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Patent yyyy yyyyy yyyy LLP

**Digital Analog Transmission Prior Art Search**

**(Your Office Ref. No.: 1234567.001)**

**Search Report**

August 12, 2009

Plumgiken Co., Ltd.

Intellectual Property Solution Division

**1. Technical Analysis**

(1) Objective

Prior art document search for the US patent search shown below

(2) Bibliographic issues

Refer to table 1-1.

Table 1-1 Bibliographic issues relating to the subject of search and claims regarding the subject of search

<b>Patent No.</b>	<b>US1,234,567 B2</b>
<b>Title of Invention</b>	<b>Digital Analog Trnsmmission</b>
<b>Assignee</b>	<b>Plumgiken Co., Ltd.</b>
<b>Filed on</b>	<b>March 11,2004</b>
<b>Continuation of application Filed on</b>	<b>May 3, 2000</b>
<b>Investigation Claims</b>	<b>Claim 1 and Claim 11</b>
<b>Patent No.</b>	<b>US9,876,543</b>
<b>Title of Invention</b>	<b>Analog Digital Transmission</b>
<b>Assignee</b>	<b>Plumgiken.Co., Ltd</b>
<b>Filed on</b>	<b>July 1, ,2005</b>
<b>Continuation of application Filed on</b>	<b>May 3, 2000</b>
<b>Investigation Claim</b>	<b>Claim 1</b>

(3) Viewpoint of search

a) The constituents features of claims are shown in tables 1-2 (a) and 1-2 (b).

Table 1-2 (a) Constituent features of US 1,234,567 Claims 1 and 11

<b>Claim 1: A system for Digital Analog Transmission</b>	
Components	Feature
<b>A System</b>	
<b>Claim 11: A method for Digital Analog Transmission</b>	
Components	Feature

Table 1-2 (b) Constituent features of US 9,876,543 Claim 1

<b>Claim 1: A method for creating a contiguous digital image of a portion of a microscope sample</b>	
Components	Feature
<b>A System</b>	

b) Scope of search

The overall configuration is as described below.

- While moving xxx xxx xxx xxx sss alskdjfal asdfasdf asdfpojit ojidga asdga asdgasgda sdg@paskg sdfakmaeti asdgasdg.
- The belt-shaped adfs pojisdf oisjetkako asdkmgaokjo asdgma asdgamjioasg asgdadgaijaoiretoo asdgasdgijagdoijgadsaiojasdg.

The technology regarding focus adjustment is as described below.

- When praphing sdf oijsgoisiegiinte nthe sdfsaioteoal;ksdlkguyoisdjgoiamek sdgioasmko aui g aoiuke tioidoa.

The technology regarding photographing precision is as described below:

- The specimen is sdfa ;lsdf sdfa sdfoij ojo i joij sodijoi joijoalgm lw petuiokjdoai hj goiahjgoid asopg i a jsdogiajoidjs a oijgds aoijdogisajg oiajgoisdja.
- Multiple sdfas dfsa dfsafa sdfasdf asd fasdf asdfasdfas dfasdfasdf asdfasdfsafdsaf asdfasdfasdf asfda s d f a sdfasdf agrehyt j kphk tro ijnoiahy h@ot9opj hr@pjeperpjofgo jpgpgokpgl;rgop jwyrepkp;l qw oipqwe@pa @ p weq4-235kmg.

We carried out a search by regarding the above items as the important scope of search.

**2. Search method**

Table 2 Search method

<p><b>1. Scope of search</b>                   (Technical classification, phrase etc.)</p>	<p>(I) Technical classification</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> FI symbol                         <ul style="list-style-type: none"> <li><b>G02B7/11: Classification relating to optical elements, optical systems, optical devices and microscopes having an automatic focus adjustment or automatic magnification system</b></li> <li><b>G02B21/00: Microscopes</b></li> <li><b>G02B26/36: Classification relating to microscopes configured for photographing or projection</b></li> <li><b>G06F15/62: Image processing, and photographed image processing</b></li> <li><b>G06F15/64: Classification relating to image acquisition and image input system control</b></li> <li><b>G06T1/00: Classification relating to image input system control and image input fields</b></li> </ul> </li> <li><input type="checkbox"/> F term, theme code                         <ul style="list-style-type: none"> <li><b>2H052: Microscopes, capacitors</b> <ul style="list-style-type: none"> <li><b>Sub-theme relating to movable stages, driving power, items moving subjects to a specified place, X-Y stages and image processing</b></li> </ul> </li> <li><b>5B057: Image processing</b> <ul style="list-style-type: none"> <li><b>Sub-theme relating to the composition, cutting out, joining, detection of positions, adjustment of positions, and detection of fields and regions</b></li> </ul> </li> </ul> </li> </ul> <p>(II) Number of relevant items  <b>4,358 items</b></p> <p>(III) Database used  <b>PATOLIS, Industrial Property Digital Library, NRI Cyber Patent etc.</b></p>
<p><b>2. Search method</b></p>	<p>Sending for complete official reports and manually reviewing them</p>
<p><b>3. Delivery format</b></p>	<p>Search reports (including the list of relevant patent numbers)</p>

### **3. Search results**

The search results are shown in table 3. To evaluate the relevance, the following criteria have been added.

- A: Almost all the requirements are disclosed,
- B: Multiple requirements are disclosed, and
- C: A limited number of requirements are disclosed.

However, no items were applicable to “A”.

The information included in the interim report is also indicated.

The comment from the person in charge on the search results is as shown below.

Some examples of acquiring and composing belt- or line-shaped images by using a line sensor etc. by moving the specimen or sample (or the image sensor itself) at a regular velocity were found.

However, in addition to the disclosure mentioned above, items referring to creating the focus map in advance and obtaining synchronization with the moving velocity of the sample were not extracted.

It seems that there many cases where rough image data is obtained through the line sensor and focus adjustment is carried out by the microscope provided at the same time, not the line sensor.

- Although the similarity in the overall configuration was low, there were two reference documents mentioning items relating to prior focus map creation using line-shaped laser beams.
- Also, there was one item referring to improving the image precision by synchronizing the image data acquisition rate with the moving velocity of the specimen. However, it seems that the overall configuration was rather different.

Table 3 Search Results

Documents relating to the overall configuration

Publication No. Assignee	Title of Invention	Outline of Invention	Disclosures, Related Descriptions and Corresponding Parts	Relevance
<b>P2000-88764</b> Nippon Steel Corp	Automatic Inspection Apparatus for Microscope	Automatic microscope, which photographs the specimen while moving it perpendicularly and composing images to acquire two-dimensional images by using the line sensor with optical camera linearly placed.	<p><b>[0010]</b> The presence of the line sensor is disclosed.</p> <p><b>[0013]</b> The fact that the specimen is photographed and two-dimensional images are acquired by moving the specimen perpendicularly to the direction the optical camera placed linearly is disclosed. It is evident that belt-shaped images are composed, based on the fact that the comparison with the two-dimensional micro-camera is clarified.</p> <p><b>[Difference]</b> The fact that the specimen is photographed while moving. However, the regular velocity and the synchronization with photographing are not mentioned. Also, the utilization of the “focus map” is not disclosed.</p>	B
<b>PHei11-119108</b> Nippon Telegraph & Telephone	Remote Observing System	Invented by the same applicant preceding “PHei11-211988” already submitted. This application and the abovementioned application “PHei11-211988” are similar in terms of the remote observation via the network and the image composition and different in terms of the line sensor. Presumably, the line sensor is adopted in “PHei11-211988”.	<p><b>[0023]</b> The fact that the specimen table is movable is disclosed.</p> <p><b>[0024]</b> The fact that multiple images are combined into one image is disclosed.</p> <p><b>[Difference]</b> It is not clear that the moving velocity of the specimen is constant, and the moving velocity is synchronized. Also, the utilization of the “focus map” is not disclosed.</p>	C
<b>PHei10-326587</b>	Confocal Microscope	A cofocal microscope, equipped with TDI	<b>[0019]</b>	B

Zeiss Carl Fa	with Electric Scanning Table	sensors two-dimensionally arrayed and a electrical scanning table which is able to move the specimen perpendicularly to the optical axis.	<p>The presence of the sensors two-dimensionally arrayed is disclosed.</p> <p><b>[0020] [0027]</b>          The fact that the specimen is moved by the electrical motor at a regular velocity.</p> <p><b>[Difference]</b>          The utilization of the “focus map” is not disclosed.</p> <p>The corresponding EP application (EP871052A1) is available, but written in German. As the Japanese version of this document is very difficult to understand, it is advisable that the corresponding EP application is used to create the English version.</p>	
PHei10-325711 Hitachi, Ltd.	Method And Apparatus for inspection as Well as Manufacture of Semiconductor Substrate	A testing device, which is used to find minute defects, foreign matter etc. in semiconductors and uses the TDI sensor and the movable stage to acquire high resolution images.	<p><b>[0021]</b>          The presence of the TDI sensor array is disclosed.</p> <p><b>[0016]</b>          The presence of the stage which is three-dimensionally movable is disclosed.</p> <p><b>[Difference]</b>          There is no disclosure corresponding to the “focus map”.</p>	C
PHei08-62503 Nireco Corp	Microscopic Device	A testing microscope, which is equipped with a line light and linear image sensor and moves the specimen stage perpendicular to the sensor array to photograph the whole image of the specimen. As it corresponds to the device rotating cylindrical objects, it considers moving the specimen at a regular velocity.	<p><b>[0019]</b>          The fact that belt-shaped images are obtained and combined through the light sources linearly arrayed and the linear image sensor, and the whole images of the specimen can be photographed is disclosed.</p> <p><b>[0017]</b>          There is a description which suggests the synchronization of the moving velocity of the specimen stage and the scanning velocity.</p>	B

			<p><b>[Difference]</b>          The utilization of the “focus map” is not disclosed.</p>	
<p><b>PHei03-223709</b>           Fuji Photo Film Co., Ltd.</p>	<p>Confocal Scanning Type Microscope</p>	<p>A transmission cofocal microscope, which is equipped with a linear image sensor whose linear light receptors receives the reflected light from the specimen or moves the linear image sensor or the specimen table perpendicularly to the array of linear light receptors to acquire two-dimensionally magnified images of the specimen.</p>	<p><b>[Page 3, Lower Left Ls12 to 18]</b>          The presence of the linear image sensor is disclosed.</p> <p><b>[Page 5, Upper Left Ls8 to 11]</b>          The fact that scanning is performed by moving the specimen table, not the optical system.</p> <p><b>[Difference]</b>          The fact that the velocity of the specimen table is indicated, but it is a theoretical value and evidently a regular velocity, and the synchronization of the velocity of the specimen table and the scanning velocity is not disclosed. Also the utilization of the “focus map” is not disclosed.</p>	<p>B</p>
<p><b>PHei02-90117</b>           Hitachi, Ltd.</p>	<p>Automatic Focusing Device for Microscope</p>	<p>A microscope, which is equipped with a linear sensor which scans linearly the object and moves the stage for the object perpendicularly to the electrical scanning direction of the linear sensor to acquire two-dimensional images of the object.</p>	<p><b>[Page 2, Lower Left L12 to Lower Right L2]</b>          The presence of the linear sensor and the stage which can be horizontally moved carrying the object, and the fact that two-dimensional images are acquired through the linear sensor are disclosed.</p> <p><b>[Difference]</b>          The fact that the moving velocity of the stage is constant and the focusing method by using the “focus map” are not disclosed.</p> <p>The synchronization with the variation of the moving velocity of the stage is not disclosed.</p>	<p>B</p>
<p><b>PHei01-277812</b>           Laser Tec KK</p>	<p>Microscopic Device</p>	<p>A microscope which is capable of three-dimensionally reproducing the specimen to be observed.</p>	<p><b>[Page 3, Upper Left Ls11 to 17]</b>          The presence of the objective lens, the linear sensor etc. is disclosed.</p> <p><b>[Page 4, Upper Left L12 to Upper Right L5]</b>          The composition of one-line images taken by the linear sensor is suggested.</p>	<p>B</p>



			<p><b>[Page 3, Lower Right Ls13 to 16]</b>                  The fact that the specimen is reciprocated at a certain rate perpendicularly to the main scanning direction is disclosed.</p> <p><b>[Difference]</b>                  The synchronization of the velocity of the specimen with scanning velocity is not disclosed. Also, the utilization of the “focus map” is not disclosed.</p>	
<p><b>PSho61-94014</b>                   Buranko                  Parushitsuku;                  Buruuno Jiyagii;                  Jiyun Noodein</p>	<p>Microscopic Image                  Processing Dynamic                  Scanner</p>	<p>(JP application corresponding to                  USP4,700,298 presented)</p>	<p><b>[Page 4, Upper Right Ls6 to 15]</b>                  The presence of the sensors linearly arrayed, the moving method of the specimen, and the presence of the automatic focus system are disclosed.</p> <p><b>[Difference]</b>                  The fact that the specimen is moved at a regular velocity is not stated. Also, the utilization of the “focus map” is not disclosed.</p>	B

Documents relating to "a focusing system in accordance with focus map"

<p><b>PHei02-285314</b>                   Fujitsu, Ltd.</p>	<p>Method for                  Positioning Light                  Cutting Microscope                  Device And Its Optical                  Means</p>	<p>Invention of the optical method positioning function of light section microscopes for specimens whose surfaces are uneven.</p> <p>Prior to photographing the surface, the focal position of the optical system is determined on the specimen in accordance with the intensity of the light section image and the position of the optical system is adjusted.</p>	<p><b>[Page 6, Upper Left Ls3 to 10]</b>                  The fact that the objective lens on the incident side is adjusted to a certain position of the specimen as desired by the observer.</p> <p><b>[Difference]</b>                  The fact that the camera is the line sensor is not disclosed, although linear laser beams are cast to the specimen and the reflected light is photographed by using the camera.</p>	C
<p><b>PSho61-32182</b>                   Hitachi, Ltd.</p>	<p>Device for Classifying                  Cell</p>	<p>A microscope for cell classification capable of identifying characteristic regions and acquiring detailed images by using low- and</p>	<p><b>[Page 4, Lower Left Ls15 to 20]</b>                  The presence of the linear array semiconductor camera and cell specimen carriage is disclosed.</p>	C

		high-resolution microscopes.	<p><b>[Page 5, Upper Right L15 to Page 6, Upper Left L11]</b>          The fact that the target cell is identified in a low resolution image and a detailed image is acquired by using the high resolution camera is disclosed. Ideological similarity to the concept of the search target is found.</p> <p><b>[Difference]</b>          However, the fact that the specimen is moved at a regular velocity and the focus adjustment method are not clearly stated.</p>	
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Documents relating to "synchronizing the data read rate to the velocity of sample"

<p><b>PHei03-197869</b>          Fuji Photo Film Co., Ltd.</p>	<p>Movement Detecting Device for Moving Body</p>	<p>A scanning microscope, whose specimen table is composed of a reciprocating unit. The velocity and moving direction of the reciprocating unit can be synchronized with the scanning of the specimen.</p> <p>The velocity of the moving unit and the frequency of main scanning sampling are proportionated and digital images are acquired.</p>	<p><b>[Page 5, Lower Left L16 to Lower Right L9]</b>          The fact that the digital image data indicates the images placed at regular intervals on the main scanning line, even when the specimen table is moved at an arbitrary velocity.</p> <p><b>[Difference]</b>          While the movement of the specimen table is disclosed, the fact that the medium used for acquiring images is the line sensor is not disclosed.</p>	C
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