

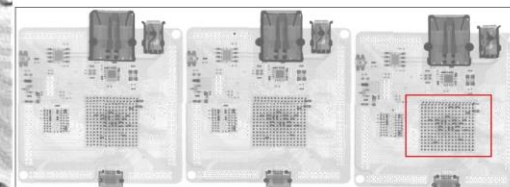
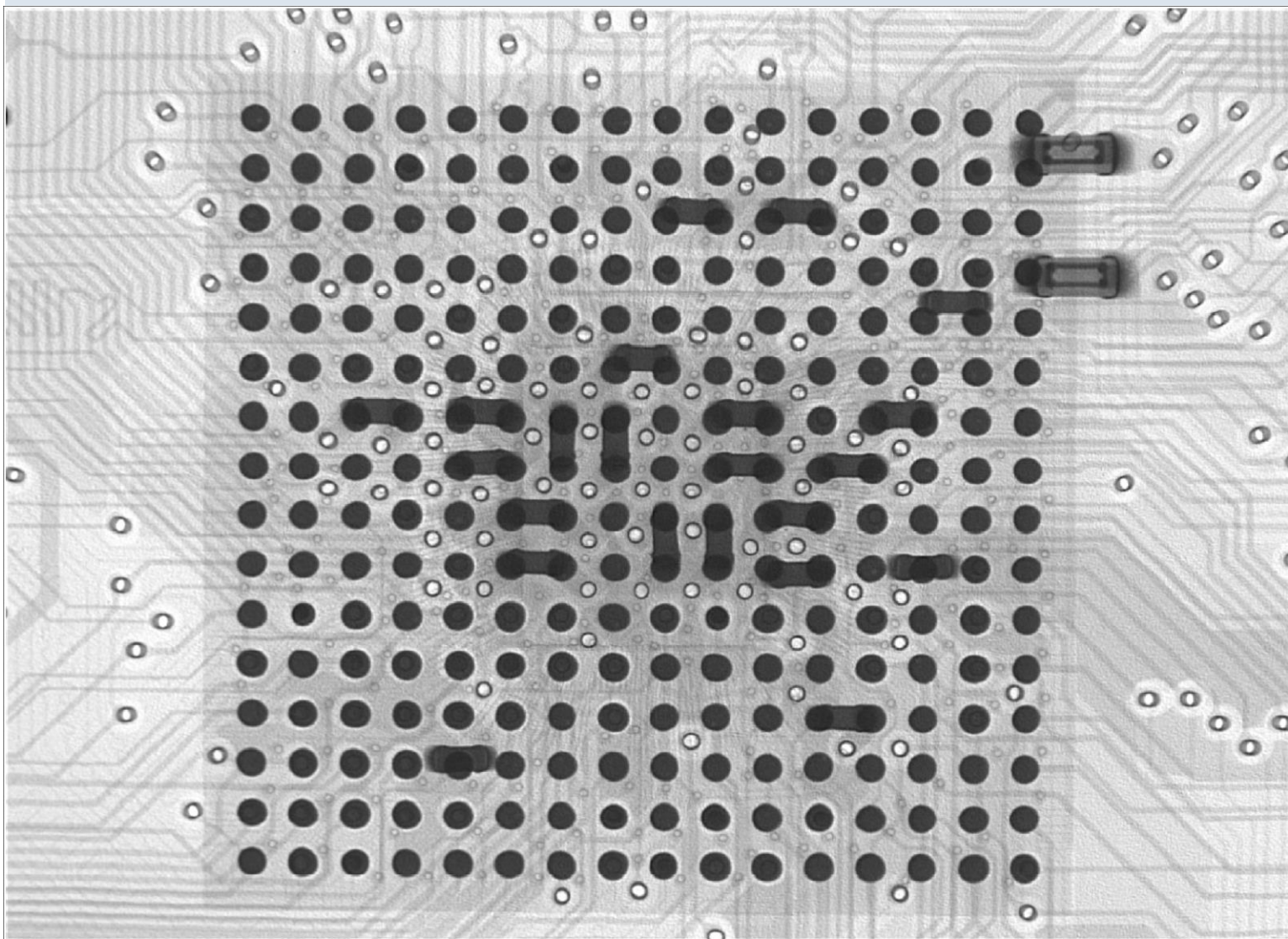


# X-Ray Inspection Report

<b>Customer:</b>	I/O SAFE
<b>Work Order:</b>	
<b>Assembly No:</b>	
<b>Serial No:</b>	
<b>Scope of work:</b>	Inspecting BGA Balls
<b>Engineer:</b>	Victor Dallago
<b>Date:</b>	08/15/2019
<b>Observation/Conclusions</b>	Varying size and shape of BGA balls caused by design of BGA pad layout

# I/O SAFE

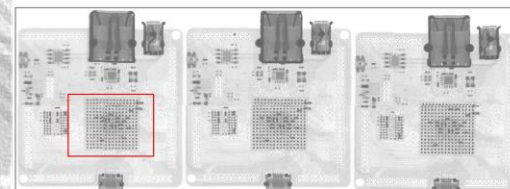
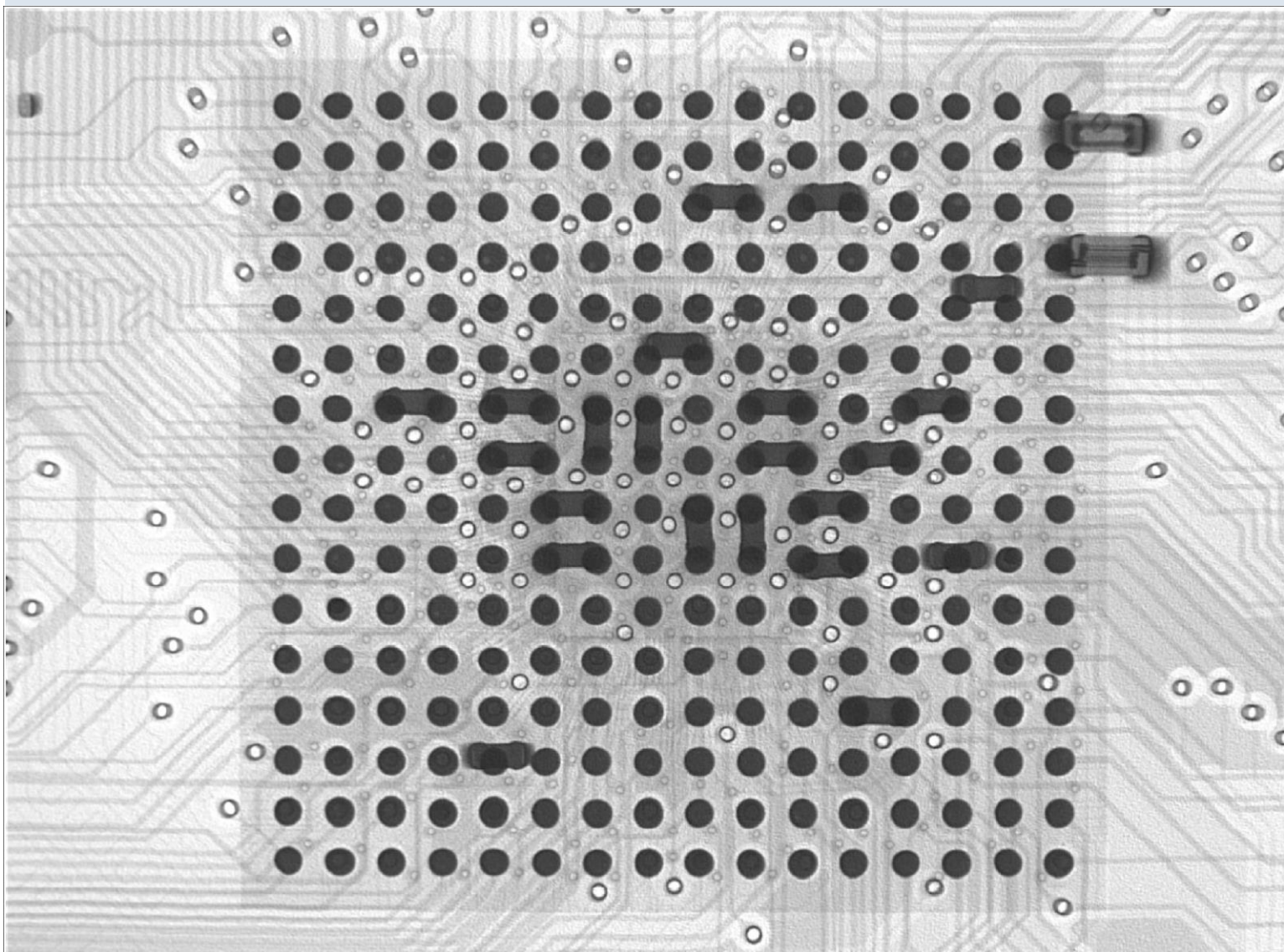




5.0mm

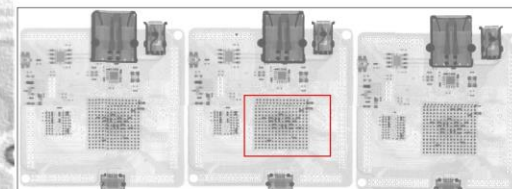
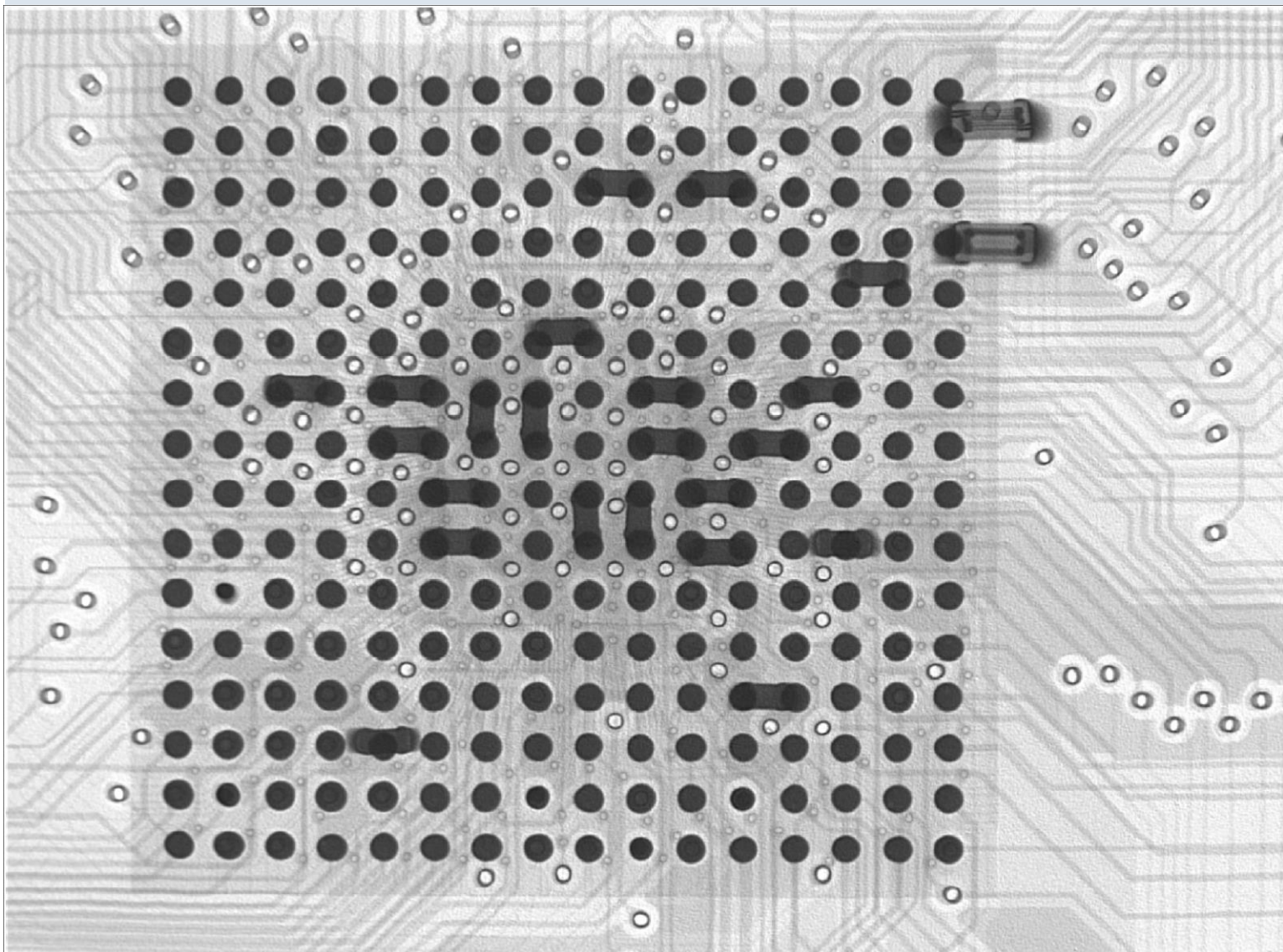
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Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames





5.0mm

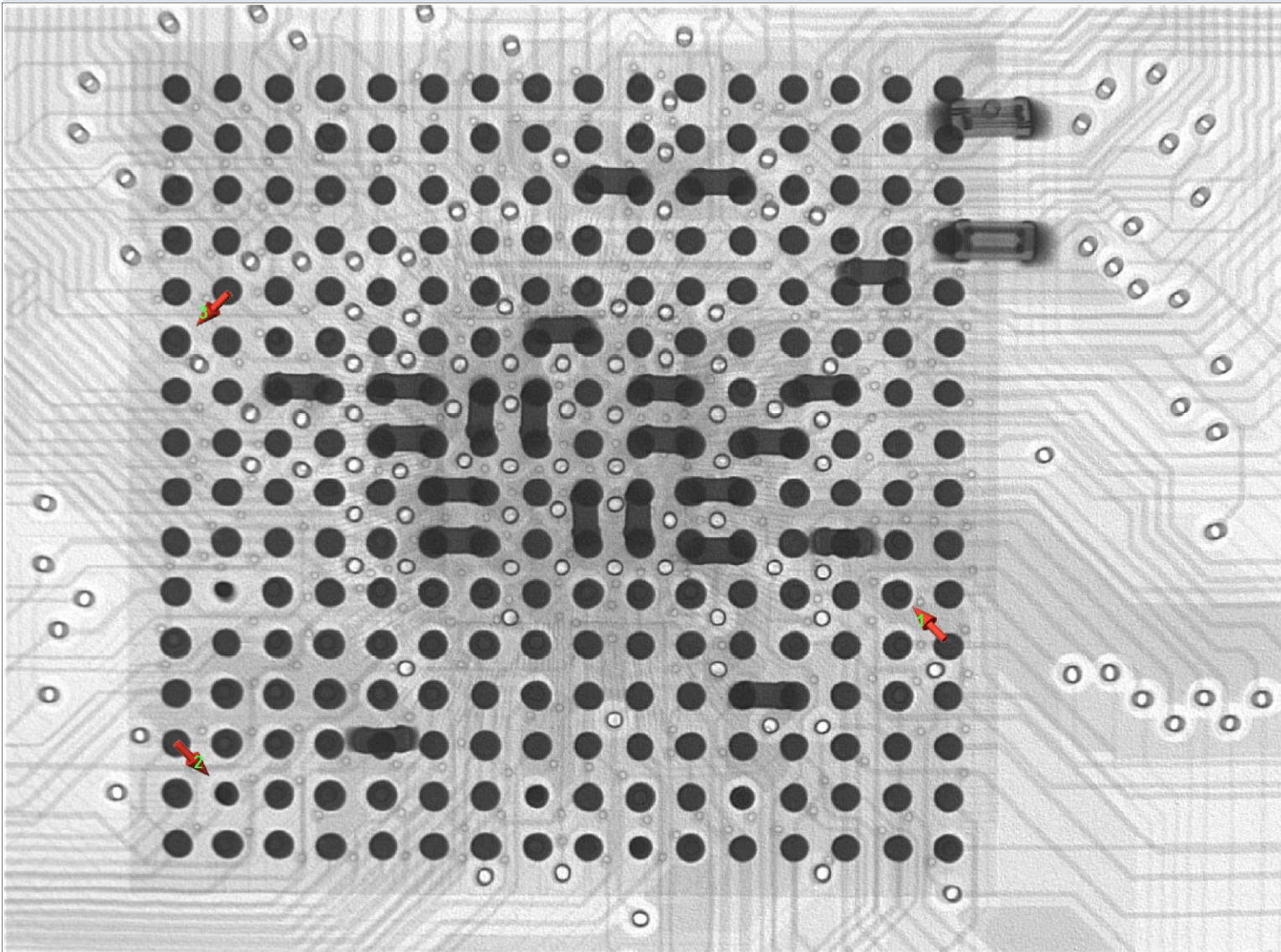
Tube voltage: 100 kV  
Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames



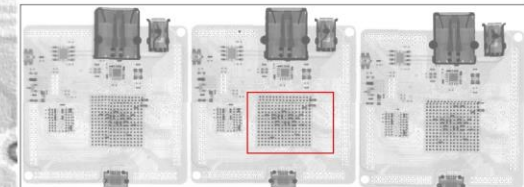
5.0mm

Tube voltage: 100 kV  
Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames



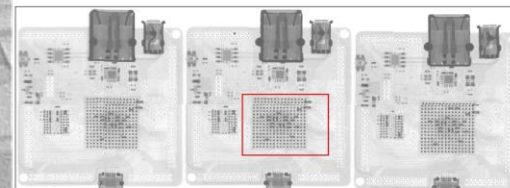
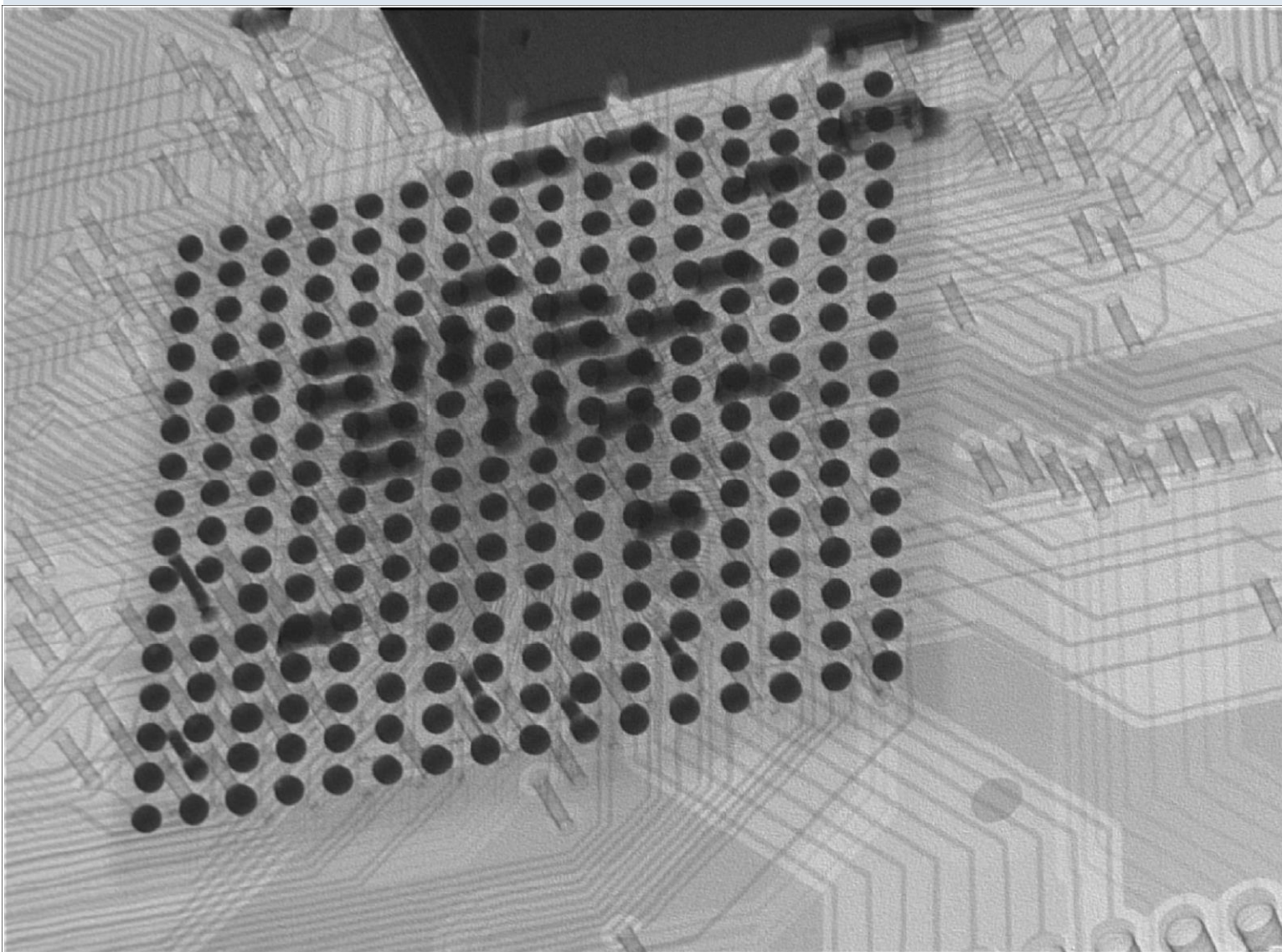


- 1) BGA Balls vary in size and in shape.
- 2) BGA Balls vary in size and in shape.
- 3) BGA Balls vary in size and in shape.



5.0mm

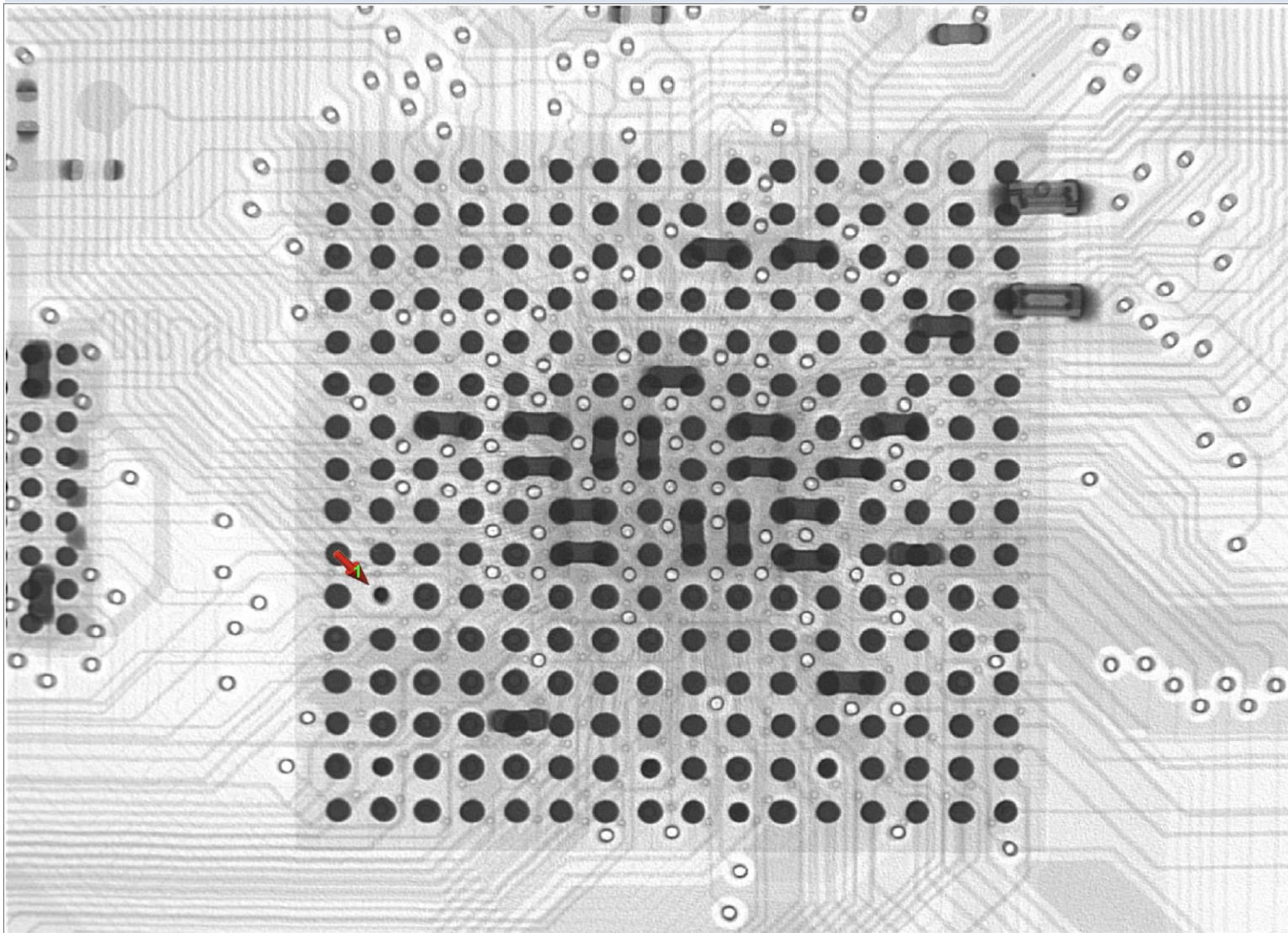
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Filter+Stretch: MediumHighMag  
Averaging: 64 frames



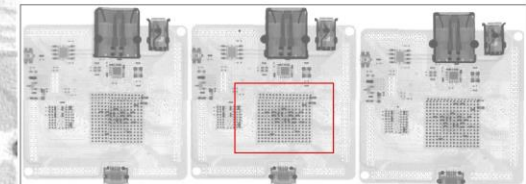
5.0mm

Tube voltage: 100 kV  
Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames





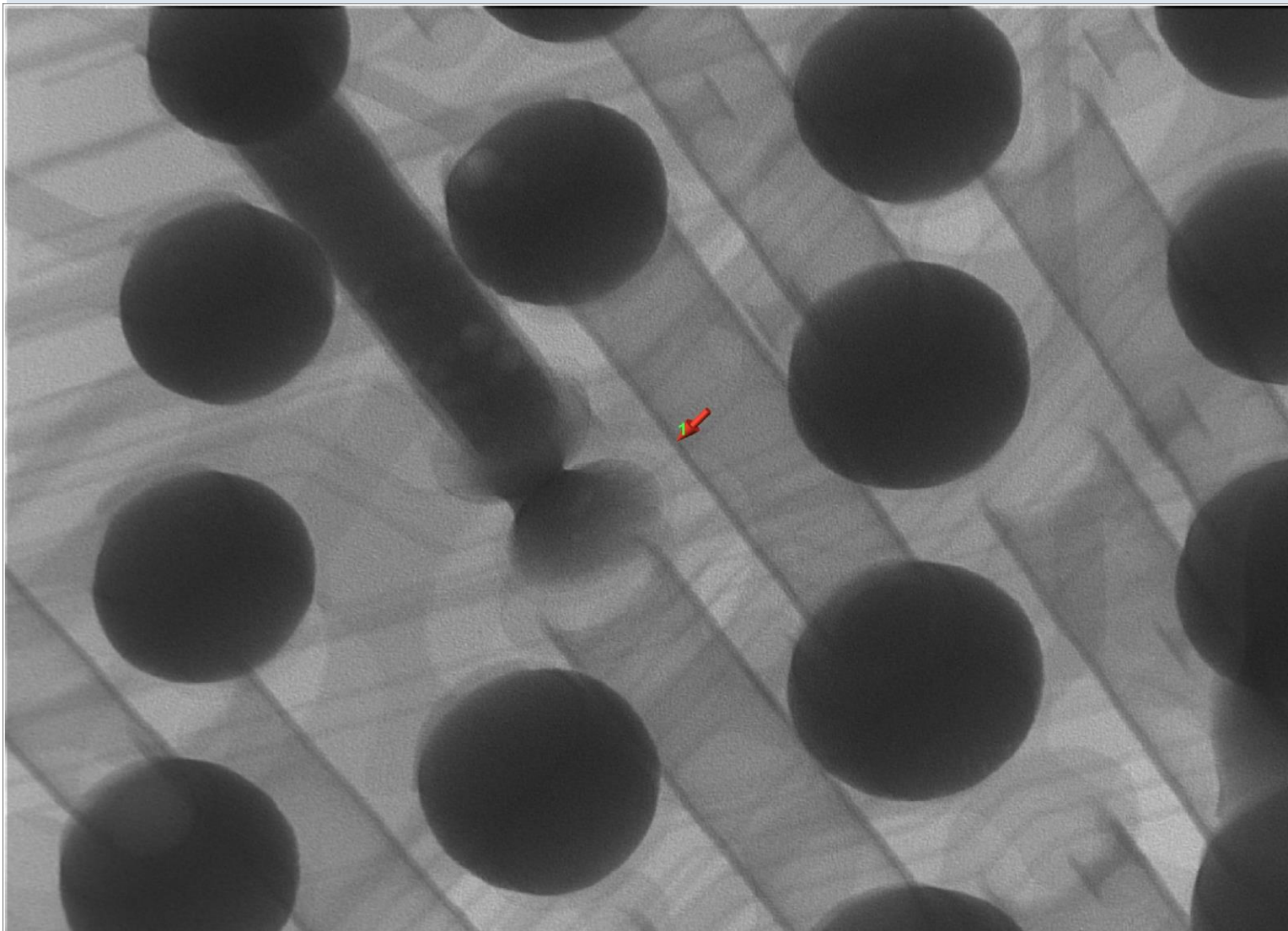
1) Insufficient ball solder joint



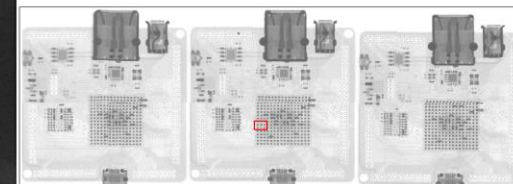
5.0mm

Tube voltage: 100 kV  
Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames





1] Insufficient ball solder due to solder flowing into via



0.50mm

Tube voltage: 100 kV  
Tube power: 2.2 W  
Filter+Stretch: MediumHighMag  
Averaging: 64 frames

# 3D X-Ray Solutions



The Nordson DAGE XD7600NT Ruby X-ray is the ultimate inspection system. The inspection system uses the latest technology image intensifier and proven feature recognition capability to provide the ultimate choice for the highest quality in X-ray imaging on the market today. With the revolutionary X-Plane™ option, the superior image quality can be extended into separating individual layers. X-Plane™ uses a proprietary, patent applied for tomosynthesis or CT technique to create 2-D X-ray slices in any plane of a printed circuit board assembly without the need to cut or destroy the board.

## Specifications:

- Proveable < 0.5  $\mu\text{m}$  Feature Recognition
- 160 kV Tube with Up to 10 W Tube Power
- 1,800 X geometric magnification
- 23,400 X total magnification including digital zoom
- Maximum board size: 29" x 22.8" (736 x 580 mm)
- Maximum inspection area: 20" x 17.5" (508 x 444 mm)
- 70° oblique angle views for 360° around a point of interest
- AciS - Active X-ray Image Stabilisation - anti-vibration control
- ciDAT3 digital image intensifier detector with 1600 x 1200 pixels (2.0 Mpixels):
- X-Plane™

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