

ScanMaster Designer Tray Marking

1 Introduction

This Application Note describes how to create, configure, and edit trays and tray cells in ScanMaster Designer (SMD). It also provides several examples of how to modify single or multiple cells in a tray. The following sections are included in this document:

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Keywords: Cell, Row, Column, Tray, SMD, ScanMaster Designer

2 Background information

Tray Marking is typically used for laser-marking items carried on trays—such as Integrated Circuits (ICs) and electronic components—with repetitive, accurate positioning. The marking may consist of serial numbers, manufacturers' names or logos, barcodes, batch numbers, or date codes. A tray arranges shapes in an array of rows and columns for marking, where the cells are identical and in a fixed geometric position.

ScanMaster™ Designer allows the marking of very small character sizes while still ensuring the highest quality and repeatability.

3 Set up the marking pattern

Do the following to set up the marking pattern:

1. Launch ScanMaster Designer.
2. Open a new or existing project in ScanMaster Designer.
3. On the Drawing Canvas, add the shapes, text, logos, or barcodes that you would like to use for tray marking.

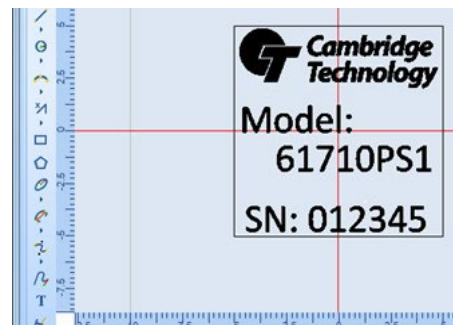


Figure 1 - A 10mm x 10mm marking pattern

The figure on the right contains an example of a marking pattern

4 Create a tray grid

Left-click the Tray icon  in the **Project | Automation** panel of the **Ribbon**. This creates a tray with default values of tray properties. The **Tray Marking Properties** window is displayed as shown in the following figure.

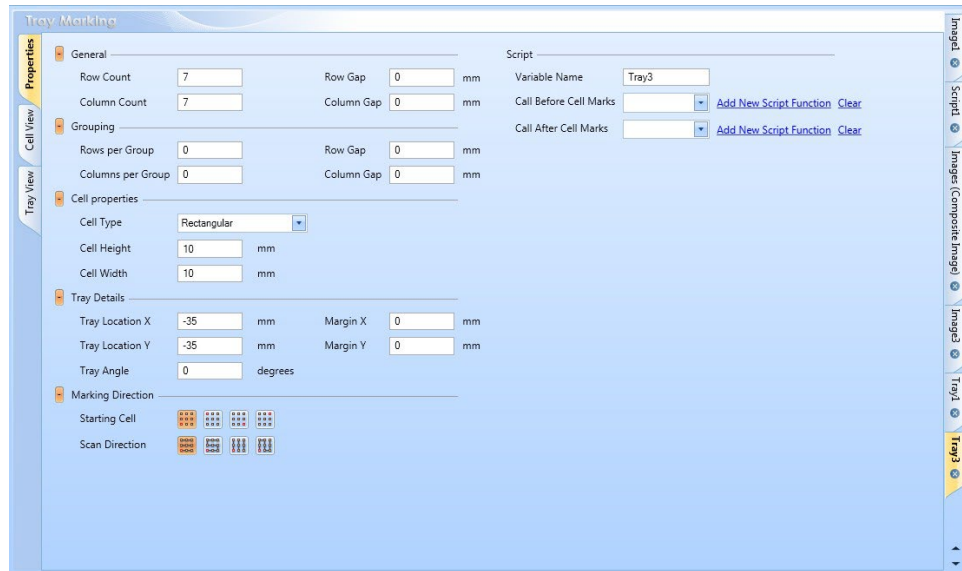


Figure 2 - The Tray Marking Properties window

5 Tray configuration

This section describes how to configure a tray.

5.1 The Properties tab

The **Properties** tab of the **Tray Marking Properties** window contains all of the properties of the tray grid. Refer to the following subsections for a description of each tray property and instructions on how to change each tray property.

- **General:** The number of rows and columns depends on the Marking Field Size and the Cell Size. For example, if the Marking Field Size is 100 x 100mm, and rectangle cell size is 10 x 10mm, the tray grid can fit 10 rows and 10 columns without any space between the rows and columns. The **General** section of the **Properties** tab specifies the number of rows and columns in a tray grid, as well as the gaps between those rows and columns.
- **Script:** it used to configure the tray object instance identification name, the pre-execution (Before-cell) script and post-execution (After-cell) script. Scripts are executed to extend the capabilities of the Tray object to fulfil additional automation requirements. Tray can be easily accessible in SMD script programming just by using the default Tray variable given or it can be customized too.
- **Grouping:** it can be used to create groups of cells within a tray grid.

- **Cell Properties:** it contains the settings for Cell Type, Cell Height and Cell Width.
- **Tray Details:** it contains settings for the location and angle of the tray grid on the Drawing Canvas and settings for the offsets between the tray boundary and the tray grid.

NOTE: The tray location data is in reference to the lower-left corner of the tray. **Margin X** and **Margin Y** are offset from the tray location.

- **Marking Direction:** it used to specify the Starting Cell option and the Scan Direction option for the tray grid. The former is the tray cell from which scanning begins, and the latter is the direction in which scanning proceeds.

e.g.: 10x10mm rectangle cell type with 7x7 row-column has 5mm gap for row and column and tray location is (-50, -50) with 0mm margin and starting cell is lower left and marking direction horizontal bi-directional having default script setting seen **Figure 3 - Tray Configuration** (below)

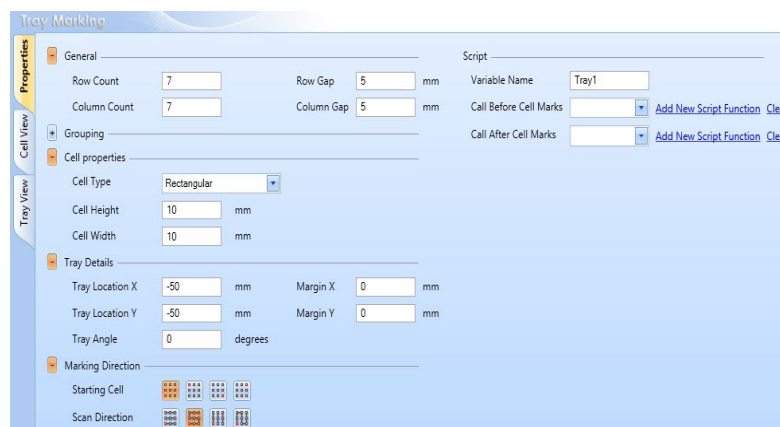


Figure 3 - Tray Configuration

5.2 The Cell View tab

The width and height of the cell, as well as the relative placement of its contents, can be adjusted from this tab. Refer to the following subsections for a description of each setting on the **Cell View** tab.

- **Dimension:** can be used to adjust the dimensions of the cell. This can be useful if the marking detail is larger than cell size. In addition, it allows the user to choose an image if there is more than one image in the Drawing Canvas as seen **Figure 4 - Cell Dimension** (below)

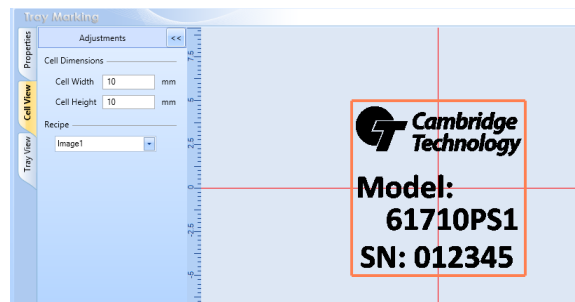


Figure 4 - Cell Dimension

- **Recipe:** a drop-down list use to view cell with various image compositions that were defined with the Selected Images property in the Tray. This dropdown list contains all the combinations of the image compositions made in the selected Images property and can be applied to any of the combinations of the cell to view and adjust the cell as seen **Figure 5 - Cell Recipe** (below)

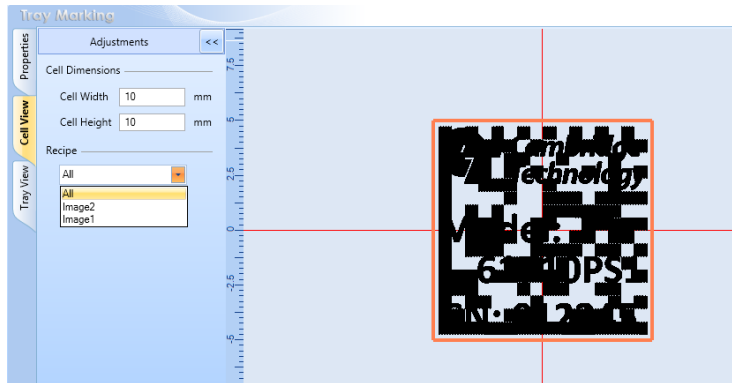


Figure 5 - Cell Recipe

5.3 The Tray View tab

Figure 6 - Tray View

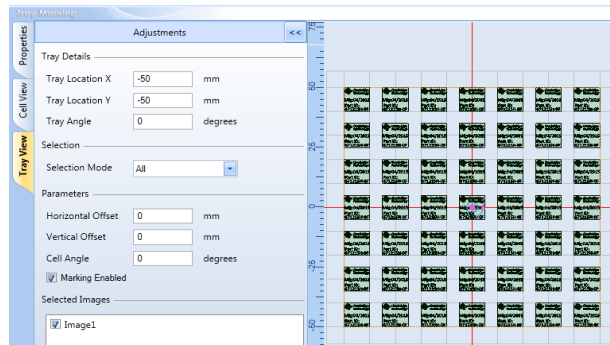


Figure 6 - Tray View

- **Tray Details:** contains parameters relative to the tray location and angle of the tray grid.
- **Selection:** contains the **Selection Mode** dropdown list. The **Selection Mode** dropdown list allows you to specify an individual cell, or a group of cells, for marking. as seen different selection in **Figure 7 - Selection option** (below)

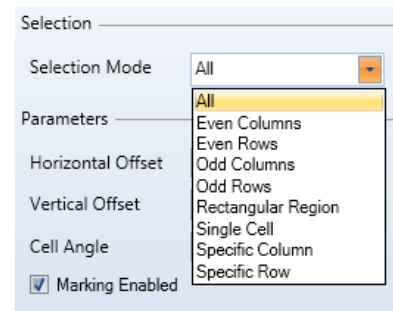


Figure 7 - Selection option

- Parameters: contains settings that specify cell positioning (offset) and angle with respect to the tray’s current location. In addition, the **Parameters** section contains a setting for enabling and disabling marking of the selected cell(s) as in **Figure 8 - Parameter Section**

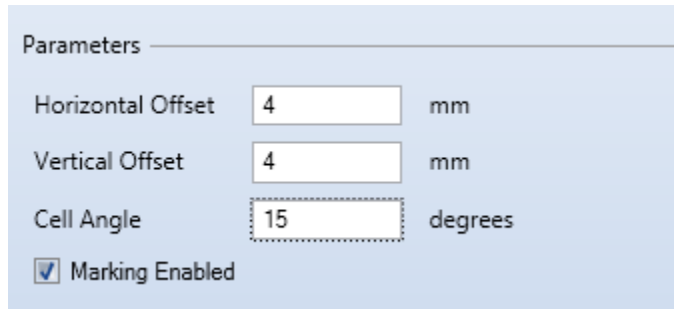


Figure 8 - Parameter Section

6 Cell and tray modification examples

While making final tray; it is always necessary to have flexibility modifying the cell or Tray at last moment. Various Selection Modes allow modifying either single cell or single row or single column or Odd/Even row or Column or specific selection of cell. Below are few examples on various modifying technics on a single or multiple cells.

The following subsections contain examples of cell and tray modifications. All of the following examples were created by adjusting settings in the **Tray View** tab.

6.1 Even Column rotation

In the following example, the **Selection Mode** is **Even Columns** and **Cell Angle** is set to 15 degrees. This means that all even columns are rotated 15 degrees as seen **Figure 9 - Rotation** (below)

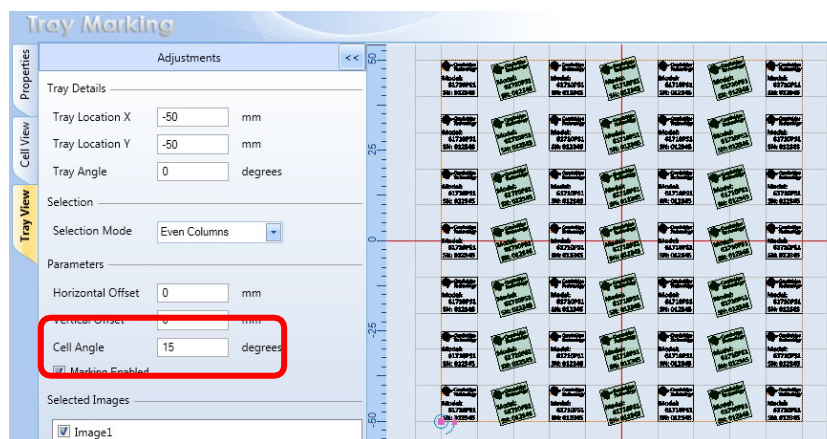


Figure 9 - Rotation

6.2 Marking disabled on a specific row

In the following example, the **Selection Mode** is **Specific Row**, the **Row Index** is 3, and the **Marking Enabled** checkbox is deselected. This means that marking is disabled for the third row in the tray grid as seen **Figure 10 - Disabled marking** (below)

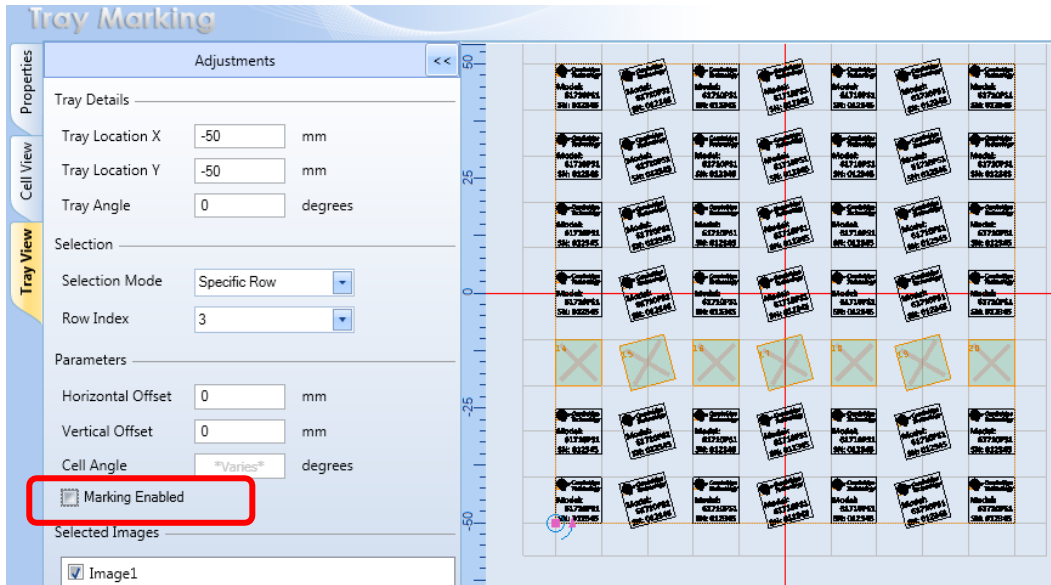


Figure 10 - Disabled marking

6.3 Multiple image selection

In the following example, the **Selection Mode** is **Odd Rows**, the **Marking Enabled** checkbox is selected, and **Image1** is selected in the **Selected Images** list. This means that all odd rows will mark **Image1** and all even rows will mark **Image2** as seen **Figure 11 - Multiple Image Selection** (below)

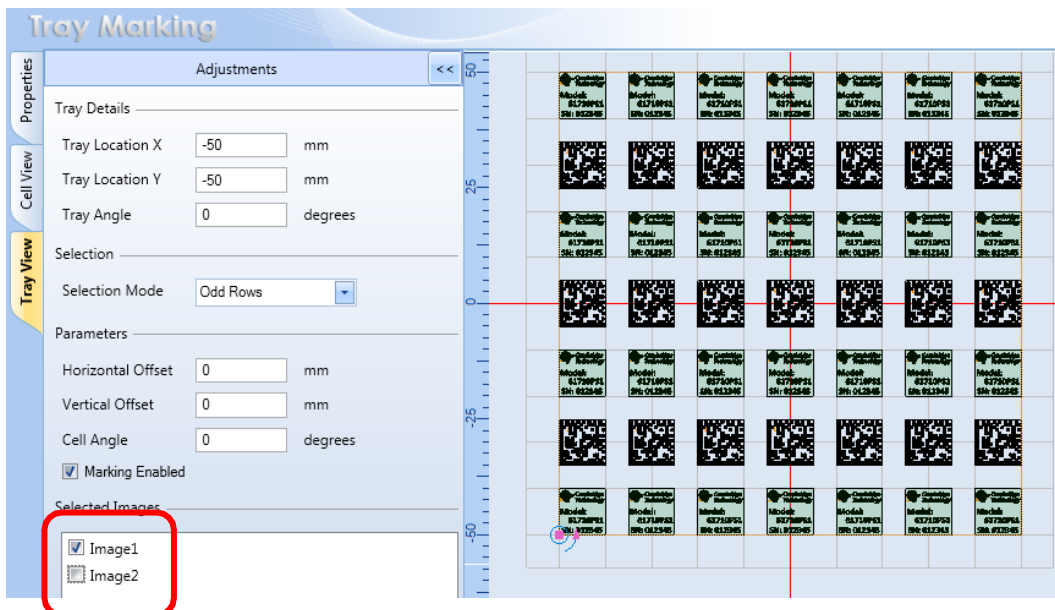


Figure 11 - Multiple Image Selection

6.4 Single cell row and column offset

In the following example, the **Selection Mode** is **Single Cell**, the **Row Index** is 5, the **Column Index** is 4, the **Horizontal Offset** is 2 mm, and the **Vertical Offset** is 2 mm. This means that the cell in the 4th column position of Row 5 gets a 2 mm offset in the +X direction and a -2 mm offset in the -Y direction. as seen **Figure 12 - Offset Selection** (below)

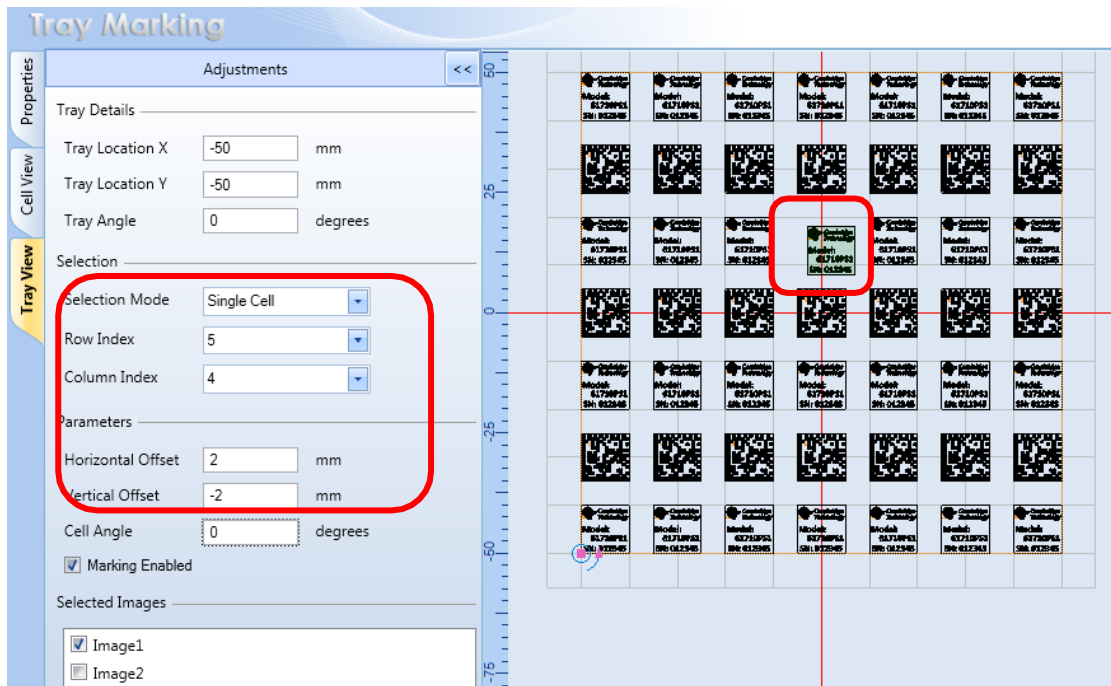


Figure 12 - Offset Selection

7 Referenced Documents

This section lists other documents that may be helpful for readers of this Application Note.

NOTE: Unless otherwise noted, the current version of any of the following documents is the applicable one.

Table 1 - Referenced Documents

Lit. No.	Title
N/A	ScanMaster Designer™ User Guide

