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(22) 2001 04 13

(71) 114

(72) 509 303

6 - 3 105 1403

(74)

:

(54)

3 4 2 2 , N × M
angle) , N M (volume angle) . 2 3 (view
가 가 .

1a

1a 2 가 .

1b 1a .

1c 1a .

1d 2 가 2가 .

2 2 .

3 .

4 2 2 .

5 .

6 3 2

7 3 2

8 2 .

9 , .

10 9 (110) .

< >

1 :

5 :

11 :

21 :

31 :

37 :

3 (4)

(array transducer)
가

가
(phased array transducer) 2 2
(64 64x64=
4096) 가 가
가 가 (:256 512)
.
2 (grating lobe) (steering)
ngth()] 0.5 λ [λ :wave le
3 (4) () 3 (4)
1
1
가 , 1 , 1
3 (4) 가 , 1
가
2
2
2
가 , 2
N × M (view angle) , N M (volume angle)
3 , 2
가

1 가 , (grating - lobe)가 , (convex concave)
 0.5λ , 1 λ
 (grating - lobe)
 λ 가 (CW: Continuous Wave) , (wid
 e - band) 가 λ

(linear scan)
 SNR(Signal - to - Noise Ratio) 2 (aperture)
 , 1 2 가 2 , 3 ,
 4 , 2 , 2

1 2 가 가 (sphere) 3 ,
 가 , R 2 가 (sphere)
) (1a 2 a, b (view angle)
 가 1a S 2 가 R
 1a

1b 1a 1b a
 1c 1a 1c b
 (volume angle) a, b , 가
 2

R, a, b 1d 1a, b, c 1d
 2 (c1, c2) R1, R2
 a b , R

2 1a S 2
 (a) (b)
 M (active) N', M' N,
 M> =M'). d, h (N> =N',
 가 ,

1 2 (steering)
 2 (,)가
 , 1 가 ,

λ (0.5 λ) 가 , 2 SNR .

2 (active channel, active transducers)

y 2 64 256 (, 4096) 2 16 16×16 .

(2) .

2 (X $\times$ Y)

$X \times Y$ 가

1 16×16 64 $1/4$ 2

(multi - beam receive focusing) 3 4

(volume rate, volume/sec) 가 , 16×16

(volume rate)가 가 가 4 가

2 32×16 (3

16×16 , 가

3 1 (frame - rate) 3 4

(x) (x) (receive multi - beam)

(x) (folding) (folding) (interpolati

on) (volume rate)

2 32×16 32×8

3 16×16 2 SNR

가 . 1 x (d=1.5 2 λ)
가

4 2 , 3 ()
4 B A

2 3 4 가
2 2 2
3 2 가 , 3 2

(single - beam receive focusing)
3 ,
가 256 가 64 × 16 64 × 16 256 = 32 ×
8 2 가 64 × 16 가 64 2
가 가 λ 16
가 가

6 2 5 C E
D F 3 C D E F 256 1024

7 3 6 , G, H,
I, J , 7 2 가
가 가 ,

가 , 가
()
가
2 , 4 , 2
()
가

1 가 가 , , 가 . 2 가 .

8 2 , (11) (bipolar pulse) (1) 2 (transducer)가 ,

(TX focus delay memory)(14) (11) 가 , 가 (

1) , 가 (synthetic aperture)

(1) 2 , (11) 2 가 64 × 64 (aperture) 32 × 32

(5) (5)가 , (5)

(5) 가 (1) (21) 가 (21)

8 (21) (11) 가 (duplexer)

(31) , (Pre - Amplifier), 가 TGC(Time Gain Compression,) ADC(analog - digital converter, -)

(37) (36) 1 2 가 N ' × M ' 가 N × M 2 C × 1 1 N " × M " 2 가 (37) () , N " ≤ N ' , M ' ≤ M " 가

1 2 가

() 가 , 가 (31)
(5)

가 ((,))
가 ()

(41) (envelope detection), (log compression) , B
3 , , , 8 (tissue characterization) 가

8
가 , 가 LUT(Lookup Table)
가

2
N × N × C_N N × N C_N N × N
64 × 64 가 64 × 32 가 ,
64 × 32 가 가 ,
가 C_N , 가 가
C_N

가 C_M C_M 가 M × N M C_N
가 (×) + (
×) = C_M × N × N + C_M × C_N × N × N / (M × M)

가

가

CMUT(Capacitor Micromachined UI

trasonic Transducer)

, AMA(active mirror array)

5,682,2

60 M × N

M × N

(active matrix array)

가

가

)

(

(Vpp)

가

IC

(

40

(

30%

)

가

가

가

(

+20, -20

가

)

가

가 2

(coded pulse excitation)

가

onent)

(flexible) PCB

(discrete comp

가

IC

가

BGA(Ball Grid Array)

BGA

(die)

(Flip Chip Packaging: FCP)

(Chip on Film: COF)

가

가 9

9

가

가

가

가

가

9

8

가

8

(21)

가

9

10

(21)

10

(Tr1, Tr2)

8

, Tr1

Tr2가

가

+20

-20

. Tr1

Tr2

(Tr3)가

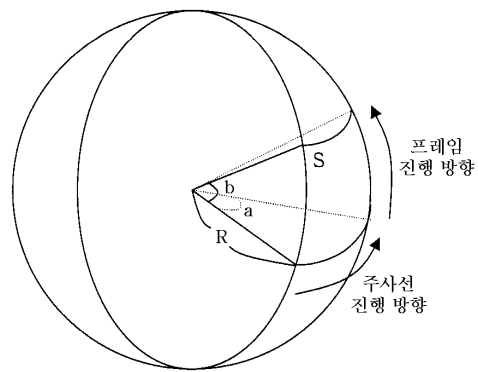
(110) 가 (Tr3)가 가
 10 (110) 가
 2 가 (120) 10
 2 ()
 가 ,
 가 . ,

aperture) 가 SNR(Signal - to - Noise Ratio) (
 2 가 2 ,
 가 . ,

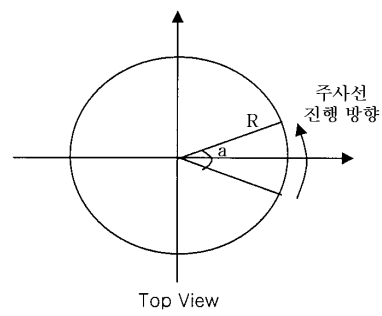
(57)

1. 2 .
2. 2 .
- 1 , $N \times M$, $N \quad M$ 2
 3 (view angle) (volume angle)
3. 2 .
- 1 2 .
4. 2 ,
5. 2 ,
- 4 ,

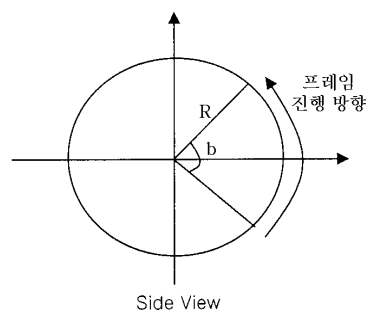
1a



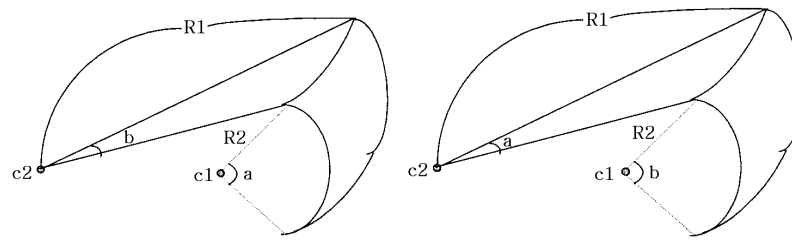
1b



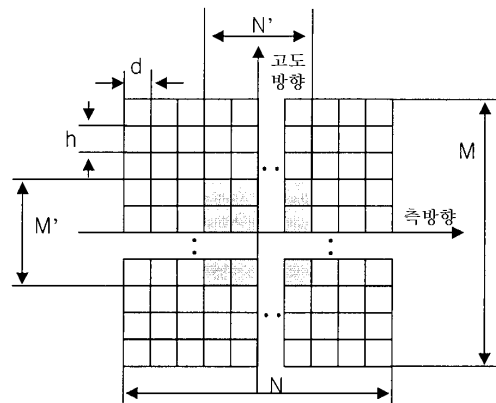
1c



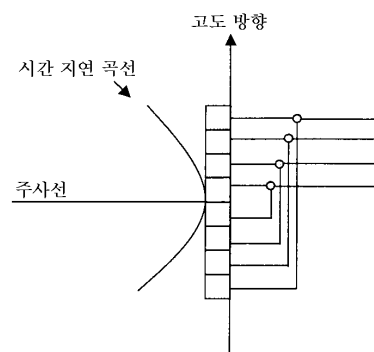
1d



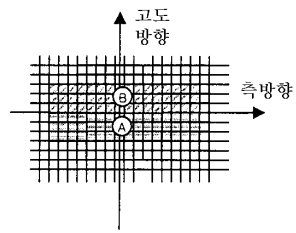
2



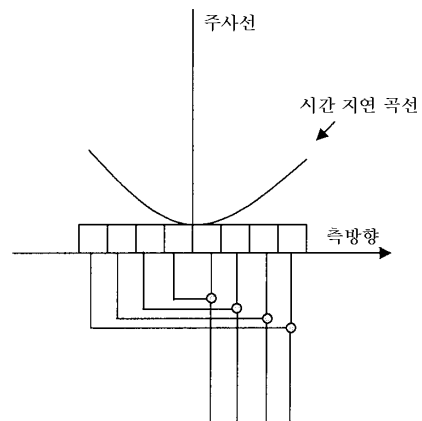
3



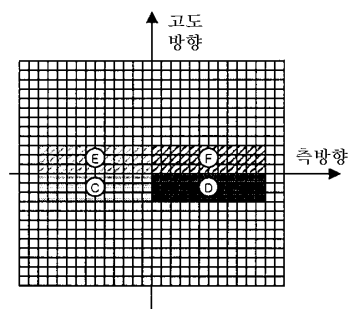
4



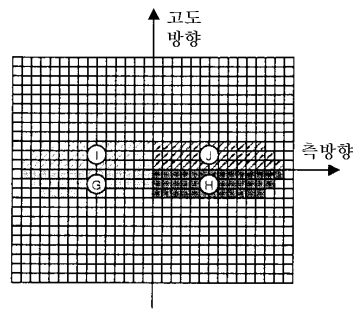
5



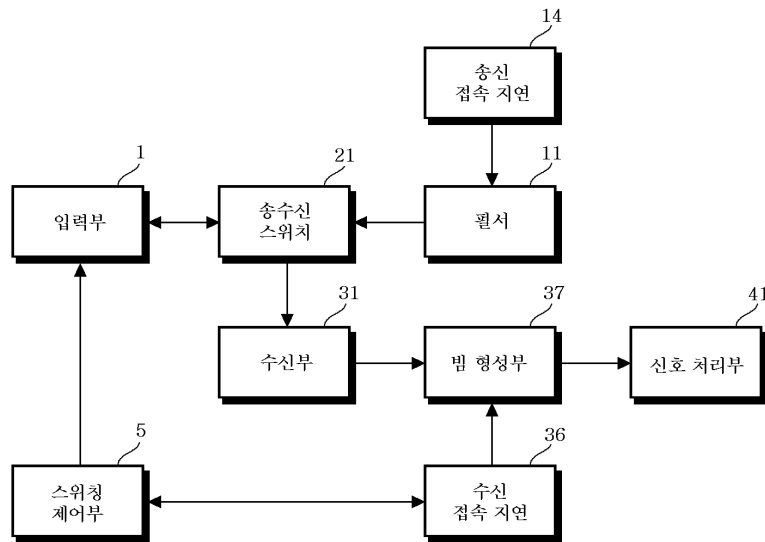
6



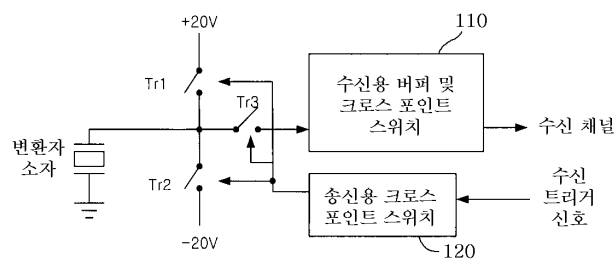
7



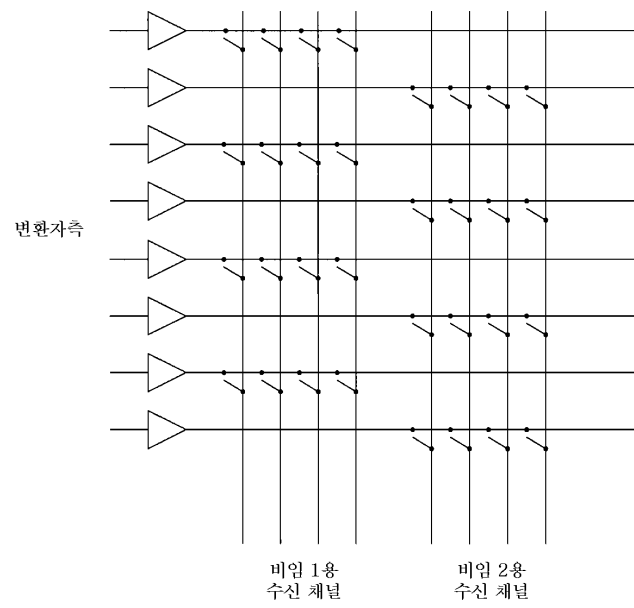
8



9



10



专利名称(译)	用于超声成像装置的二维表面阵列换能器		
公开(公告)号	KR1020020079138A	公开(公告)日	2002-10-19
申请号	KR1020010019844	申请日	2001-04-13
[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		
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发明人	장성호 송태경		
IPC分类号	A61B8/00		
CPC分类号	A61B8/4483 G01S15/892 G01S15/8925 G01S15/8993		
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其他公开文献	KR100752334B1		
外部链接	Espacenet		

摘要(译)

二维阵列变换器技术领域本发明涉及一种用于三维到四维 (2D) 超声图像形成系统的二维阵列变换器, 并且涉及一种二维阵列变换器, 其中变压器布置在具有一个或多个曲率的曲面上。二维表面阵列变换器包括 $N \times M$ 个变换器, 并且根据可以使用曲面阵列变换器形成的三维超声图像的视角和体积角来确定 N 和 M 。是的。为了控制二维曲面阵列换能器, 还提供了用于切换列变压器的高压开关元件和用于控制开关元件以使阵列变压器中的任何换能器短路的开关控制器。。 图1a

