

Dye & Pry Test Report

Report No: VN20220720004-1
Sample Name: PCBA
Applicant Department: JBD ME
Test Item: Dye & Pry
Test Environment: 22.0°C/51.9%RH
Test Completion Date: Jul. 23, 2022

Approved by	Checked by	Prepared by
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Notes:

- 1.This report is only applicable to the submitted samples.
- 2.Partial copy this report is prohibitive if not approved by testing center.

1.Problem Description:

One samples of PCBA were received from JBD ME. In order to verify if there was crack or open in the solder joints, the dye & pry test was performed then. The specimen to be tested was specified as below.

2.Sample Information:

Sample Name	Model	S/N	Location
PCBA	K18X001.00	YWB1KGL	U1,U1313

3.Test Equipment:

No.	Equipment	Model
1	Microscope	Brand: Keyence Model VHX950F
2	Vacuum system	Brand: Buehler Model:20-1382-250
3	Oven	Brand: Dr.Storage Model: AH-72
4	Universal Testing Machine	Brand: KQL Model: KD111- 5

4.Test Procedure:

The preparing procedure was conformed to IPC-TM-650 2.4.53.

5. Test Location:

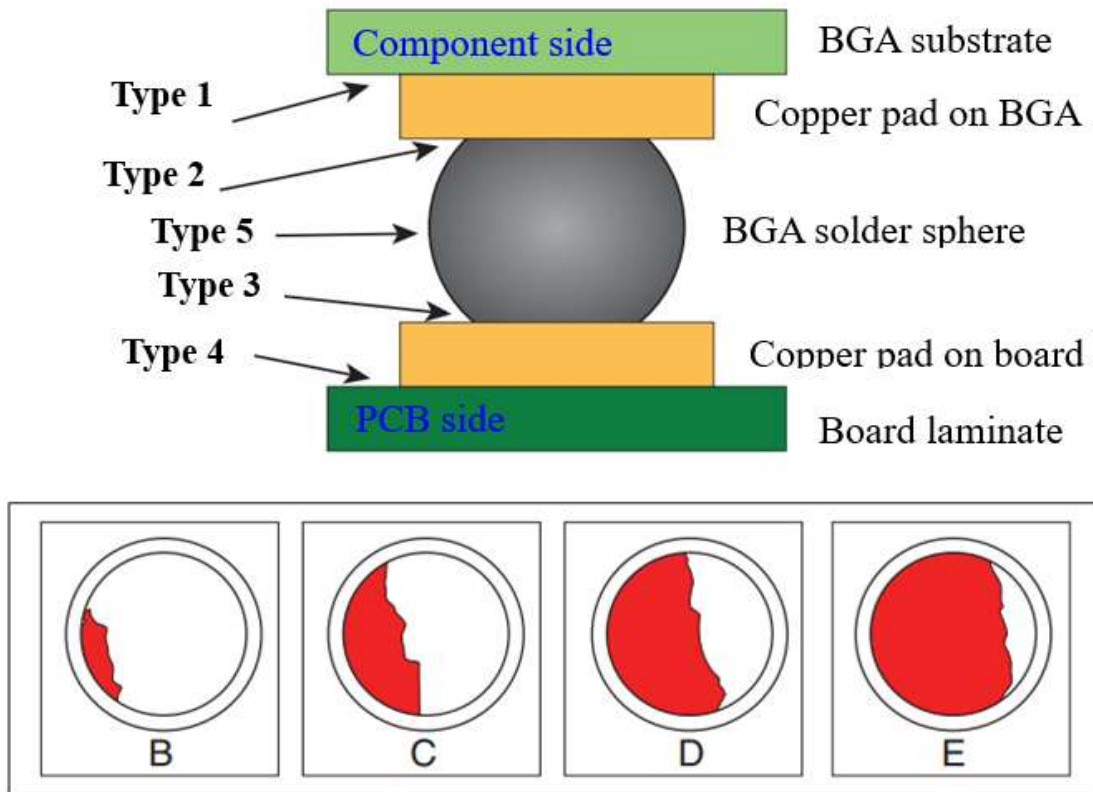


6. Conclusion:

Location	Conclusion	Remark
U1	No cracks observed	Page 5~6

7. Dye and Pry Failure Mode Classification:

Types of Solder Ball Breakage: The diagram below is taken from the IPC specification.



Fracture Type:

- Type 1: Crack between Cu pad on BGA and BGA substrate
- Type 2: Crack between BGA solder sphere and Cu pad on BGA
- Type 3: Crack between BGA solder sphere and Cu pad on on board
- Type 4: Crack between Cu pad on board and board laminate
- Type 5: Crack between BGA solder sphere

Dye Stain Type:

- Type A: No cracks observed 0%
- Type B: Crack size percentage between 1-25%
- Type C: Crack size percentage between 26-50%
- Type D: Crack size percentage between 51-75%
- Type E: Crack size percentage between 76-100%

8. Dye & Pry Microstructure Inspection:

Location: U1

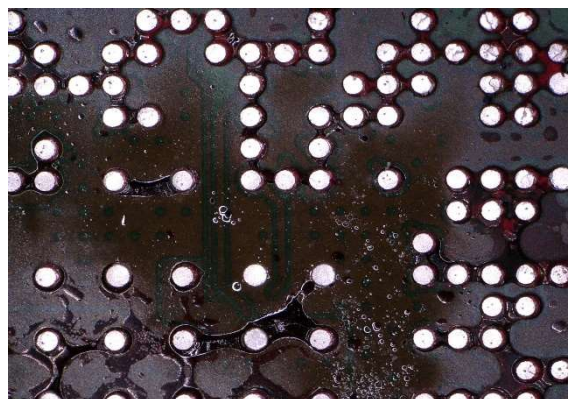
Analysis: No cracks observed . The representative photos are shown as below.

Site1 and Site2

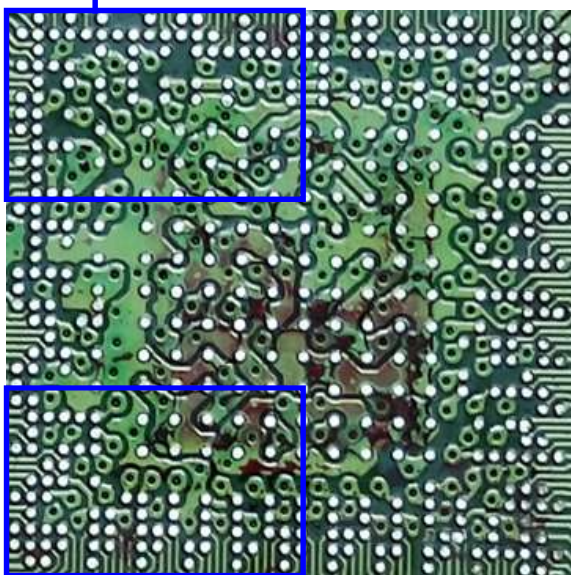
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Site2



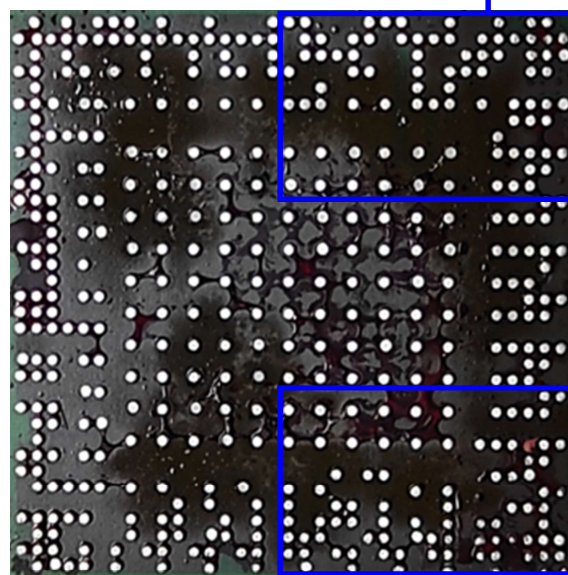
100X
Site2



PCB



IC



100X
Site1



100X
Site1

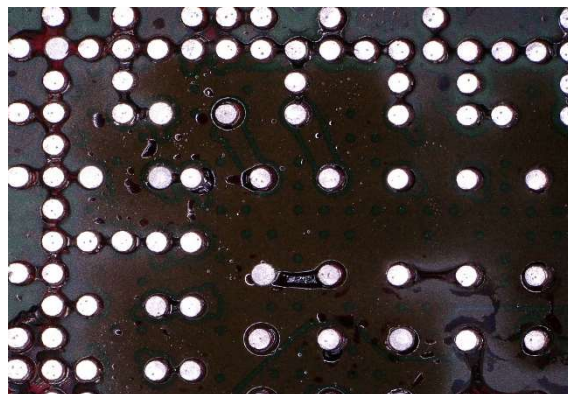


Site3 and Site4

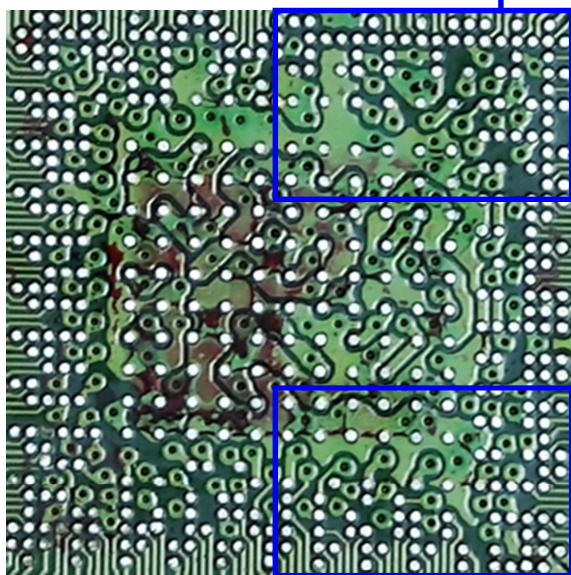
100X
Site3



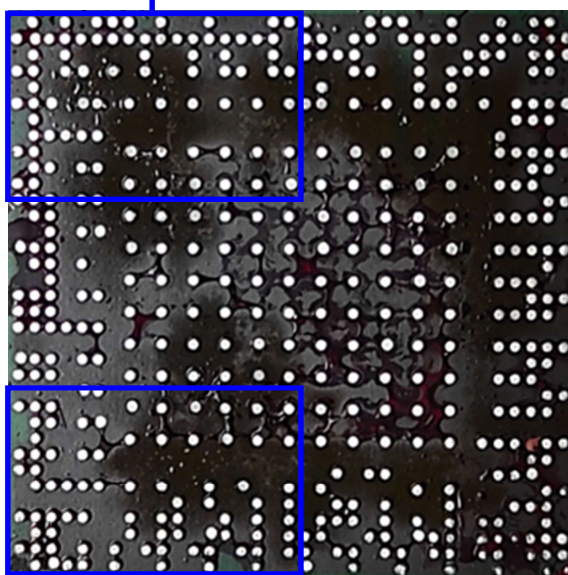
100X
Site3



PCB



IC



100X
Site4

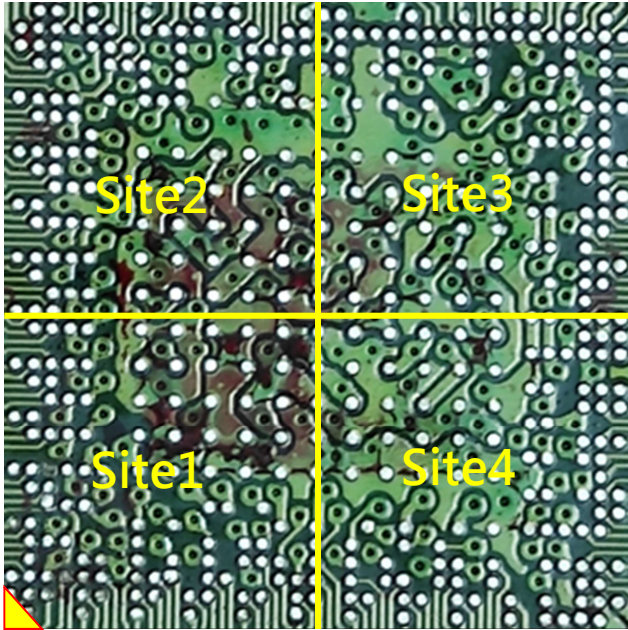


100X
Site4



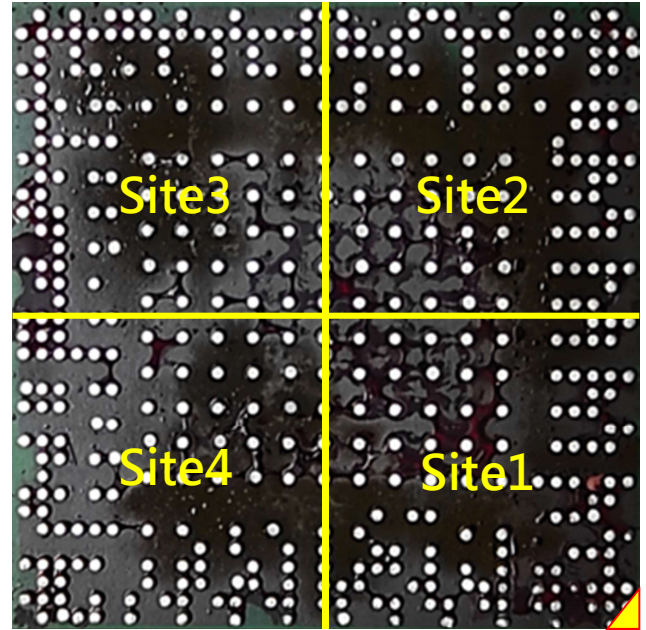
9. Description of The Photo Sites:

U1



Mark

PCB Site

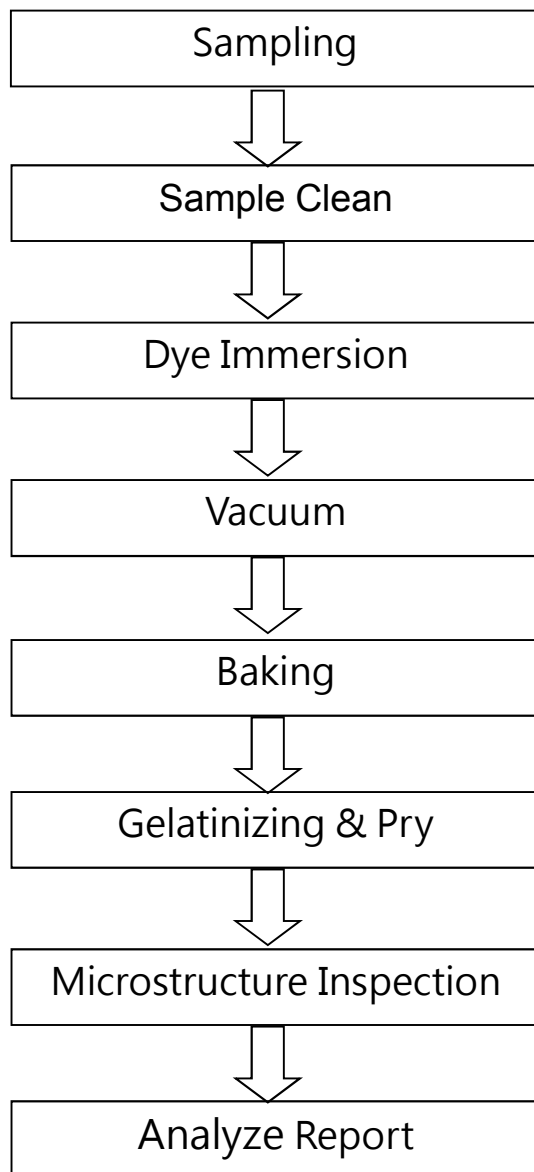


Mark

IC Site

10. Appendix:

10.1 Dye and Pry Flow Chart :



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