Akrometrix Test Services Sample Information Form

# Customer Information

|  |  |
| --- | --- |
| **Company Name:** |  |
| **Shipping Address:** |  |
| **Contact Name:** |  |
| **Title:** |  |
| **Department:** |  |
| **Phone #:** |  |
| **Email Address:** |  |

|  |  |
| --- | --- |
| **Data Delivery Contact Name:** |  |
| **Title:** |  |
| **Department:** |  |
| **Phone #:** |  |
| **Email Address:** |  |

|  |  |
| --- | --- |
| **Purchasing Contact Name:** |  |
| **Title:** |  |
| **Department:** |  |
| **Phone #:** |  |
| **Email Address:** |  |
| **PO #:** |  |

|  |  |
| --- | --- |
| **Project Name:** |  |
| **Results Requested By Date:** |  |

**Samples Return:** Because additional testing is sometimes desired, Akrometrix will wait to return samples until receiving customer confirmation, unless "Immediate Return" is selected.

|  |  |  |
| --- | --- | --- |
| Return | Immediate Return | Destroy |
|  |  |  |

|  |  |
| --- | --- |
| **Shipper:** | UPS, FedEx, etc. |
| **Account #:** |  |
| **Preferred Delivery Speed:** | Ground, 3 day air, overnight, etc. |

**Which Displacement Measurement Technique is being requested?** (Check all that apply)

|  |  |  |
| --- | --- | --- |
| TherMoiré | DIC | Fringe Projection |
|  |  |  |

For each requested technique, please fill out the corresponding section below with sample information, test plan details, and results specifications.

# Interface Analysis

Interface Analysis plots can be applied to the measurement data of two mating surfaces taken with Thermoiré or Fringe Projection systems. Mating surfaces are automatically oriented and plotted in the same window to perform gap analysis under real world conditions. When multiple samples are measured from each attach surface, statistical analysis can be done on the quantity of measured surfaces. Results are organized by like temperatures.

**If measuring mating surfaces, would quantifying the resulting gap between them be useful?** Akrometrix Interface Analysis software can analyze two mating surfaces to perform statistical gap analysis.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**Will multiple samples of bottom and top surfaces be measured?** If yes, choose Data types to be presented below.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**What kind of data should be presented?** Akrometrix recommends Datum Plane Fixed with Maximum surfaces to give a worst case gap at any particular location on the surface. Additionally, Closest Point Touching with Average surfaces shows typical part shape and brings the two surfaces together until first contact.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Offset Method -> | Closest Point Touching | Closest Point Offset | Center Gap Constrained | Edge Gap Constrained | Datum Plane Fixed | Datum Plane Offset |
| Average Surfaces |  |  |  |  |  |  |
| Minimum Surfaces |  |  |  |  |  |  |
| Maximum Surfaces |  |  |  |  |  |  |
| 3 Sigma Surfaces |  |  |  |  |  |  |
| Offset Distance |  |  |  |  |  |  |

**What plots types should be presented for each selected surface above?**

|  |  |
| --- | --- |
|  | Plots |
| 3D |  |
| Diagonals |  |
| Horizontal Centerline |  |
| Horizontal Edges |  |
| Vertical Centerline |  |
| Vertical Edges |  |

# TherMoiré Sample Information

TherMoiré measurements are limited to a maximum field of view of 600 x 600 mm, and a minimum field of view of 5 x 5 mm. Depending on the surface of interest optical qualities, this testing can be considered non-destructive.

|  |  |
| --- | --- |
| **Sample(s) Description:** | Please be as detailed as possible and attach pictures for clarification where necessary. |
|  |
| **Sample Dimensions:** |  |
| **Sample Quantities:** |  |
| **Surface(s) to be measured:** | Examples: Top or Bottom, mold compound or solder ball, etc. |
| **Name and Location of Local Areas of Interest:** | Attach pictures if possible. |

**Do we need to adhere to ESD sensitivity standards while testing?** If Yes, samples must be matte and light enough in color to obtain good data without optical coating for this to be possible. Additional charges apply.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**May we apply an optical coating to maximize diffuse reflection of visible light from sample?** If No, samples must be matte and light enough in color to obtain good data without optical coating for measurement to be possible.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**Does the desired measurement surface of any of the samples have solder balls?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, can we remove the solder balls?** Samples cannot be measured on the solder ball surface without first removing the solder balls. Additional charges apply for solder ball removal at Akrometrix.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**Do any of the samples require a pre-bake?** If Yes, turnaround time will increase.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, please specify the pre-bake temperature and time:**

|  |
| --- |
| Example: 125 C for 12 hours |

**If No, will parts be shipped in moisture controlled packaging, not to be opened until just before testing?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**What is the maximum time between opening the moisture controlled packaging and testing the sample(s)?**

|  |
| --- |
| Example: 30 minutes at 80% RH |

**If any samples to be tested are PCB’s, how should they be supported in the test chamber?**

|  |
| --- |
| Edge support or area support are typical. Please also specify what edges of the sample should be supported. Pictures are helpful here. |

**Please specify the temperature profile, if needed:**

|  |
| --- |
| Examples: time/temperature pairs, temperature points and rates, or attach a production reflow oven output (either data or graph). Depending on sample thermal mass Akrometrix can match most production reflow processes up to 2 C/sec. |

**Please specify the temperatures at which measurements will be taken:** Standard pricing includes 6 temperature points but more can be added at additional cost.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|  |  |  |  |  |  |  |  |  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|  |  |  |  |  |  |  |  |  |

# TherMoiré Results Specifications

**Z (Out-of-plane) Displacement Units?**

|  |  |
| --- | --- |
| Microns | Mils |
|  |  |

**What deliverables are being requested?** Standard deliverables are 3D Plots and a Full Field Signed Warpage Gauge Report. Additional deliverables can be provided at additional cost. If Data is selected, it will be provided for any Plot type that is requested. Any plot type can be swapped in for the standard 3D at standard pricing.

|  |  |  |
| --- | --- | --- |
|  | Plots | Data |
| 3D |  |  |
| Diagonals |  |
| Horizontal Centerline |  |
| Horizontal Edges |  |
| Vertical Centerline |  |
| Vertical Edges |  |
| Warpage Vs. Temperature Plot |  |

**What scale should be used?**

|  |
| --- |
| Examples: same for all parts, same for each lot, -100 to 100 µm, etc. |

**How should the report be organized?** Typically this is per part, showing each graph type in order of the measurements location along the temperature profile.

|  |
| --- |
| Examples: 3D and Diagonals side by side on a page, each part by temperature, etc. |

**Any other report details?**

|  |
| --- |
|  |

# DIC Sample Information

DIC measurements are limited to a maximum field of view of 75 x 75 mm, but sample size can be up to 400 x 400 mm with the area of interest located in the sample center. Samples have to be coated with a black and white speckle pattern in order for data to be obtained. As such, this testing should be considered destructive.

|  |  |
| --- | --- |
| **Sample(s) Description:** | Please be as detailed as possible and attach pictures for clarification where necessary. |
|  |
| **Sample Dimensions:** |  |
| **Sample Quantities:** |  |
| **Surface(s) to be measured:** | Examples: Top or Bottom, mold compound or solder ball, etc. |
| **Name and Location of Local Areas of Interest:** | Attach pictures if possible. |

**Does the desired measurement surface of any of the samples have solder balls?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, can we remove the solder balls?** Samples cannot be measured on the solder ball surface without first removing the solder balls. Additional charges apply for solder ball removal at Akrometrix.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**Do any of the samples require a pre-bake?** If Yes, turnaround time will increase.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, please specify the pre-bake temperature and time:**

|  |
| --- |
| Example: 125 C for 12 hours |

**If No, will parts be shipped in moisture controlled packaging, not to be opened until just before testing?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**What is the maximum time between opening the moisture controlled packaging and testing the sample(s)?**

|  |
| --- |
| Example: 30 minutes at 80% RH |

**If any samples to be tested are PCB’s, how should they be supported in the test chamber?**

|  |
| --- |
| Edge support or area support are typical. Please also specify what edges of the sample should be supported. Pictures are helpful here. |

**Please specify the temperature profile:**

|  |
| --- |
| Examples: time/temperature pairs, temperature points and rates, or attach a production reflow oven output (either data or graph). Depending on sample thermal mass Akrometrix can match most production reflow processes up to 2 C/sec. |

**Please specify the temperatures at which measurements will be taken:** Standard pricing includes 6 temperature points but more can be added at additional cost. Temperatures must be at room temperature or above.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|  |  |  |  |  |  |  |  |  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|  |  |  |  |  |  |  |  |  |

# DIC Results Specifications

**Strain Units?** Most commonly this is Microstrain for comparison and calculation of CTE.

|  |  |  |
| --- | --- | --- |
| Microstrain | Unity | Percent |
|  |  |  |

**What deliverables are being requested?** Standard deliverables are X and Y Strain Plots and an average X and Y CTE calculation. Additional deliverables can be provided at additional cost. If Data is selected, it will be provided for all Plot types available. Any 2 plot types can be swapped in for the standard X and Y Strain at standard pricing.

|  |  |  |
| --- | --- | --- |
|  | Plots | Data |
| Z |  |  |
| X Displacement |  |
| Y Displacement |  |
| X Strain |  |
| Y Strain |  |
| Shear Strain |  |
| Principal Strain 1 |  |
| Principal Strain 2 |  |
| Average X and Y CTE calculation |  |

**What scale should be used?**

|  |
| --- |
| Examples: same for all parts, same for each lot, -100 to 100 µm, etc. |

**How should the report be organized?** Typically this is per part, showing each graph type in order of the measurements location along the temperature profile.

|  |
| --- |
| Examples: 3D and Diagonals side by side on a page, each part by temperature, etc. |

**Any other report details?**

|  |
| --- |
|  |

# Fringe Projection Sample Information

Digital Fringe Projection (DFP) measurements are limited to a maximum field of view of 64 x 48 mm, but sample size can be up to 400 x 400 mm with the area of interest located anywhere in the 400x400mm area. Samples have to be coated with high temperature white paint in order for DFP data to be obtained. As such, this testing should be considered destructive.

|  |  |
| --- | --- |
| **Sample(s) Description:** | Please be as detailed as possible and attach pictures for clarification where necessary. |
|  |
| **Sample Dimensions:** |  |
| **Sample Quantities:** |  |
| **Surface(s) to be measured:** | Examples: Top or Bottom, mold compound or solder ball, etc. |
| **Name and Location of Local Areas of Interest:** | Attach pictures if possible. |

**Does the desired measurement surface of any of the samples have solder balls?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, can we remove the solder balls?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**Do any of the samples require a pre-bake?** If Yes, turnaround time will increase.

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**If Yes, please specify the pre-bake temperature and time:**

|  |
| --- |
| Example: 125 C for 12 hours |

**If No, will parts be shipped in moisture controlled packaging, not to be opened until just before testing?**

|  |  |
| --- | --- |
| Yes | No |
|  |  |

**What is the maximum time between opening the moisture controlled packaging and testing the sample(s)?**

|  |
| --- |
| Example: 30 minutes at 80% RH |

**Please specify the temperature profile, if needed:**

|  |
| --- |
| Examples: time/temperature pairs, temperature points and rates, or attach a production reflow oven output (either data or graph). Depending on sample thermal mass Akrometrix can match most production reflow processes up to 2 C/sec. |

**Please specify the temperatures at which measurements will be taken:** Standard pricing includes 6 temperature points but more can be added at additional cost. Temperatures must be at room temperature or above.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|  |  |  |  |  |  |  |  |  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|  |  |  |  |  |  |  |  |  |

# Fringe Projection Results Specifications

**Z (Out-of-plane) Displacement Units?**

|  |  |
| --- | --- |
| Microns | Mils |
|  |  |

**What deliverables are being requested?** Standard deliverables are 3D Plots and a Full Field Signed Warpage Gauge Report. Additional deliverables can be provided at additional cost. If Data is selected, it will be provided for any Plot type that is requested. Any plot type can be swapped in for the standard 3D at standard pricing.

|  |  |  |
| --- | --- | --- |
|  | Plots | Data |
| 3D |  |  |
| Diagonals |  |
| Horizontal Centerline |  |
| Horizontal Edges |  |
| Vertical Centerline |  |
| Vertical Edges |  |
| Warpage Vs. Temperature Plot |  |

**What scale should be used?**

|  |
| --- |
| Examples: same for all parts, same for each lot, -100 to 100 µm, etc. |

**How should the report be organized?** Typically this is per part, showing each graph type in order of the measurements location along the temperature profile.

|  |
| --- |
| Examples: 3D and Diagonals side by side on a page, each part by temperature, etc. |

**Any other report details?**

|  |
| --- |
|  |