



## Application Note 006

### Auto Analysis

Auto Analysis allows the user to set up accept/reject criteria on each device in a tray or jump scan. The result is a Pass/Fail evaluation report for each device. The application of the accept/reject criteria may be extended to trays in a lot in a production environment. Each tray in turn may be classified as an accept/reject based on the number of failed devices in the tray.

In order to perform Auto analysis, a "decision tree" must be set up first. The decision tree allows the user to specify a data gate, a region of interest, a criteria (% Delam, % Threshold, % Cluster Area, % Phase Inversion etc.), a comparison operator, and the pass/fail threshold. Multiple decision lines can be set up to create a true decision tree. Once applied, the Auto Analysis feature provides a table of results marking any values that fail the criteria in red. In addition, the packages in the image are colored green or red depending on whether they passed or failed.

In the example illustrated here, Auto Analysis is used to determine if the devices pass the user-defined criteria for % of phase inversion.

In **Figure 1**, the first line instructs WinIC to look at the Phase Gate 1 image. The total amount of phase inversion located in the die region must be less than or equal to 5%, or the device is given a Fail rating. The second and third lines define the allowable phase inversion for the paddle region and the whole part respectively (See Application Note on Templates to learn about setting up regions of interest). If any of these criteria are not met, then the device is failed.

A display of the results is shown in **Figure 2**, and the images get colored borders – green for Pass, red for Fail. The numerical value for each criterion is displayed in the results table shown in **Figure 3**, with the criteria that were not met, indicated in red. The numerical results may be exported to an Excel file.

Auto Analysis is therefore a useful tool to automatically classify parts as accept/reject based on user defined defect criteria.

	Gate	Region of Interest (ROI)	Criteria	Threshold	Action	Action
1) If	Phase Gate 1	die	PhaseInversionHigh	<= 5	Then Line 2	Else Fail
2) If	Phase Gate 1	paddle	PhaseInversionHigh	<= 10	Then Line 3	Else Fail
3) If	Phase Gate 1	full	PhaseInversionHigh	<= 10	Then Pass	Else Fail
4) If				<= 0	Then Pass	Else Fail
5) If				<= 0	Then Pass	Else Fail
6) If				<= 0	Then Pass	Else Fail
7) If				<= 0	Then Pass	Else Fail
8) If				<= 0	Then Pass	Else Fail

Figure 1: Decision Tree

