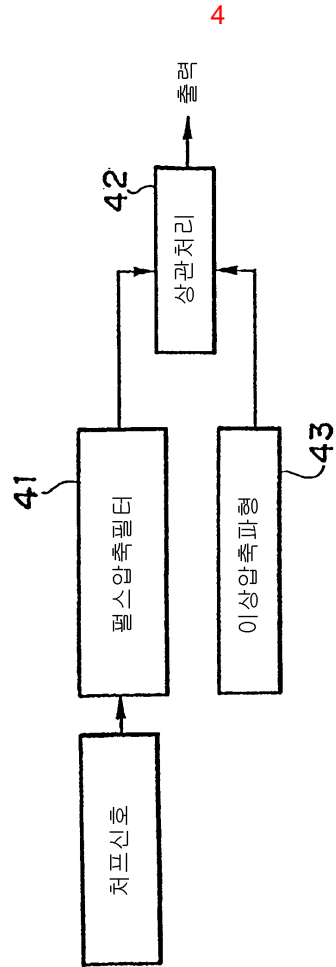
(1) 송신파형 (비선형 처프)



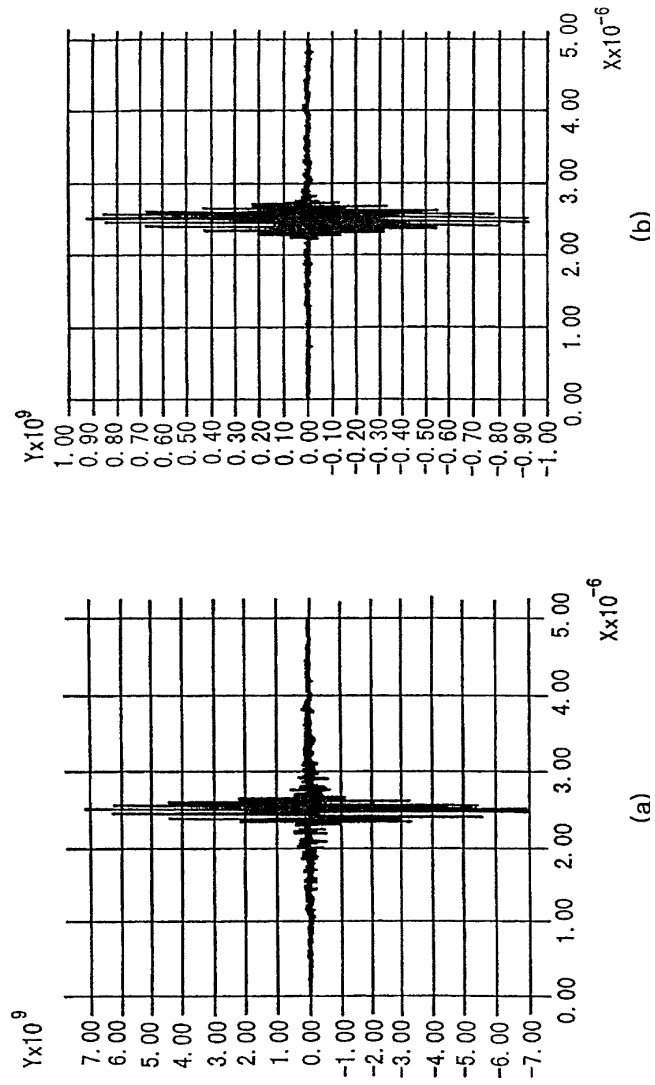
(b)

(2) 수신파형 (선형 처프)

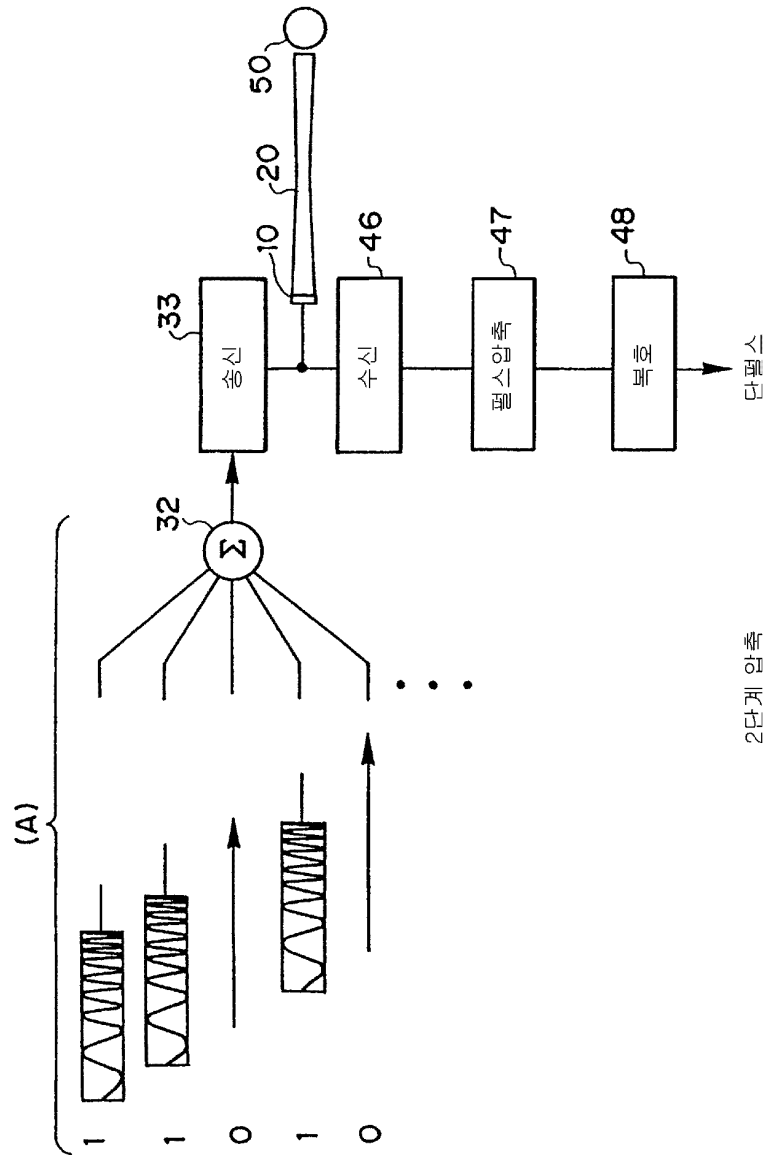




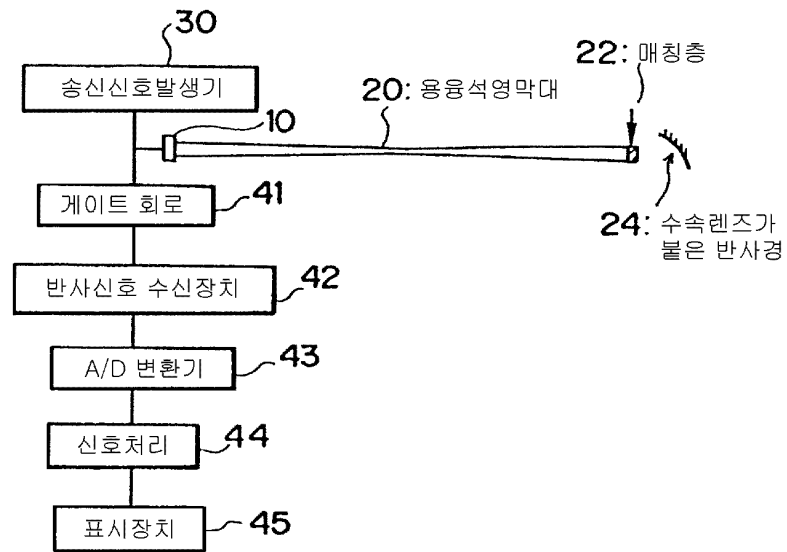
5



6

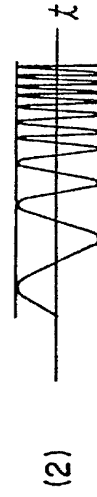
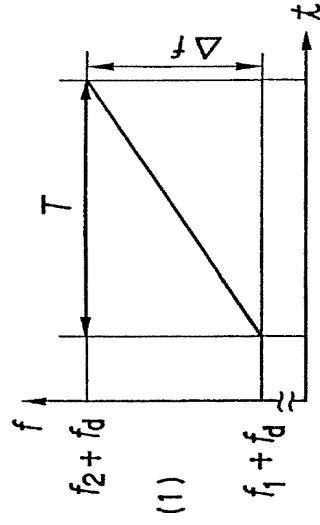


7

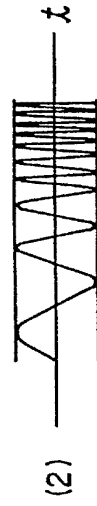
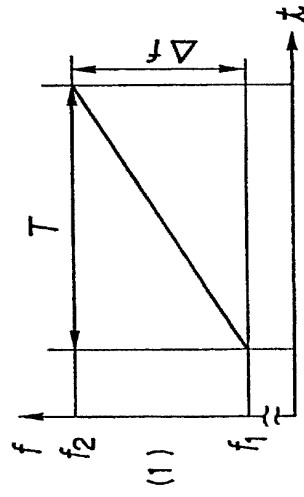


관망내용 시스템

(b) 영 차프파
(모틀러 있음)

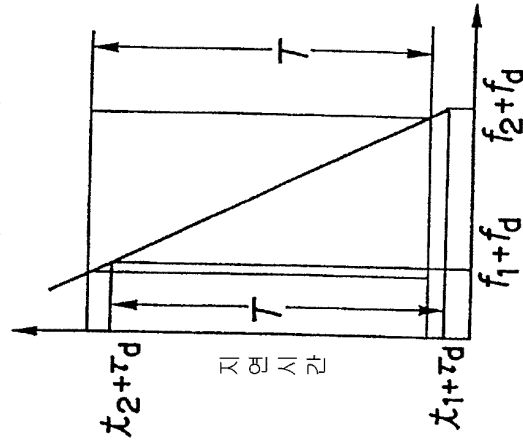


(a) 영 차프파
(모틀러 없음)

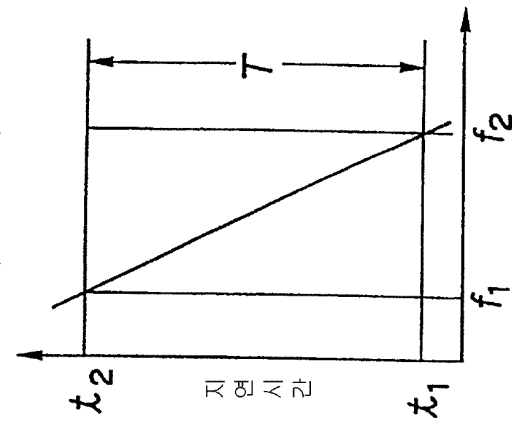


9

(b) 펄스압축필터의 특성
(도플러 있음)

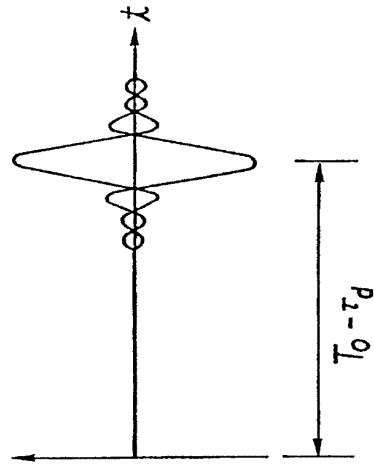


(a) 펄스압축필터의 특성
(도플러 없음)

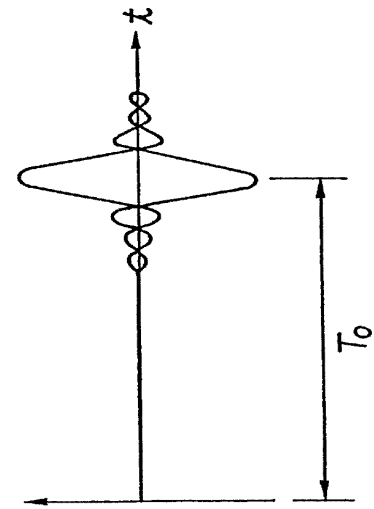


10

(b) 앞쪽 편평 (드레일링 있음)

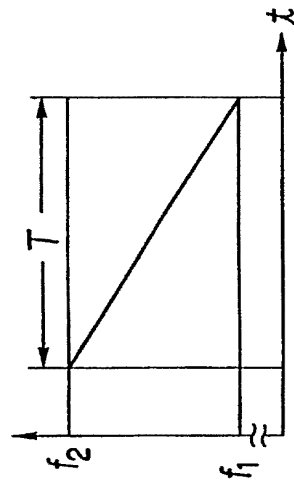


(a) 앞쪽 편평 (드레일링 있음)

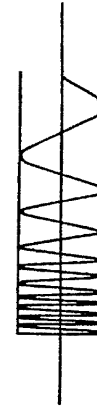
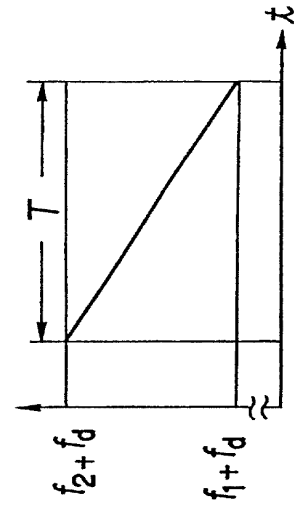


11

(a) 다원차교파형
(모폴러 없음)

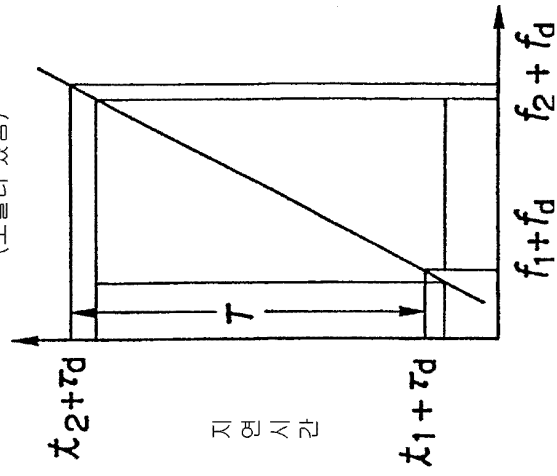


(b) 다원차교파형
(모폴러 있음)

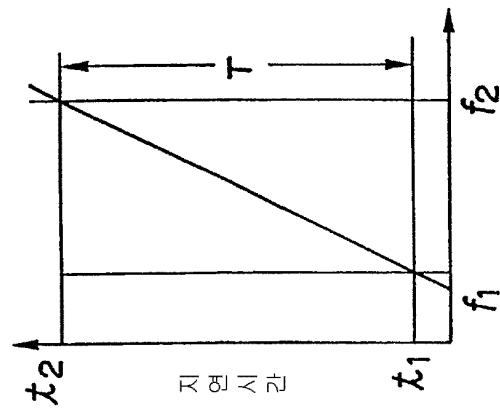


12

(b) 펄스압축필터의 특성
(도플러 있음)

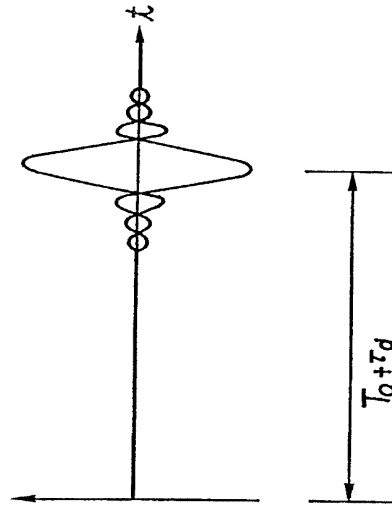


(a) 펄스압축필터의 특성
(도플러 없음)

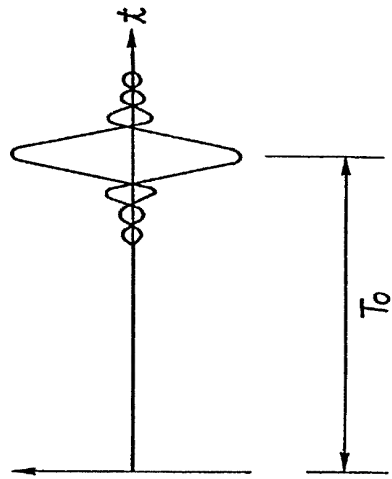


13

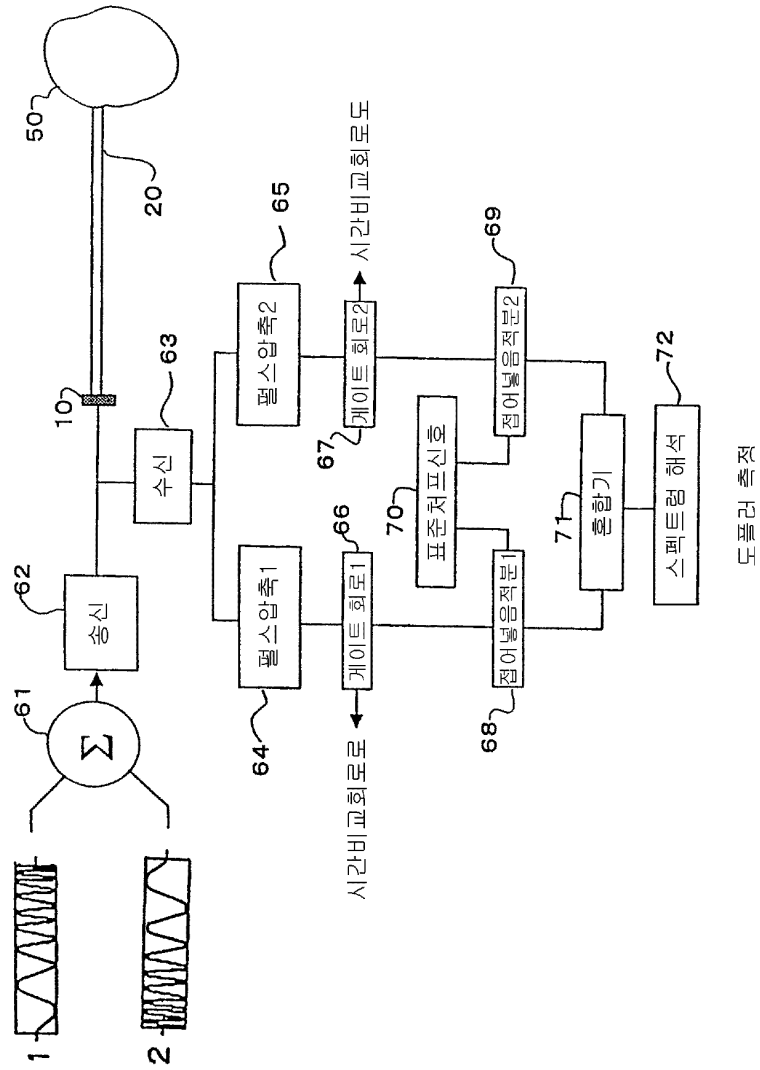
(b) 입축파형 (도플러 있음)



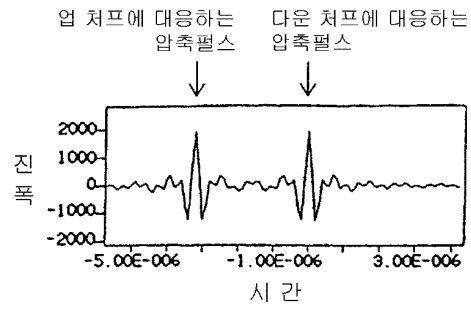
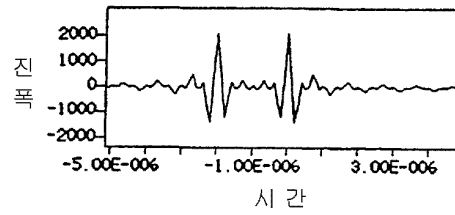
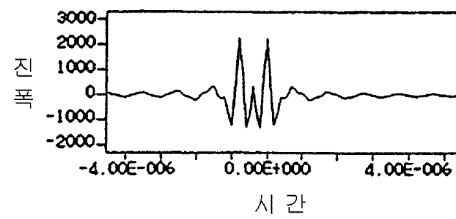
(a) 입축파형 (도플러 없음)



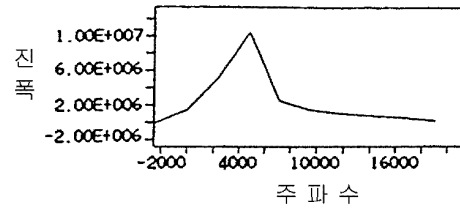
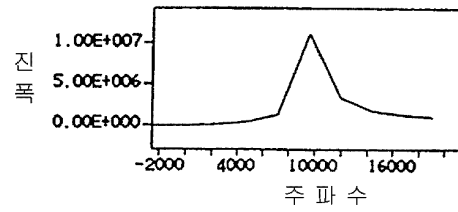
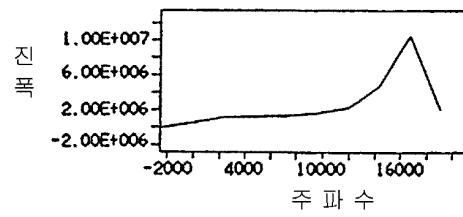
14

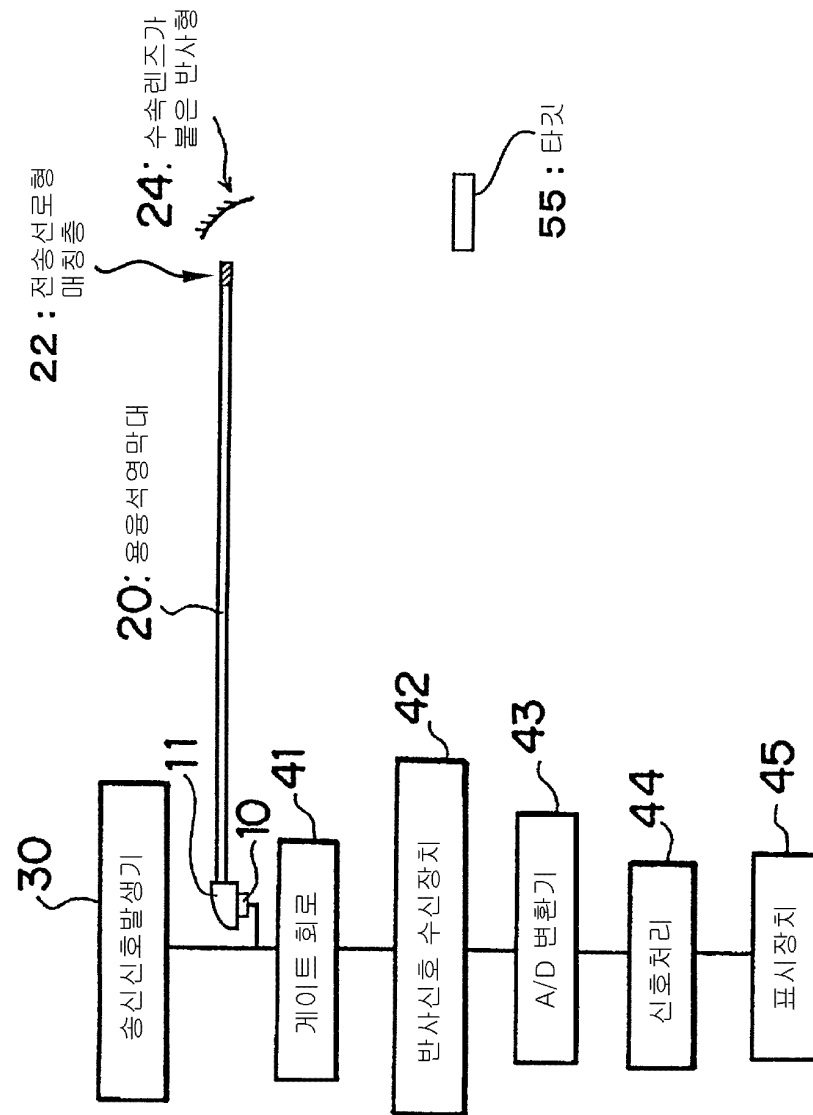


15

(a) $f_d > 0$ 의 경우(b) $f_d = 0$ 의 경우(c) $f_d < 0$ 의 경우

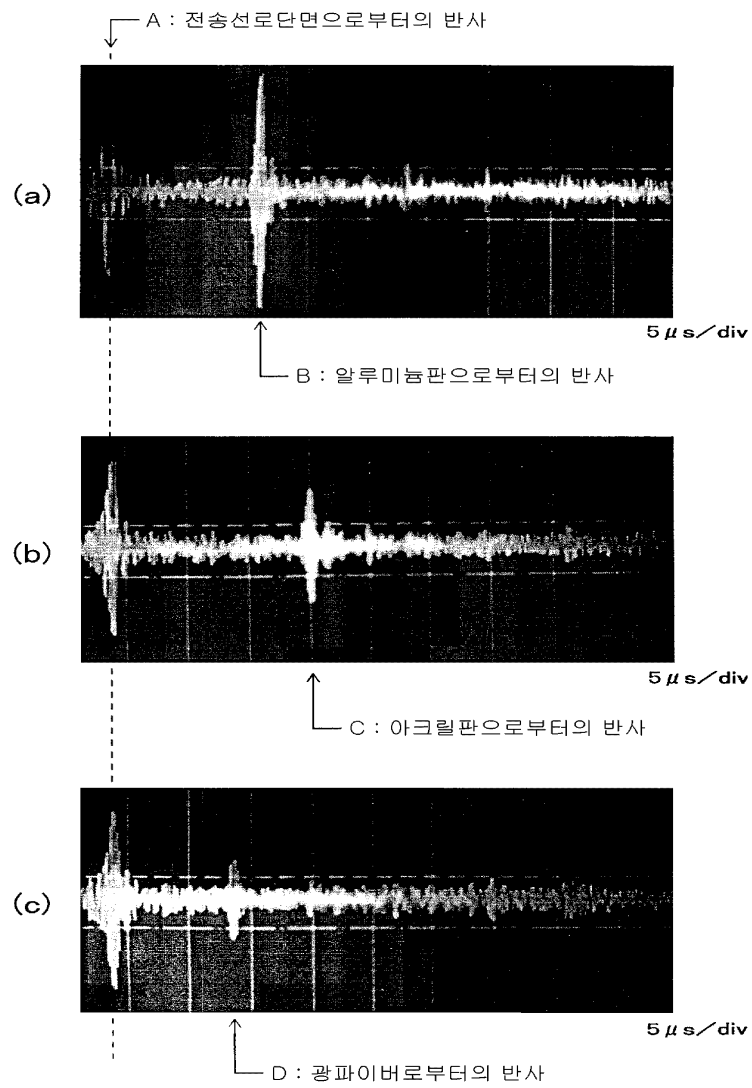
16

(a) $f_d > 0$ 의 경우(b) $f_d = 0$ 의 경우(c) $f_d < 0$ 의 경우



17

18



专利名称(译)	超声波收发器通过脉冲压缩		
公开(公告)号	KR1020020043588A	公开(公告)日	2002-06-10
申请号	KR1020027003731	申请日	2000-09-25
[标]申请(专利权)人(译)	独立行政法人科学技术振兴机构 内容提示卡，库我们肯这茨号等内容的恋饰品鞋尖高鼻子		
申请(专利权)人(译)	悟空心中查法人丽思建久嘉启新光马切达饼干jyucheu		
当前申请(专利权)人(译)	悟空心中查法人丽思建久嘉启新光马切达饼干jyucheu		
[标]发明人	MORIYA TADASHI TAGAWA NORIO		
发明人	모리야다다시 다가와노리오		
IPC分类号	A61B8/12 A61B8/06 A61B8/00 G01B17/00 G01N29/24 G01N29/28 G01N29/34 G01N29/44 G01P5/24 G01S7/52 G01S13/28 G01S15/89		
CPC分类号	A61B8/12 A61B8/06 A61B8/4281 G01B17/00 G01N29/2462 G01N29/2468 G01N29/28 G01N29/348 G01N29/4436 G01N2291/017 G01N2291/101 G01P5/24 G01S7/52047 G01S13/28 G01S15/8959 G01S15/8961 G01S15/8979		
代理人(译)	Honggicheon		
优先权	1999271454 1999-09-24 JP		
其他公开文献	KR100626944B1		
外部链接	Espacenet		

摘要(译)

如图2 (a) 所示，在本发明中，例如，超声波探头安装侧的端面的直径为0.58mm，最薄部分的直径为0.3mm，样品侧的端面为直径。对于0.68mm，使用长度为38cm的石英棒20。这是熔融石英棒20的安装有超声波传感器10的一侧的直径在L (0、3) 模式下的转换效率良好，或与试样50接触的一侧的石英的范围内。杆20的直径大到足以与波长比较，而其他部分设置得足够薄以获得柔韧性。图2 (b) 示出了发送波形和接收波形。图2

