Solder Paste Inspection

- Factsheet
- Example Images
- Light Field in micro inspection
<table>
<thead>
<tr>
<th>Feature</th>
<th>R26 3X</th>
<th>R50 3X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field of View</td>
<td>7.8x7.8mm</td>
<td>12.1x9.2mm</td>
</tr>
<tr>
<td>Lateral Resolution</td>
<td>3.0µm</td>
<td>3.1µm</td>
</tr>
<tr>
<td>Depth of Field</td>
<td>1.1mm</td>
<td>1.1mm</td>
</tr>
<tr>
<td>Depth Resolution</td>
<td>2.5µm</td>
<td>0.5µm</td>
</tr>
<tr>
<td>Working Distance</td>
<td>48mm</td>
<td>48mm</td>
</tr>
<tr>
<td>Framerate (max)</td>
<td>81fps</td>
<td>30fps</td>
</tr>
</tbody>
</table>
Example Images

*Solder Paste, 100µm height*

3D model with 2D image as texture

3D model with false color depth map as texture

2D image
Solder Paste, 100µm height – Cross Section Measurement
Example Images

*Solder Paste, 85µm height, missing pad*

3D model with texture

3D model with false color depth map

2D image
Example Images

Solder Paste, 85µm height, missing pad – Cross Section Measurement
Example Images

Solder Paste, 85μm height – Cross Section Measurement
Example Images

*Solder Paste, 30µm height*

3D model with 2D image as texture

3D model with false color depth map as texture

2D image
Example Images

Solder Paste, 100µm height – Cross Section Measurement

[Image of cross section measurement graph]
Light Field in micro inspection

Why light field?
• extended Depth of Field
• occlusion free
• fast
**Extended Depth of Field**

*Bonding wire @ 10x*

- **10MP 2D camera**

- **Raytrix light field camera R10µ**

2D image

3D model with false color depth map as texture
Extended Depth of Field

Three lens types are focused on different depths.
Extended Depth of Field

Micro lens DoFs are designed to connect thereby extending the overall Depth of Field up to six times.
Occlusion free

**Stereo Camera System** reconstructs pin as cone

Camera 1  Camera 2

Oclusion areas in red

**Light Field Camera** reconstructs pin as rectangle

Microlens Array

No occlusion areas due to many views

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Fast

- Up to 330 fps captured
- Up to 60 fps processed per GPU
- Multi GPU support
Light Field in micro inspection

Other applications
3D model (texture / false color depth)
How deep is the cavity?
Micro screws

3D model with 2D image as texture

3D model with false color depth map as texture
What is the curvature of the bonding wires?
Volume of red and white blood cells
Life science – neuron (fluorescence)

False color stack of three fluorescence excitations

2D texture for each wavelength

False color depth map
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