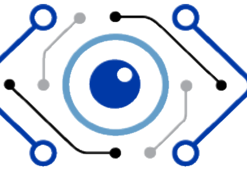
NV-Core Inspection System

Unique Inspection System across Cohu Handlers



NV-Core enables advanced inspection capabilities across Cohu's handler portfolio. NV-Core latest advance inspection technologies include innovative solutions such as 3D Flex fo 3-dimensional topographic inspection, sidewall micro-crack detection, and infrared inspection for sub-surface defect detection. In addition to device quality inspection, by mastering the "all-in-one" solution, Cohu can offer unique capabilities for handler's diagnostics and alignments, that enable the highest productivity performance.

Key Features

- Top silicon shiny dies micro-crack detection down to 2 µm
- Micro-scale sidewall defect inspection down to 5 µm
- Inner cracks detection on silicon devices
- Wafer vision mapping and skeleton check
- Color camera inspection

Capabilities

- 2D and 3D lead/pad/ball/pin inspections
- Marking (OCV/OCR), presence and orientation inspections
- LED lens dome inspection (shape, scratches, bubbles...)
- Top/bottom/side crack detection
- Traceability (bar and matrix codes)
- Advanced surface inspection and post sealing quality inspection

Automotive

Mobility

IoT/IoV & Optoelectronics

Computing & Network

Industrial & Medical

Consumer

- **Micro-crack Detection**
  - **Visible HR sidewall solution**
  - **Infrared sidewall, backside & intape solution**
- **3D Flex® for True Ball/Bump co-planarity**
- **Dedicated micro-crack Algorithm**
- **ViewMap and Wafer Quality Map**

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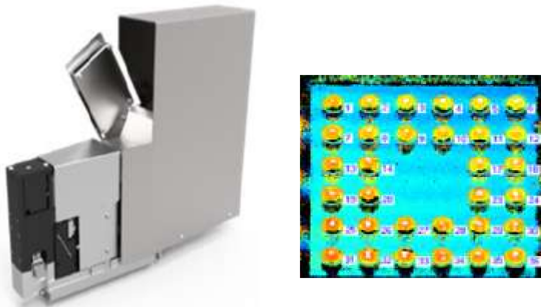
3D Flex® Vision System

3-dimensional measurement equipment into the volume production environment for wafer level chip scale package (WLCSP) Inspection.

Based on Moiré interferometry, the 3D Flex Vision system combines a sequence of touchless 2-dimensional images with projected light patterns to generate high accuracy 3-dimensional measurement of inspected devices. A dedicated algorithm generates a topographic view of devices, accurately measuring ball or bump height, coplanarity, quality and body warpage, enabling high-speed inspection of WLCSPs with micrometer resolution.

- Ball/bump height and coplanarity
- Ball/bump 3D
- Horizontal mount under 1 turret position



ViewMap and Wafer Quality Map

Wafer input mapping supervision

- Wafer mapping and quality map merging
- Code reader
- Skeleton check

*Low over rejection

Aquilae HR Sidewall

Aquilae solution is designed to identify micro-cracks on an integrated circuit that often go undetected using only electrical test, ultimately minimizing end-product failures.

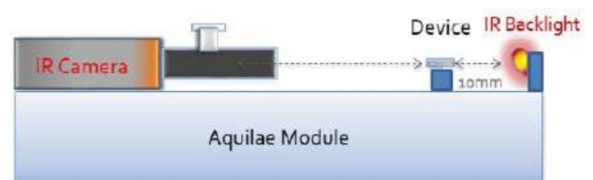
The Aquilae inspection module combines a high-resolution camera with dedicated image processing algorithms to offer a breakthrough solution for early detection of micro-cracks WLCSPs and bumped dies. Providing this level of inspection enables semiconductor manufacturers to ensure the highest level of product quality, which is imperative in high-end applications.

- Down to 5 µm defect size detection*
- Dedicated micro-crack algorithm
- 1 HR image per component side

Aquilae Infrared

Infrared imaging has the ability to see through silicon, inspecting the structure underneath the surface that is not otherwise observable with traditional vision inspection systems. Cohu's unique innovation offers a breakthrough by integrating infrared imaging for enhanced micro-crack and sub-surface detection on wafer level chip scale packages (WLCSPs) onto a high-speed automation platform that delivers an economical solution for high quality inspection.

- Down to 1 µm crack detectability with infrared inspection
- Inner micro-crack detection
- Ability to see through silicon, inspecting the structure underneath the surface



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Cohu

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Specifications

3D Flex® Vision System

	Packages [mm]	FOV [mm]	Resolution [µm/px]	3S Repeatability [µm]	Min. Detectable Chipout, Void [µm/px]	Min. Detectable Scatch, Crack [µm/px]
3D	2 x 2 to 6.5 x 6.5	7 x 7	0.8	10	NA	NA
2D	2 x 2 to 6.5 x 6.5	7 x 7	14.5	8	45 x 45	45 x 90
UPH	Up to 30K					

Aquilae HR Sidewall

FOV	Standard Configuration			Option
Camera Resolution	5 MP			12 MP
Max Device Length size*	3 mm	8 mm	12 mm	12 mm
Min Detectable Crack size*	5 µm*	10 µm*	15 µm*	10 µm*
NY32W UPH w/o Dynamic Focus	16K	16K	16K	14K
NY20 UPH w/o Dynamic Focus	18K	18K	18K	15K

Aquilae Infrared

FOV	Standard Configuration
Camera Resolution	VGA
Max Device Length size*	6 mm
Min Detectable Crack size*	~1 µm*
NY32W UPH w/o Dynamic Focus	18K
NY20 UPH w/o Dynamic Focus	20K

*Note: Feasiblity required to confirm min. detectable crack size
For detailed performance specifications, please contact Cohu.

REV20230725

www.cohu.com/nvcore
www.cohu.com/test-handlers

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