No. FQI 05-0245 A

PLX TECHNOLOGY INC

# RELIABILITY REPORT

DEVICE PART NUMBER: PCI9656-BA66BI G (Pb-Free)

PACKAGE TYPE: 272 PBGA

06/June/2005

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## 1.0 PURPOSE

To perform pre-conditioning MSL-3 ( 30°C/60% ),CR@260°CX3
New FAI for SMI-ED Substrate (Part# :Q40AT5012460) .To evaluate the PBGA 31x 31 365L package for PLX TECH customer.

## 2.0 OBSERVATIONS

### 2.1 EXTERNAL VISUAL MECHANICAL INSPECTION

2.1.1 No abnormalities noted at external package at x40 magnification for all of the units i.e mold compound surface at initial and after pre-conditioning MSL-3 @CR 260°C .

### 2.2 ACOUSTIC TOPOGRAPHIC ANALYSIS FOR DELAMINATION/VOIDS

2.2.1 No delamination noted at Die and Substrate initial 0/45 units.

2.2.2 After the post pre-conditioning test MSL- 3,CR @ 260°C no delamination noted at DIE and substrate for all the units. ( 0/45 units )

### 2.3 ELECTRICAL TEST

Electrical testing is not required .

## 3.0 CONCLUSION

The evaluation on PBGA 31x31 365L package for PLX TECH customer using new FAI SMI-ED Substrate ( Part # :Q40AT5012460. ) passed to meet the preconditioning MSL- 3,CR@ 260°C as per Jedec standard J-STD-020D.

## 4.0 PRODUCT SUMMARY

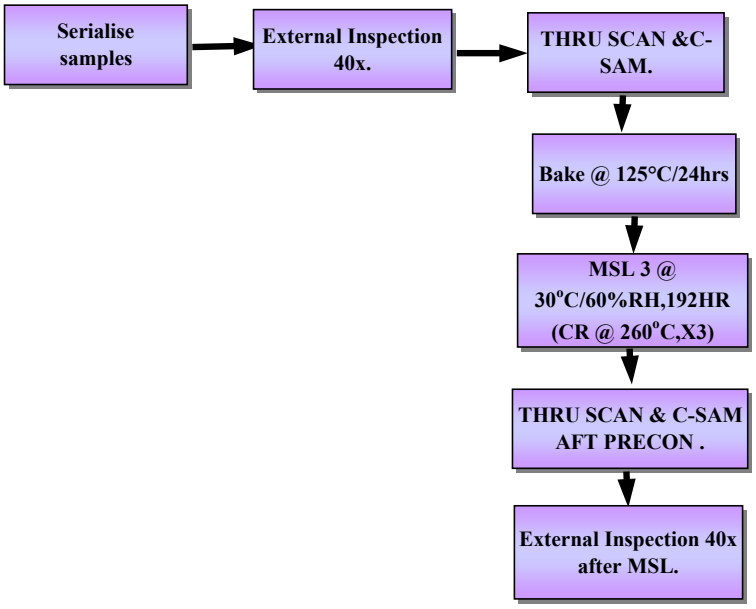
### 4.1 SUPPLIER INFORMATIONS

**SUB - CON D**

### 4.2 BILL OF MATERIALS

| | |
|---|---|
| **PT Number** | N-101 |
| **Package Type** | PBGA 31X31 |
| **Device Type** | PCI6254 G, 9656-BA66BI G |
| **Lead Count** | 365L |
| **Wafer Lot** | N/A |
| **Pad Size** | N/A |
| **Die Size** | 6.858 x 6.883 MM |
| **Epoxy** | ABLEBOND 2000B |
| **Wire Type** | 1.0 TANAKA AU |
| **Lead Frame Type** | SMI-ED : Part #- Q40AT5012460 |
| **Mold compound Type** | KYOCERA KE-G1250 |

## 5.0 RELIABILITY TEST FLOW




## 6.0 RELIABILITY TEST RESULTS

### 6.1 TEST RESULTS

| TESTS | CONDITION | RESULTS | | | REMARKS |
|---|---|---|---|---|---|
| | | VI@ X40 MAG | C-SAM/ S.SIZE | ELEC TEST | |
| MSL-3 | (30°C/60%RH ,192HRS) CR @260°C X3 | 0/45 | 0/45 | N/A | No delamination noted initial and after Post preconditioning. |

VI Criteria : External visual on package at x40

C-SAM Criteria :

a) No delamination on the active side of the die.

b) No delamination change >10% on any wirebonding surface of the laminate.

c) No delamination change >10% along the polymer potting or molding compound/ laminate interface for cavity and over-molded packages.

d) No delamination change >10% along the soldermask/ laminate resin interface.

e) No delamination change >10% within the laminate.

f) No delamination/ cracking change >10% through the die attach region.

g) No delamination/ cracking between underfill resin and chip or underfill resin and substrate/ soldermask.

h) No surface-breaking feature delaminated over its entire length. A surface-breaking feature includes leadfingers, laminate, laminate metallization, PTH, eatslugs, etc.

## 7.0 C-SAM ANALYSIS

### TOP SCAN

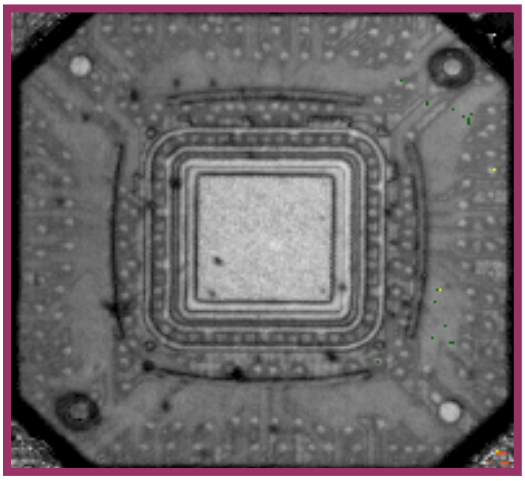


FIGURE 1a: TOP SCAN IMAGE SHOWS NO DELAMINATION AT INITIAL STAGE

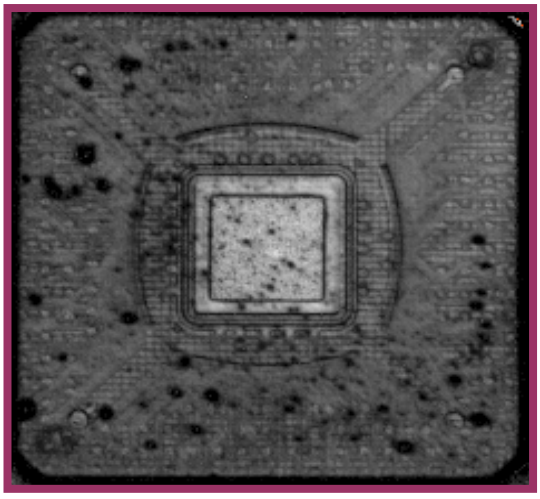


FIGURE 1b: NO DELAMINATION NOTED ON TOP SCAN AFTER MSL 3 CR@260°Cx3 (0/45 UNITS )

### THRU SCAN

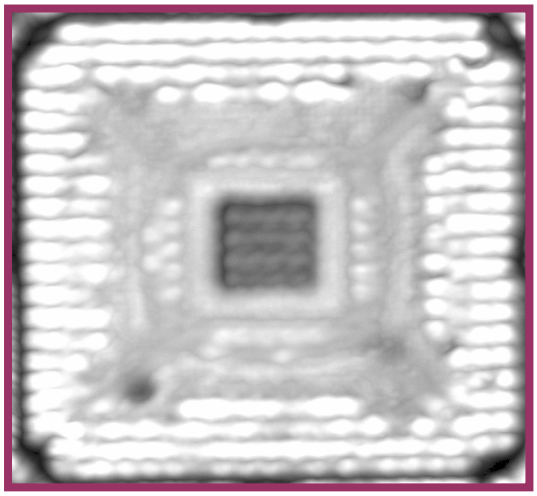


FIGURE 1a: THRU SCAN IMAGE SHOWS NO DELAMINATION AT INITIAL STAGE

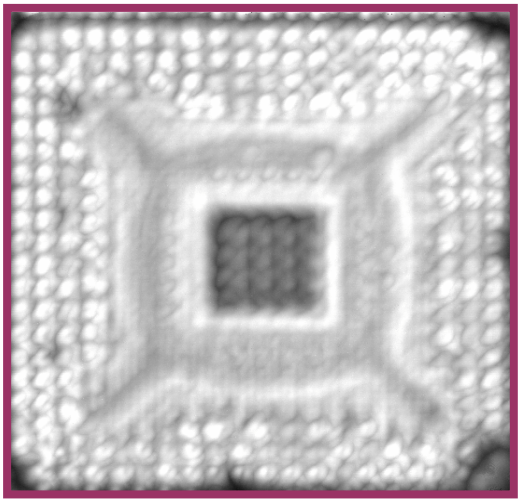
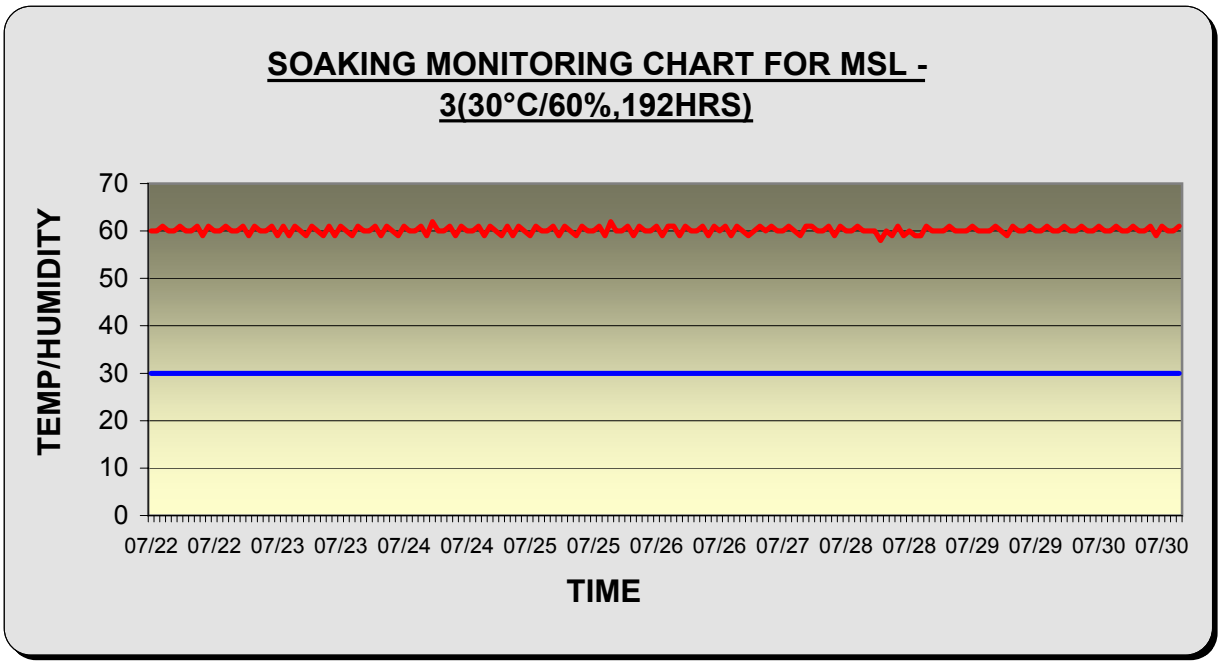


FIGURE 1b: NO DELAMINATION NOTED ON THRU SCAN AFTER MSL 3 CR@260°Cx3 (0/45 UNITS )

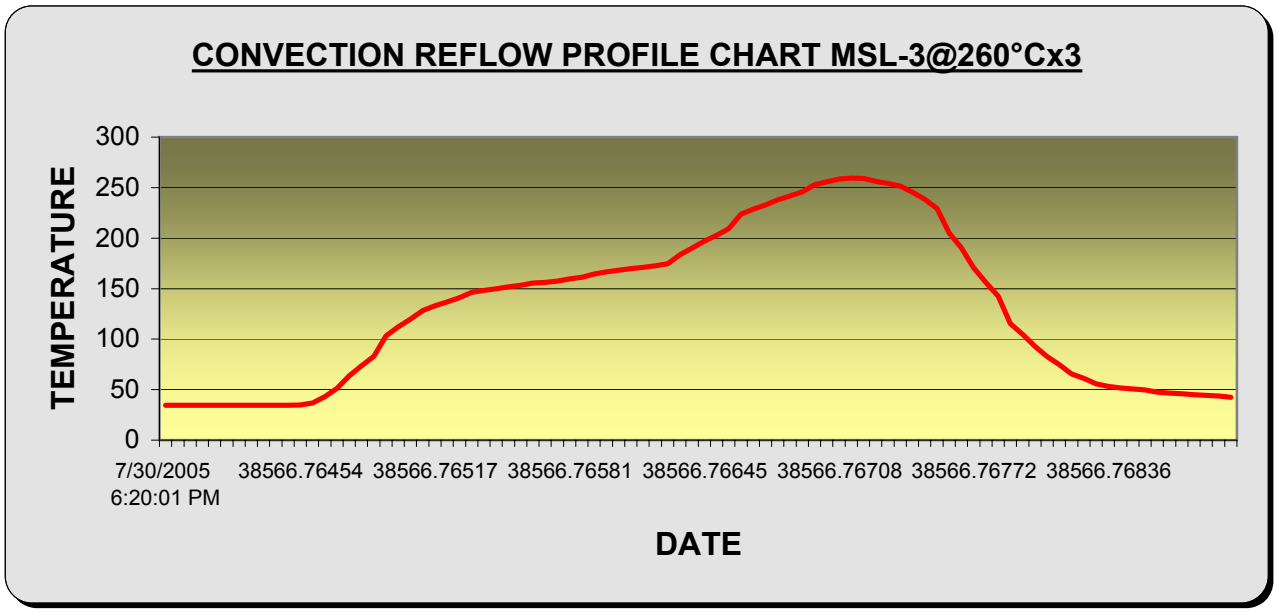
## 8.0 CHAMBER MONITORING CHARTS

### 8.1 PRECOND LEVEL 3 SOAKING MONITORING CHART @ 30°C/60%RH,192HRS

No significant abnormalities noted during moisture soaking 30/60 except few interuption due loading/unloading.



## 9.0 CONVECTION REFLOW PROFILE CHART MSL-3 @260°C.




| | | | |
|---|---|---|---|
| 1) | AVERAGE RAMP-UP RATE (217°C TO PEAK) | : | 0.763 °C/SEC |
| 2) | PREHEAT TEMPERATURE 175 (+/-25)°C | : | 84.7 SEC |
| 3) | TEMPERATURE MAINTAINED ABOVE 217°C | : | 90.2 SEC |
| 4) | TIME WITHIN 5°C OF ACTUAL PEAK TEMPERATURE | : | 19.3 SEC |
| 5) | PEAK TEMPERATURE RANGE | : | 259.5°C |
| 6) | RAMP-DOWN RATE | : | 1.18°C/SEC |
| 7) | TIME 25°C TO PEAK TEMPERATURE | : | 3.07 MINUTE |