



(74)

:

(54)

3

2 가 (volumetric region) (beamforming)  
 가 , 가  
 2 가 (weighting factors) ,

8

subject) 3 (ultrasonic diagnostic imaging systems) , (s  
 (ultrasound systems) .

3 ( ) 가 . 3  
 , 가 . 3  
 1  
 (elevation dimension) .  
 , 3 .

(real time imaging) (echo signals)  
 2 (2D) , 3 , 3

				, 3	
가		. 2 (add operations)	가	가	(simple shift)
1				(coronary arteries)	
2	1			(angiogram)	
3		(wall of a heart)		(chamber of a heart)	
4a	4c	3			(infusion)
5a	5b			" - - "	(slit - o - vision)"
6a	6b				
7a	7b				" - - "
8					
9					
10a	10b				
11a,	11b	11c			
12	11a,	11b	11c		
13					
14	13			-	(receive sub - aperture)
15a	15g	13		-	
16	13				
17	16				

18a 13

18b

18c 18d 2D (single line) (multiline)

19a 18a

19b 19c (interpolation)

20

21 20 (time interleaved sampling)

22 20 (duplex display)

23

24

25

26 23 " (straightened)"

1 (10) (12)

가

가

2 1

2 가 (broad beam) 가

x -

x - " (shadow; 14)"

가

x -

3

x -

" /

3 (LV) (RV) 18  
 (20) , (12) (contrast agent)가  
 16 , , (nonlinear fundamental return)  
 , 가 , ,  
 , 5,980,457 , , 4a  
 , (20) 가 , , (light up) ,  
 (12) 가 , (18) (12) 4b ,  
 , 가 (12) 가 (perfusing) ,  
 (12, 16, 18) 4c ,

가 (clutter) 가  
 , 4b , 가 , ,  
 , LV , 4b  
 , (18) ,  
 / (masking)  
 (18) 가 , ,

6% . 100% 가  
 , , ,  
 , 가 , , 가  
 , , , ,

가 ( , ) (transmit aper  
 ture; 가 , )  
 , , ,  
 , " (fat; )"

가  
(time - of - f  
light)  
가

가 4c 3 가  
4b 2  
(16)

r vessel) 가 가 (collecto  
( , )

0.1 /  
0.2 0.5 가  
가

1.0 가  
가

4b 2 가  
가

가  
(catheter) 가

가  
가

가 5,305,756 ,"

(elevation dimension)

(azimuth dimension)

(wavefront)

가

5a

(10)

(30)

EL  
(28)  
(32)

AZ  
(30)

(10)

(32)

(32)

5b

(10')

(60)

(62)

6a

6b

(30, 60)

(42)

1D

(rocking)

(30, 60)

(cavity)

(28)

(32, 62)

가

(30, 60)

가

7a

7b

가

5

가

(10")

1.5D

2D

7a

(30)

(60)

5a

5b

가

(30, 60)

(32 62)

7 2D

6

2

가

(off - axis reflectors)

8

(26)

(11)

(36)

(10)

가

가

ECG

			5,706,819	(38)	5,951,478
r; 22)					(wall filte
				6,095,980	
				(42)	
					6,036,643
					(44)
		5,197,477		5,782,769	-
			(40)		
B				(24)	B
	(40)				
B				(46)	
				(100)	
					가
		Cineloop <sup>®</sup>	(70)		
			(56)		
3D					
				(50)	
			(UIF)		(5
4)					(52)
	가				
		5,720,291			3D
		Cineloop <sup>®</sup>	(56)		
			Re 36,564		

. 1D(



12 (120) N  
 - (120<sub>1</sub> - 120<sub>n</sub>) , , 6 .  
 ) (26) & (&  
 (126) , (124) , , 가  
 t) ( ) 가 , 0 가 (zero weigh (1  
 22<sub>1</sub> - 122<sub>n</sub>) & & (126) 6  
 , 11a 11b  
 , 128 128  
 (36b) , 128 ( ) ,  
 (11) (101) .  
 2D 2D 가 13 . 3000  
 2D (200) , ,  
 . 2D 12 가 ,  
 , , ± 30 °  
 , ,  
 /4가 (arcuate) , 1  
 13 (200) 12 (202) " .  
 " (202) 가 14 . 12  
 ( 750 ) 15a 15f  
 가 3- 3  
 15g 4 , 4 .  
 3000 가 , 12 가  
 , 256 가 256 .  
 2D 12 , 40 ° ( ) ,  
 가 가 1/16  
 , ,  
 16 17 (

204) (206) (208) . (208)  
 (210) 가 , (208)  
 (212) 가 ( ) (206)

(212) 2 (216)  
 (214) . 2 (216)  
 (214) (220)

218) 가 가 , (

16 17 . 16  
 가 , (228)  
 (228) (230) 가 (230)  
 (228) (212) (232)  
 (234) , (current summing n  
 (212) ode)

(240) ,  
 (242) 1 가 (230) 2 (232) (242)  
 , 2  
 (INode)

1 2 가 , 2  
 1 가 , ( , )  
 가 , /

3D ,  
 , 18 19 , ( )  
 , , 19a  
 , 19 19  
 , 19 가 " (2  
 50) , 19  
 (280) , 18a 19x  
 (282) , 3072 2D 12 256  
 , 19x 19a 19 (281) 256  
 19 (284) , 8b , B ,  
 가 (100)  
 , ,  
 19b  
 (361 - 367) (361 - 367)  
 , , 2 r.f.  
 (371) (361 362) 1/2 가  
 가  
 (372) (362 367)  
 , 2 (373) (361 367)  
 (2<sup>-1</sup>) 가 (weighting factor)  
 가  
 3D  
 19c 가 가 가 가 19b 가 (iteration)  
 , 가 (381 - 383 387 - 392) (361, 362, 367)  
 가 ( ) 2 가 가  
 가 (381 - 383) 가 1/2  
 1/4 가 (381) (1/2( 361)+1/4( 362)+1  
 /4( 367)) 5,940,123 1/4, 3/  
 4 가 (392) (1/4( 367)+3/4( 361)  
 , (1/4( 367)+1/4( 361)+1/4( 361)+1/4( 361)  
 19c (384 - 386) (362, 363, 367)  
 , (393 - 396)  
 , r.f.

가 , ( , ) 가

(grating lobe) 가

2D

( )

/2

1D 가  
16

4 /2

( ) 가 64 1D

, r.f.

1dB

$\pm /8$

, r.f.

/8

( /2

(Nyquist)

/4

$\pm ( /8)/(4^* )$

1/32

1/16

3.6 가

1.2 가

1D

, 가

가

2D

. 2D

, 4

2D

18d

120°

B<sub>0</sub>, B

120 B<sub>240</sub>

( )

18c

(202)

(B<sub>0</sub>)

가



" c"

23

(30

0)

(300)

(306)

E

300 , E<sub>306</sub> , E<sub>300</sub> , E<sub>306</sub> , E<sub>300</sub>

23

(300)

(

300)

(306)

(306)

(306)

(300)

(308)

19

(308)

가

(300)

(12)

(306)

24

26

24

(300)

(310)

(312 314)

25

26

(310)

가

25

(320)

(310) 가

(320)

310a

가

(320)

(310b)

(310a)

310b)

가

(314)

(324)

(312)

(314)

(314)

(310)

가

26

(324)

24

" 가

26

(h)

ath)

가

, 322

(flow p

(57)

1.

(a subject) 3

2

;

2

;

;

3

2.

1

r.f.

r.f.

3.

1

2 (2<sup>-1</sup>) 가

4.

3

가 1/2:1/2

5.

3

가 1/4:3/4

6.

1

7.

1

8.

1 ,

9.

2

가

3

10.

9 ,

2 (2<sup>-1</sup>) 가

가

11.

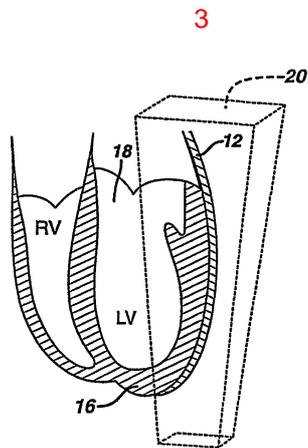
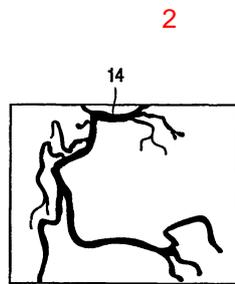
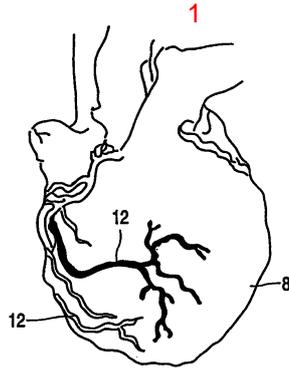
9 ,

r.f.

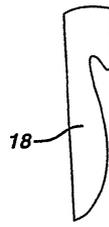
12.

9 ,

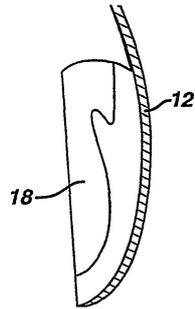
가



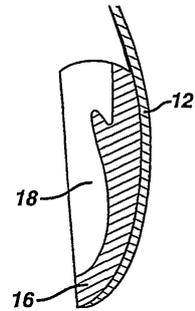
4a



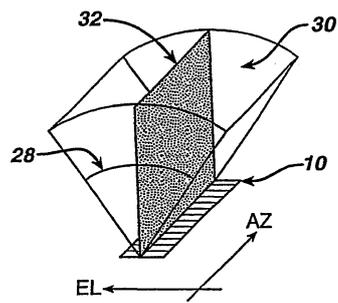
4b



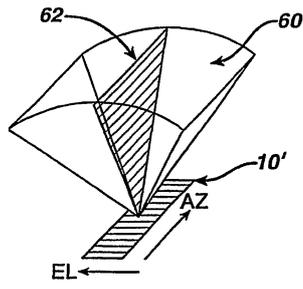
4c



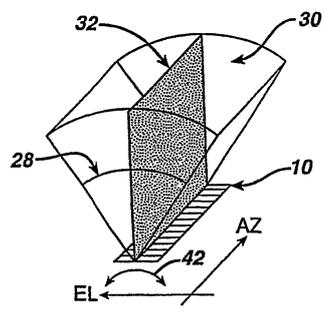
5a



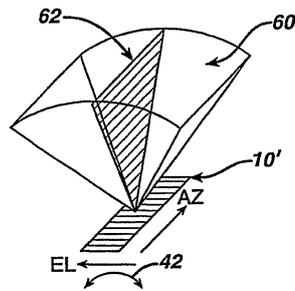
5b



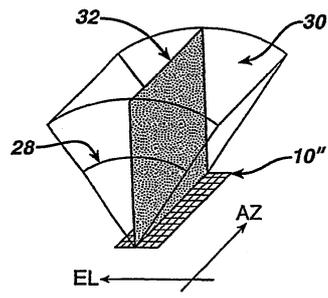
6a



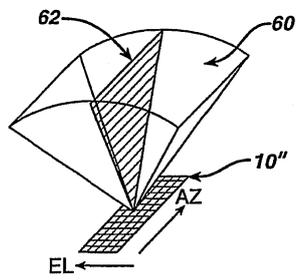
6b



7a

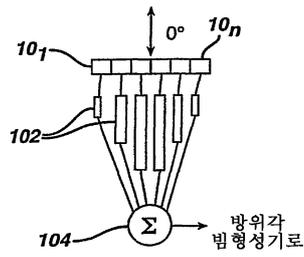


7b

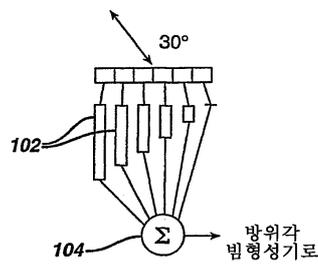




10a



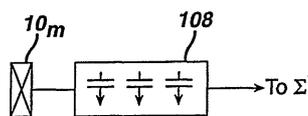
10b



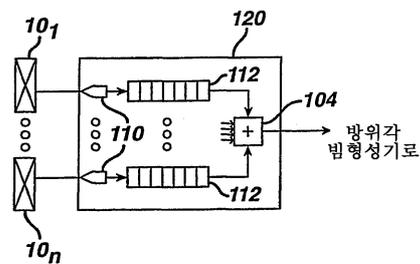
11a



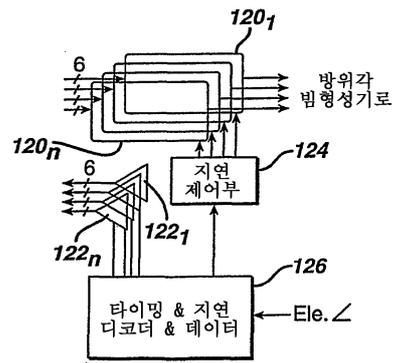
11b



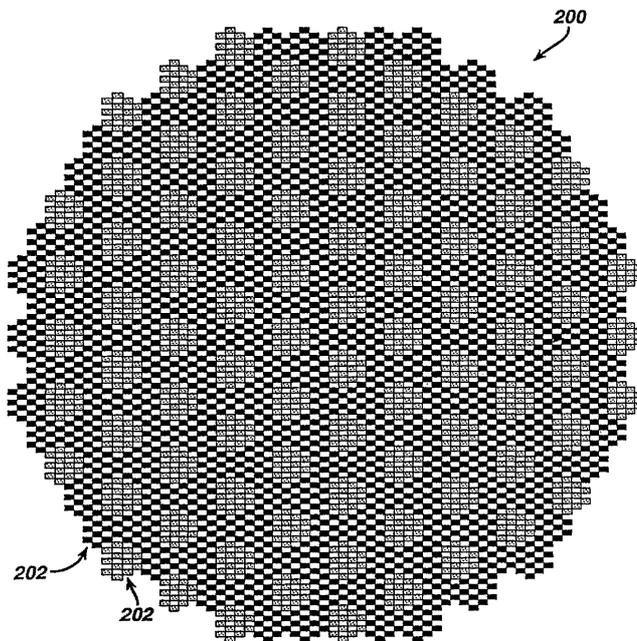
11c



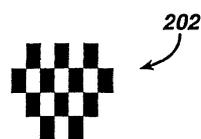
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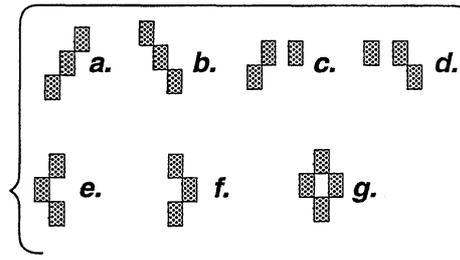
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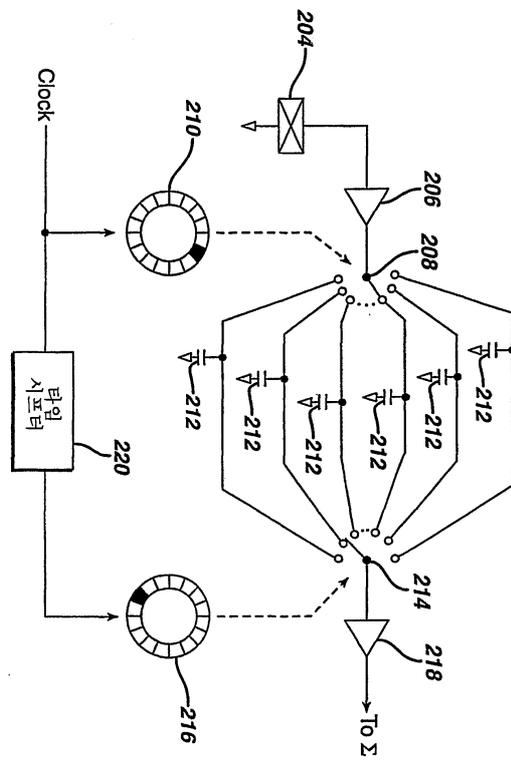
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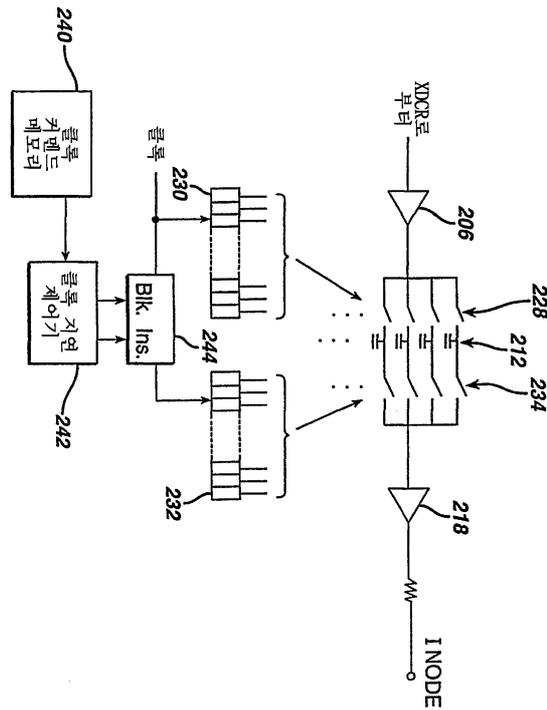
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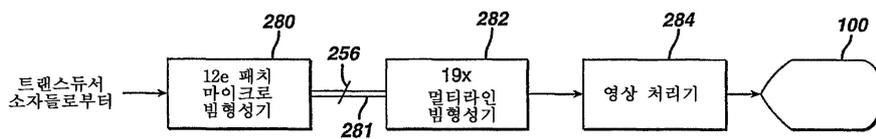
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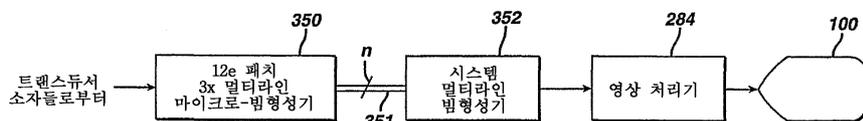
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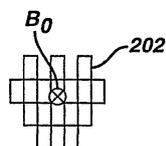
18a



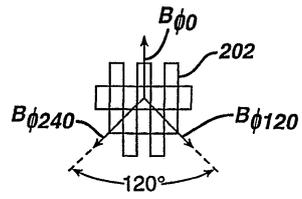
18b



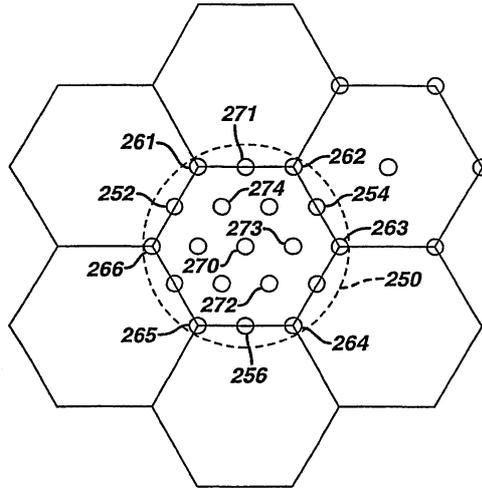
18c



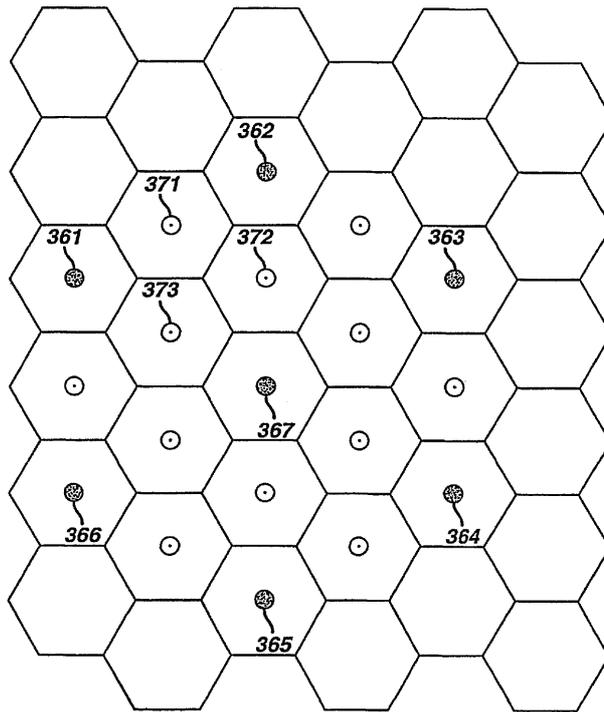
18d



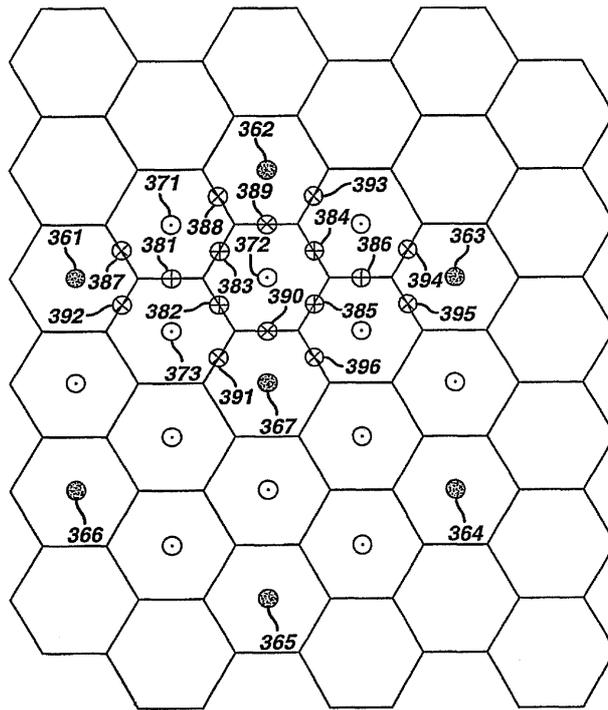
19a



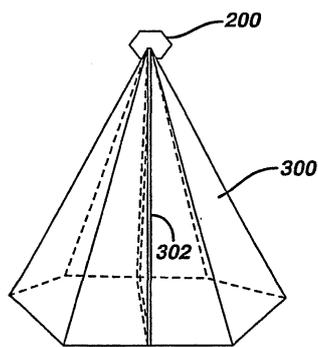
19b



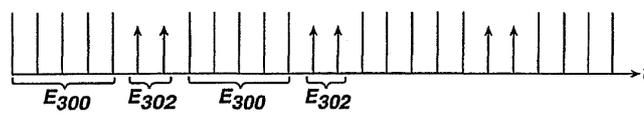
19c



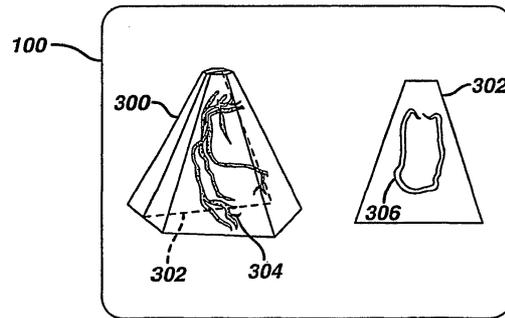
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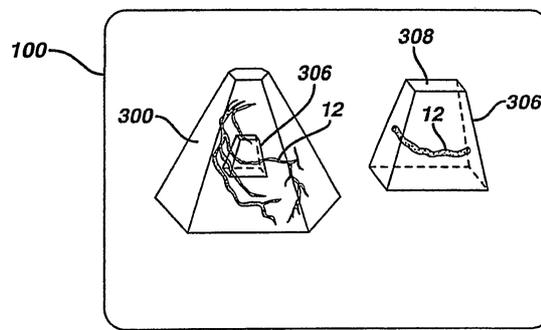
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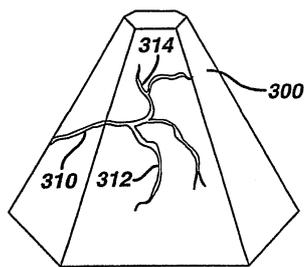
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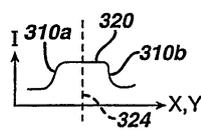
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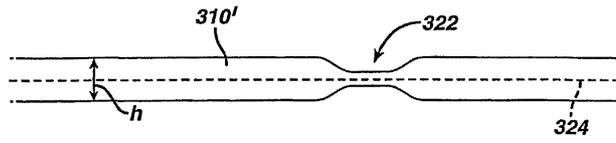
24



25



26



专利名称(译)	内插扫描线的三维超声成像		
公开(公告)号	<a href="#">KR1020020044555A</a>	公开(公告)日	2002-06-15
申请号	KR1020027005150	申请日	2001-08-23
[标]申请(专利权)人(译)	皇家飞利浦电子股份有限公司		
申请(专利权)人(译)	科宁欣克利凯恩菲利普斯日元.V.		
当前申请(专利权)人(译)	科宁欣克利凯恩菲利普斯日元.V.		
[标]发明人	POWERS JEFFRY E 파워스제프리아 AVERKIOU MICHALAKIS 애버큐미칼라키스 BRUCE MATTHEW 브루스매튜 SKYBA DANNY M 스키바대니엠 ENTREKIN ROBERT R FRASER JOHN D COOLEY CLIFFORD R ROBINSON BRENT S ROUNDHILL DAVID N 라운드힐데이비드엔 SCHWARTZ GARY A PESQUE PATRICK R		
发明人	파워스제프리아. 애버큐미칼라키스 브루스매튜 스키바대니엠. 엔트레킨로버트알. 프레이저존디. 쿨리클리포드알. 로빈슨브렌트에스. 라운드힐데이비드엔. 슈바르츠개리에이. 페스퀘파트릭알.		
IPC分类号	A61B8/06 G01S7/52 G01S15/89 G06T1/00 G10K11/34 A61B8/00		
CPC分类号	A61B8/06 A61B8/0883 A61B8/0891 A61B8/4472 A61B8/481 A61B8/483 A61B8/543 G01S7/52025 G01S7/52074 G01S7/5208 G01S7/52095 G01S15/8918 G01S15/8925 G01S15/894 G01S15/8963 G01S15/8979 G01S15/8993 G10K11/341 Y10S128/916 G10K11/346		
代理人(译)	李, 何炳 李昌勋		
优先权	09/645872 2000-08-24 US 09/912094 2001-07-23 US		
外部链接	<a href="#">Espacenet</a>		
摘要(译)			

公开了使用二维阵列换能器对体积区域成像的超声成像方法和装置。阵列由空间形成，单独的光束是波束形成光束在体积区域上扫描。通过使用其中接收扫描线密度的光束内插附加扫描线，它增加。使用基于2的接收的加权因子（加权因子）来使用良好的线性插值。可以对其进行单次和高速插值。超声成像，冠状动脉，测量体积区域，超声造影剂，波束形成器。

