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(54) **ULTRASONIC DIAGNOSIS APPARATUS AND BIOMEDICAL LIGHT MEASURING APPARATUS**

(57) In general, according to one embodiment, an ultrasonic diagnostic apparatus is characterized by comprising a plurality of light emission units, a control unit, a plurality of light detection units and a calculation unit. The light emission units are arranged around an ultrasonic transmitting and receiving surface of an ultrasonic probe included by the ultrasonic diagnostic apparatus and emit light including a component of a specific wavelength to the subject, the particular wavelength being included in

an absorption wavelength range of a body. The control unit drives a plurality of the light emission units at different frequencies. The plurality of light detection units are arranged around the ultrasonic transmitting and receiving surface and detect the light of the specified wavelength reflected inside the subject. The calculation unit calculates intensity of the light of the specified wavelength at different frequencies.

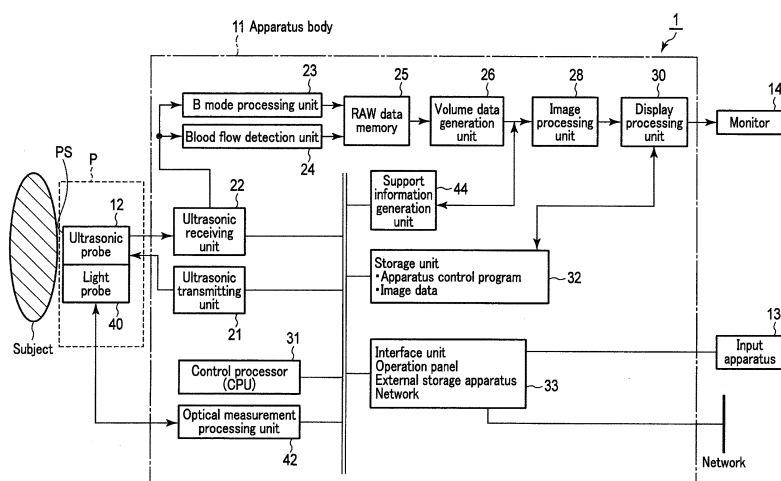


FIG. 2



## PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention.  
This report shall be considered, for the purposes of  
subsequent proceedings, as the European search report

EP 15 16 5383

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                     |                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Citation of document with indication, where appropriate, of relevant passages                                                                                                                                                                                                   | Relevant to claim                                   | CLASSIFICATION OF THE APPLICATION (IPC)    |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | WO 2014/045564 A1 (CANON KK [JP])<br>27 March 2014 (2014-03-27)                                                                                                                                                                                                                 | 1,3-6,14                                            | INV.<br>A61B5/00                           |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | * paragraphs [0021] - [0023], [0025],<br>[0027], [0028], [0041], [0043]; figure<br>1 *                                                                                                                                                                                          | 2                                                   | A61B8/00<br>A61B8/08<br>A61B8/14           |
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| INCOMPLETE SEARCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                 |                                                     |                                            |
| <p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.</p> <p>Claims searched completely :</p> <p>Claims searched incompletely :</p> <p>Claims not searched :</p> <p>Reason for the limitation of the search:<br/>see sheet C</p>                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                 |                                                     |                                            |
| Place of search<br>Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                 | Date of completion of the search<br>4 December 2015 | Examiner<br>Koprinarov, Ivaylo             |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>.....<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                                                                                                                                                                                 |                                                     |                                            |

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**INCOMPLETE SEARCH  
SHEET C**

Application Number  
EP 15 16 5383

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Claim(s) completely searchable:  
1-6, 14

Claim(s) not searched:  
7-13, 15

Reason for the limitation of the search:

The search has been restricted to claims 1 to 6 and 14 as indicated by the applicant in his letter dated 04-11-2015 filed in reply to the invitation pursuant to Rule 62a(1) EPC.

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

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5

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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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

|                |                                                                                                                                                                    |         |            |
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| 专利名称(译)        | 超声波诊断装置和生物医学光测量装置                                                                                                                                                  |         |            |
| 公开(公告)号        | <a href="#">EP2959826A3</a>                                                                                                                                        | 公开(公告)日 | 2016-01-13 |
| 申请号            | EP2015165383                                                                                                                                                       | 申请日     | 2015-04-28 |
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| 当前申请(专利权)人(译)  | 株式会社东芝                                                                                                                                                             |         |            |
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| IPC分类号         | A61B5/00 A61B8/00 A61B8/08 A61B8/14                                                                                                                                |         |            |
| CPC分类号         | A61B8/4416 A61B5/0075 A61B5/0091 A61B5/4312 A61B5/6843 A61B8/0825 A61B8/085 A61B8/4254<br>A61B8/429 A61B8/4455 A61B8/463 A61B8/5207 A61B8/54 A61B8/58 A61B2562/063 |         |            |
| 审查员(译)         | KOPRINAROV , IVAYLO                                                                                                                                                |         |            |
| 优先权            | 2014093033 2014-04-28 JP<br>2014191961 2014-09-19 JP                                                                                                               |         |            |
| 其他公开文献         | EP2959826A2                                                                                                                                                        |         |            |
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# 摘要(译)

通常，根据一个实施例，超声诊断设备的特征在于包括多个发光单元，控制单元，多个光检测单元和计算单元。发光单元布置在超声波诊断装置所包括的超声波探头的超声波发射和接收表面周围，并向对象发射包括特定波长的分量的光，该特定波长包括在身体的吸收波长范围内。。控制单元以不同的频率驱动多个发光单元。多个光检测单元布置在超声波发射和接收表面周围，并检测在对象内部反射的特定波长的光。计算单元计算不同频率的指定波长的光的强度。

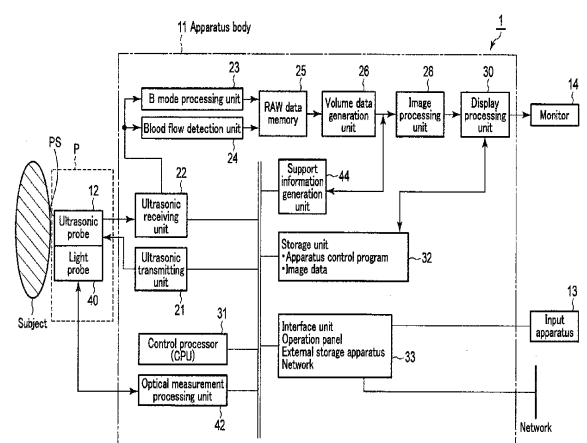


FIG. 2