Labeling – 2D Barcode Basics

A simple explanation of how and why 2D barcode is beneficial to our industry.

An ECIA Knowledge Document
What is 2D Barcode?

2D Barcode labeling is the latest symbology for scanner readable information on shipping labels and documents including product or unit pack labeling, packing slips or labels, intermediate packing, and shipping containers or external packaging. A 2D barcode can hold over 2,000 characters compared with its’ 1D counterpart holding merely 20-25. 2D barcode is already being used in many applications and service areas including the automotive and medical industries. Certain partners in our industry have already converted to 2D and many others are planning the transition.

Barcode Examples

<table>
<thead>
<tr>
<th>1D Barcode</th>
<th>2D Barcodes</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Barcode Example" /></td>
<td><img src="image2.jpg" alt="Barcode Example" /></td>
</tr>
</tbody>
</table>

What’s the big deal?

Today, each supplier and distributor have different labels and labeling requirements. There is no practiced industry standard for either the information on the labels or the label layout. Distributors ask suppliers to comply with the distributors’ labeling or the suppliers’ ship with their own labeling. This process is cumbersome, inefficient, confusing, and creates the potential for errors.

Global regulations are requiring identification of more and more part attributes. It’s not enough to identify just a part number, now we must add attributes such as RoHS, REACH, Conflict Minerals Free, etc. The ability to add more information to the labels will become increasingly important.

Current human readable (manual data input) and 1D barcode (multiple scan input) is costly, time consuming, and includes potential for errors. Even 1D barcode is subject to inaccuracy frequently requiring rescans.

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Our Industry Solution

ECIA has created a labeling standard, *EIGP 114.1 2D Barcode Labeling Specification for Product Package and Shipments in the Electronics Industry* (Including Human Readable and 1D Barcode). This standard will address several problems in the current system:

- The one label accepted by the industry
- It will allow single barcode scans instead of multiple scans per label improving accuracy and increasing efficiency.
- 2D will allow more information in less space on the label
- Create a standard label throughout our industry. You don’t have to wait to implement 2D technology. It can standardize the label for human readable, 1D, and 2d applications.

### 1D vs. 2D

<table>
<thead>
<tr>
<th>From: 1D Labels</th>
<th>To: 2D Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple scans required to process product inbound using 1D</td>
<td>One scan captures all required supplier information.</td>
</tr>
<tr>
<td>Holds a max of 85 characters requiring more label space</td>
<td>Holds over 2000 characters in a single barcode</td>
</tr>
<tr>
<td>Various scans and entries performed by distributor during receiving process allowing increased opportunity for error</td>
<td>One scan and one source of information (the supplier) from time of receipt to end customer shipment resulting in reduced errors and returns.</td>
</tr>
<tr>
<td>Supplier creates multiple custom labels based on distributor</td>
<td>One label accepted by the industry</td>
</tr>
</tbody>
</table>
Sample

1D vs. 2D Visual

Containing the same data

Requires 9 Scans

Requires 1 Scan