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| FA Request Number/PQA Number:  1400052/140069 [FAR#/REF#] | Requestor:  Bittner, Daniela [Requestor] | Requester’s Contact:  [Daniela.bittner@atmel.com](mailto:Daniela.bittner@atmel.com) [Requestor emai] |
| Customer:  Marquardt [Customer] | Product Line:  AVR [leave this blank] | Test / Product Engineer:  Not Applicable [leave this blank] |
| Fab Part Number:  To be determined | Part Number:  ATTINY4-TS8R [Product] | Lot Number:  C83EY [lot\_nos of samples] |
| Date Code:  To be determined [date\_code] | Package Type:  6-Lead SOT [leave this blank] | Quantity Submitted:  1 [sum of samples QTY] |
| Failure rate:  Not provided [Failure\_rate] | Assembly:  To be determined [assembly site] | Where failure occurred:  Not provided [leave this blank] |
| Date Requested:  13 December 2013 [Request\_date] | Date Next Update:  To be determined[leave this blank] | Date Completed:  [leave this blank] |

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| Reported Failure: |
| No output signal on pin 4. [FA Details Description] |
| **Device Background:** |
| ACOE-FA received one unit of ATTINY4-TS8R from Marquardt for failure analysis. [leave this blank] |
| **Analysis Summary:** |
| [Processes from FA Process Flow]   |  |  |  |  | | --- | --- | --- | --- | |  | Bake 125 °C/ 2 Hrs. |  | Decapsulation (Laser and Chemical decapsulation) | |  | External Visual Inspection (EVI) |  | Internal Visual Inspection (low and high magnification) | |  | X-ray Inspection |  | SEM inspection | |  | SAM Analysis |  | Liquid Crystal Analysis (LCA) | |  | ATE Testing |  | Light Emission Microscope (LEM) Analysis | |  | Curve Trace Analysis |  | Delayering/Deprocessing | |  | Functional Bench Testing |  | Other: | |
| **Analysis Details** |
| [Processes from FA Process Flow and Comment per Process]  **EVI (External Visual Inspection):**  SN 1: EVI results did not show package-related anomaly. *Refer to EVI photos.*  **X-ray Inspection:**  SN 1: X-ray inspection results did not reveal wire-related anomaly.  *Refer to X-ray Inspection images.*  **SAM (Scanning Acoustic Microscope) Analysis:**  SN 1: No delamination was observed on the package. *Refer to SAM Analysis image.*  **Curve Trace Analysis:**  SN 1: No I/V curve trace anomaly was observed on Pin 4 (PB2) and all other pins with respect to Gnd. *Refer to Curve Trace Analysis screenshot.*  **STK600 Functional Bench Testing:**  SN 1: Device ID, fuses and lock bits were read without any error. Flash was also read and reprogrammed successfully using TPI (Tiny Programming Interface). *Refer to STK600 Functional Bench Testing screenshots.* |
| **Analysis Results/Conclusion:** |
| SN 1: The unit will be endorsed for ATE testing. |

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| **Analyst 1:**  Jun Faith Rodrigo [Analyst/User who will generate the Report] | **Title:**  FA Engineer [fixed value] |
| **Phone number:**  +63 575 3900 [phone] | **No. of hours:**  10 [leave this blank] |
| **Reviewed by:**  Richard Munoz [FA Overall Incharge] | **Title:**  FA Team Leader [fixed value] |
| **Phone number:**  +63 575 3900 local 4325 [phone] | **No. of hours:**  N/A [leave this blank] |
| **Approved by:**  Nerwin Beronio [leave this blank] | **Title:**  FA Manager [fixed value] |
| **Phone number:**  +63 575 3900 local 4191 [phone] | No. of hours:  N/A [leave this blank] |

[Processes from FA Process Flow and the attached photos per process]

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| **EVI photos:** | |
| SN 1 Top | SN 1 Bottom |
| SN 1: Optical photos showing no package-related anomaly. | |
| **X-ray Inspection images:** | |
| SN 1 Top | SN 1 Side |
| SN 1: X-ray images showing no wire-related anomaly. | |

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| **SAM Analysis image:** |
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| SN 1: Back multiple interface scan showing no delamination on the package. |

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| **Curve Trace Analysis screenshot:** |
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| SN1: Graphics plot showing no I/V curve trace anomaly on Pin 4 (PB2) with respect to Gnd. |

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| **STK600 Functional Bench Testing screenshots:** | |
| device id  **TPI**  SN 1 Device ID | fuses  SN 1 Fuses |
| SN1 Lock bits | SN 1 Flash Programming |
| SN 1: Screenshots of the device ID, fuses, lock bits and flash showing no  error in reading. | |