Abstract: X-ray inspection systems and methods for inspecting a region of interest on a printed circuit board. The system includes an X-ray source configured to emit an X-ray beam, an X-ray detector, an X-Y transport mechanism configured to hold and move the printed circuit board in an inspection plane situated between the X-ray source and the X-ray detector, and an X-Y transport mechanism having a carriage coupled with the detector such that the detector faces toward the X-ray source, a first stage coupled with the carriage, and a second stage also coupled with the carriage. The first stage is configured to move the carriage in an X-direction. The second stage is configured to independently move the carriage in a Y-direction orthogonal to the X-direction so that the detector is movable within an imaging plane.
Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8)- A61B 6/00 (2009.01)
US CPC - 378/4
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
US CPC - 378/4

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
378/4, 11, 12, 21, 195-198, 208-209 (Keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
pubwest(DB=PGPB,USPT,EPAB,JPA), Google Scholar
Terms - X-ray, inspection, detector, sensor, source, x-y, translate, carriage, stage, off-axis, slice, 3D, image, circuit board, tomosynthesis

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 7,215,736 B1 (Wang et al.) 08 May 2007 (08.05.2007); Fig. 1, 9; Abstract; col 1, in 18-29; col 2, In 14-26; col 4, In 66-67; col 5, In 1-4, 16-24; col 6, In 1-21; col 9, In 51-59</td>
<td>1-16</td>
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<tr>
<td>Y</td>
<td>US 2006/0274883 A1 (Buck et al.) 07 December 2006 (07.12.2006); Abstract; para [0003], [0028], [0030], [0033]-[0035]</td>
<td>1-7</td>
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<tr>
<td>Y</td>
<td>US 2003/0058983 A1 (Thayer) 27 March 2003 (27.03.2003); Fig. 1, 3; Abstract; para [0003]-[0005], [0007], [0011], [0032], [0036], [0039], [0042], [0043]</td>
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Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

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