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(54) **Ultrasound system and method of forming ultrasound images**

(57) The present invention is directed to an ultrasound system capable of providing a plurality of M-mode images corresponding to M-mode lines without moving a probe. A volume data forming and reconstructing unit of the present invention forms volume data based on the ultrasound echo signals, the volume data forming and reconstructing unit being configured to determine a beat period of the moving object and reconstruct the volume

data based on the beat period. A processor forms at least one reference image based on the reconstructed volume data and one or more M-mode images corresponding to one or more M-mode lines set on the reference image and a display unit displays the reference image, the M-mode lines and the M-mode images.

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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2004/111028 A1 (ABE YASUHIKO [JP] ET AL) 10 June 2004 (2004-06-10) * abstract; figures 1, 7, 8 * * paragraph [0028] - paragraph [0030] * * paragraphs [0043], [0046], [0048] * * paragraph [0073] - paragraph [0074] * * paragraph [0086] - paragraph [0088] * * paragraph [0125] *	1-10	INV. G01S15/89 G01S7/52 A61B8/08
Y	EP 1 757 955 A1 (MEDISON CO LTD [KR]) 28 February 2007 (2007-02-28) * abstract; figures 1, 9 * * paragraphs [0011], [0017] * * paragraph [0021] - paragraph [0025] *	1-10	
Y	US 5 515 856 A (VINGMED SOUND AS [NO]) 14 May 1996 (1996-05-14) * abstract; figures 1, 2, 3, 9 * * column 1, line 7 - line 10 * * column 3, line 65 - column 4, line 46 * * column 5, line 27 - line 30 * * column 6, line 4 - line 22 * * column 7, line 21 - line 37 *	1-10	TECHNICAL FIELDS SEARCHED (IPC) A61B G01S
A	US 2005/288589 A1 (HOULE HELENE C [US] ET AL) 29 December 2005 (2005-12-29) * abstract; figures 1, 3, 4 * * paragraphs [0018], [0022] - [0024] * * paragraphs [0034], [0046] - [0047] * * paragraph [0049] *	1-10	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 January 2012	Examiner Knoll, Bernhard
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004111028 A1	10-06-2004	JP 4202697 B2	24-12-2008
		JP 2004073287 A	11-03-2004
		US 2004111028 A1	10-06-2004

EP 1757955 A1	28-02-2007	EP 1757955 A1	28-02-2007
		JP 2007054635 A	08-03-2007
		US 2007053566 A1	08-03-2007

US 5515856 A	14-05-1996	DE 19531419 A1	07-03-1996
		FR 2723835 A1	01-03-1996
		IT MI951824 A1	29-02-1996
		US RE37088 E1	06-03-2001
		US 5515856 A	14-05-1996

US 2005288589 A1	29-12-2005	NONE	

专利名称(译)	超声系统和形成超声图像的方法		
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申请(专利权)人(译)	MEDISON CO. , LTD.		
当前申请(专利权)人(译)	MEDISON CO. , LTD.		
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代理机构(译)	SCHMID , WOLFGANG		
优先权	1020070022982 2007-03-08 KR		
其他公开文献	EP1967867A2		
外部链接	Espacenet		

摘要(译)

本发明涉及一种超声系统，其能够提供与M模式线对应的多个M模式图像而无需移动探头。本发明的体数据形成和重建单元基于超声回波信号形成体数据，体数据形成和重建单元被配置为确定运动物体的拍子周期并基于拍子周期重建体数据。处理器基于重建的体数据形成至少一个参考图像，并且与参考图像上设置的一个或多个M模式线对应的一个或多个M模式图像和显示单元显示参考图像，M模式线和M模式的图像。



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Y	EP 1 757 955 A1 (MEDISON CO LTD [KR]) 28 February 2007 (2007-02-28) * abstract: figures 1, 9 * * paragraphs [0011], [0017] * * paragraph [0021] - paragraph [0025] *	1-10	
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A	US 2005/286589 A1 (HOULE HELENE C [US] ET AL) 29 December 2005 (2005-12-29) * abstract: figures 1, 2, 4 * * paragraphs [0018], [0022] - [0024] * * paragraphs [0031], [0040] - [0047] * * paragraph [0049] *	1-10	TECHNICAL FIELD SEARCHED (IPC) A61B G01S
The present search report has been drawn up for all claims			
Place of search Munich Date of completion of the search 18 January 2012 Examiner Kno11, Bernhard		CATEGORY OF CITED DOCUMENTS X particularly relevant (taken alone) Y relevant in combination with another document of the same kind (indicate with another document the complementary part) Z non-relevant document A number of the same patent family, corresponding document	