Micron Technology, Inc. Barcode Receiving Guidelines

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Micron (including its Joint Venture – IM Flash Technologies, LLC.) has adopted the Electronics Industry Association’s CEA-556-C standard by which our systems have been developed.

The latest CEA-556-C standard can be obtained by ordering a copy from the MHIA (Material Handling Industry of America) website: http://www.mhia.org

CEA-556-C Document ordering page:

Or by contacting MHIA directly:
8720 Red Oak Blvd., Suite 201
Charlotte, NC 28217, USA
704 676 1190

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Micron Technology, Inc. Barcode Receiving Guidelines

1. Objective

Micron Technology, Inc. strongly encourages standardized barcode receiving labels and packing slips for all inbound shipments. This guideline is designed to help drive performance excellence and achieve requisite levels of automated information handling in Micron’s warehouse receiving and accounts payable/invoicing processes.

This document details the guidelines created by Micron Technology, Inc. for its barcode receiving labels and packing slips to achieve the above objective.

2. Scope

- This guideline is applicable for shipments to all Micron US facilities including Boise, IMFT–Lehi, MTV–Virginia and might be applicable to other international sites in the future.
- Labeling guidelines for all shipments that Micron receives from its suppliers – including capital, raw materials (also applicable to Gases and Chemicals) and spares components.
- Labeling guidelines include shipping package labels and packing slips.
- Guidelines for barcodes, label layout and print design.
- Guidelines for placement of barcoded shipping labels and packing slips on all shipments.

3. Definitions

1. **Barcode Symbol:** Code 39, also known as Code 3 of 9 is used as specified by ANSI / AIMBC1 Uniform Symbology Specification - Code 39.
2. **Shipment:** An incremental delivery for one part number, purchase order number (PO), work order number (WO), and item number.
3. **Barcode character:** A barcode character is composed of vertical elements (dark bars & light spaces). A Code 39 barcode character has nine vertical elements, five bars & four spaces. Three of these nine elements are wide, and the other six are narrow.
4. **Human readable characters:** A human readable interpretation (usually in English alphabets and numerals) of the barcode symbol characters, without the data identifiers or the start/stop (*) characters. This interpretation usually appears directly above the barcode symbol.
5. **Data Identifier:** specified character or string of characters that defines the intended use of the data element that follows. They are alphanumeric as defined in ANSI MH10.8.2.
6. **Carrier Code:** is a Micron/IMFT developed custom developed code similar to the SCAC code that all major carriers are assigned by the National Motor Freight Traffic Association.
7. **Waybill number (WB):** The unique tracking number used by a commercial freight carrier.
8. **Quiet zone:** The area before the first character and the area following the last character. A quiet zone is required before and after a barcode symbol.
9. **ANSI:** American National Standards Institute is an organization which creates and maintains national standards in the United States.
4. Receiving label and Packing slip guidelines

This section details the general information, do’s and don’ts with receiving label and packing slip like their location, material, details with special shipment categories etc.

4.1 Label and Packing Slip location:

- The barcode label shall be permanently attached to the exterior of each package shipped.
- The packing slip shall always be placed in a plastic sheet jacket outside the box.
- Positions to affix the barcoded receiving label and packing slip are as shown in Exhibit 5.
- To ensure survivability of the label and packing slip during transit and handling, following considerations must be kept in mind while affixing the label:
  a. Labels shall be applied wrinkle free to avoid obscuring any information on it.
  b. Labels are to be affixed only on the side faces of the box to ensure ease of scanning
  c. Labels and packing slips shall not be placed on the bottom face of the package.
  d. Labels shall be protected against moisture, abrasion and other harsh environments.
- It is recommended to affix the labels are on the top right corner of the larger face of the box and not on the top or bottom sides. Refer to Exhibit 3 for recommended label size specifications.
- Irregularly shaped packages that are cylindrical in nature or have no flat plane surface shall still have the label applied to the material as shown in Exhibit 5.
- If multiple parts or boxes are consolidated into one shipment or package, then following are the guidelines:
  ▪ Case 1: Single package, Single PO, 1 PO line item/part: One outer box barcoded label and packing slip secured outside the box.
  ▪ Case 2: Single package, Single PO, Multiple line items/parts: then, have a single label and have all PO line items (material numbers) barcoded on the packing slip or you should have unique material numbers barcoded for each part shipped in the package.
  ▪ Case 3: Single package, multiple POs and items: then, have a unique label for every PO# when there are multiple POs in the package and if there are multiple line items (parts) within the PO, then follow Case 2.
  ▪ Case 4: Single PO, multiple boxes for one item: then, the box count field must be populated on the receiving label and packing slip attached to the respective boxes.
- Packing slips are recommended to be affixed on the top surface of boxes in a secure plastic jacket irrespective of the above cases. If there are no flat surfaces, then they will be tagged to the irregular shaped package.

4.2 Barcode Characteristics:

- The label material/paper is recommended to be white with black text and lines or borders printed with ink that does not smear if the label were to get wet.
- The recommended width of the narrow elements (bars & spaces) and the "inter-character" gaps is 0.010 inch (0.254mm) to 0.017 inch (0.432mm).
- A quiet zone (or the clear area) is required before and after a bar code. It is recommended that the bar code shall not start or stop within 0.25 inch (6.35mm) of the edge of the label. No other information, lines or marking shall appear within 0.25 inch (6.35mm) on either end of the bar code.
- The recommended height of the bar code is 0.4 inch (10.2mm) minimum to 0.5 inch (12.7mm) maximum.
- Each label shall contain a title for all of the pieces of data. The title and the human readable data shall have a height of no less than 0.1 inch (2.54mm) and shall be in the upper left hand corner of the row or block containing the data.
- Bar code symbols shall comply with ANSI X3.182. They consist of the barcode start character ‘*’ followed by the data identifier (refer to Section 5 for the respective Data Identifiers for each field), the field details and ending with the character ‘*’.

4.3 Barcode block components:
- **Data Identifier Zone:** Each Block shall begin with the proper Data Identifier (DI) as specified in this field specification. The DI is in accordance with ANSI MH10.8.2 Standard. The parenthesis ( ) are not part of the DI and are not included in the barcode but only in the human readable Data Identifier zone.
- **Title Block:** Each Block shall be appropriately titled to match what is specified in a human readable form in English alphabets, numerals and standard keyboard symbols.

![Barcode Block Components Diagram](image)

- **Human Readable Number:** The human readable number is same as the barcoded characters excluding the start/stop (*) character of the Barcode and the DI prefix.
- **Barcode Zone:** The Barcode symbol should be left justified in the lower half of block and quiet zones must be maintained as shown.
- **Quite Zone:** These are clear areas on both ends the Barcode symbol stretching out to the outline border of the label, and for optimum scanning this area should be at least 0.25 inch (6.35mm) on either ends of the bar code.
5. Label Field Characteristics

The list of fields described below is common for both the receiving label and the packing slip. The detailed guideline may not apply for the packing slip, but the only requirement is that all fields listed on the barcode receiving label must also be present in the packing slip preferably in the same order. Refer to Exhibit 1 for the complete bar code label and Exhibit 2 for labels with fields that are generally optional but ‘Necessary’ in special cases (necessary for Micron to receive using current ERP system).

5.1 Row 1A & 1B - From Address and Package Weight

- Requirement: Necessary field
- Format: Necessary field in human readable format only
- Data Field Identifier: None

Left box (1A From Address) shall contain the full name and address of the supplier. Right box (1B Package Weight) shall contain the weight of the packages.

Note: The first row shall be divided with a vertical line, to separate the weight of the packages from the name and address of the supplier. The package weight is a only a representative weight to help perform the materials operation in a safe manner and hence can be an approximate weight.

5.2 Row 2 - To Address

- Requirement: Necessary field
- Format: Necessary field in human readable format only
- Data Field Identifier: None

The second row shall contain the name and address where the shipment needs to be delivered including the facility name, address, building number, floor and mail stop location if applicable.

5.3 Row 3 - (7K) Carrier Code #

- Requirement: Necessary field
- Format: Both human readable and barcode required
- Data Field Identifier: (7K) represents the carrier number
- Barcode characters example: *7K22-FEDEX 2ND*
The third row shall contain custom defined, pre-assigned commercial carrier’s code. This is an important field for Micron to automate the entry of waybill information coming from the labels affixed by the carriers and their service levels.

If the supplier is delivering the parts via the supplier’s truck or a carrier not provided in the specification document, then enter "NONE". Refer to Exhibit 4 for complete listing of commonly used carriers and service levels.

5.4 Row 4 - (K) PO #
- Requirement: Necessary field (always required)
- Format: Necessary field in both human readable and barcode format
- Data Field Identifier: (K) represents the purchase order number
- Barcode characters example: *K4500926831*

This row displays the Purchasing Order number (PO #) generated by Micron when the purchase order is sent to the suppliers. It follows a standard format starting with '45' and has 10 digits.

5.5 Row 5 - (P) Material #
- Requirement: Necessary field
- Format: Necessary field in both human readable and barcode format
- Data Identifier (P) is the Micron’s part or material number
- Barcode characters example: *P980-02927*

The material or part number can be found on the Micron’s Purchase Order (PO). This number consists of 9 digits including the dash and must appear exactly as it appears on the Micron’s PO.

5.6 Row 6 - (11K) Packing Slip #
- Requirement: Necessary field
- Format: Optional field in both human readable and barcode format
- Data Identifier (11K) is the supplier’s package/delivery slip or invoice number
- Barcode characters example: *11K50900707*
The packing list number or invoice number is a record of transaction and helps cross referencing with PO and package if required. It can contain a maximum of 16 digits. Packing Slip or Supplier Invoice is a detachable copy of a package label but can have other fields like part descriptions, date, contacts etc. It is required that the packing slip be attached to all shipments made to Micron in a secure plastic jacket outside the package.

5.7 Optional – (13Q) # of Boxes

- Requirement: Necessary for shipments with multiple packages per PO, else optional
- Format: Human readable and barcode required
- Data Identifier: (13Q) is the Quantity in the box followed by the Unit of measurement
- Barcode characters example: *13Q1/10*

This optional row shall contain the number of packages / boxes, (e.g. 1 / 10). If there is only one package for the PO, it will be represented as “1 / 1”.

5.8 Optional – (1T) or (Z) Lot #

- Requirement: Necessary if items are batch/lot produced, else it is an optional field.
- Format: Human readable and barcode required.
- Data Identifier: (1T) is the Lot Number or (Z) is a mutually defined identifier for Lot number followed by the product expiration date.
- Refer to Exhibit 2 for display of Lot # fields in the barcode.

If the product shipped is manufactured in a batch by the suppliers like wafers, chemicals, slurries, pads etc., Micron tracks the batch or lot number for individual items for Quality assurance and other purposes. There are 2 options for barcoding the Lot # field:

- Options 1: Consists of just the Lot number which has the data identifier as ‘1T’. Lot # can be a maximum of 10 digits. Example: *1T1234567890*
- Options 2: Consists of Lot number (maximum 10 digits) preceded with the mutually defined data identifier ‘Z’ and followed by the character ‘+’ and then the product expiration date in ‘YYYYMMDD’ format. Example: *Z123450+20090202*
5.9 Optional - (7Q) Qty. and UOM

- Requirement: Optional field
- Format: Optional field in both human readable and barcode format
- Data Identifier: (7Q) is the Quantity in the box followed by the Unit of measurement
- Barcode characters example: *7Q1000+EA*

The seventh row shall contain the quantity (Qty.) and unit of measure (UOM), as defined in the purchase order. The UOM is required to contain only two characters (e.g., each = EA). The quantity and the UOM shall be combined in a single line with no data separators.

5.10 Row 9 – ( ) Additional optional fields

Any other additional optional fields that the supplier wants to print on the labels can be done with a prior approval from Micron and would follow the standards discussed in this document.
Exhibit 1 – Barcode Fields

Example of the complete barcode receiving label with mandatory fields only:

<table>
<thead>
<tr>
<th>From Address:</th>
<th>Package Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type your company name Number and Street name City, State - Zip Code</td>
<td>10 LBS</td>
</tr>
<tr>
<td>To Address:</td>
<td></td>
</tr>
<tr>
<td>IM Flash Technologies, LLC ATTN: Receiving Dock, BLDG 20 1550 East 3400 North, Lehi, UT 84043</td>
<td></td>
</tr>
<tr>
<td>(7K) Carrier Code #</td>
<td>22-FEDEX 2ND</td>
</tr>
<tr>
<td>(K) PO #</td>
<td>4500926831</td>
</tr>
<tr>
<td>(P) Material #</td>
<td>980-02927</td>
</tr>
<tr>
<td>(11K) Packing Slip #</td>
<td>50900707</td>
</tr>
</tbody>
</table>

**Row1:** From Address - (mandatory field) Display full name and address from where the shipment is made, including building, dock etc. To the right of it is the weight of the package in pounds. Both in a human readable format.

**Row2:** To Address - (mandatory field) Display full name and address to where the shipment is made, including building, dock etc. In a human readable format.

**Row3:** (7K) Carrier Code - (mandatory field) Display carrier codes for common carriers used by Micron and its suppliers. These codes are discussed in further detail in the spec document.

**Row4:** (K) PO # - (mandatory field) Displays the Purchasing Order number generated by Micron. It starts with '45.' and has 10 digits.

**Row5:** (P) Material # - (mandatory field) Displays the part number or material number as specified in Micron's PO. If there is no part number, then leave the field blank.

**Row6:** (11K) Packing Slip # - (mandatory field) Displays the packing list or slip number to cross reference to the details in packing slip with the package itself.
Exhibit 2 – Barcode Field Options

Barcode labels below exhibit fields that are generally optional but ‘Necessary’ for special cases along with the mandatory fields as highlighted:

When a single PO line item is shipped in multiple packages, where in the # of boxes field is mandatory.

Shipping packages containing parts that are manufactured in a batch in which case a Lot # field is mandatory.
Exhibit 3 - Barcoding Dimension Spec

From Address:
Type your company name
Number and Street name
City, State - Zip Code

To Address:
IM Flash Technologies, LLC
ATTN: Receiving Dock, BLDG 20
1550 East 3400 North, Lehi, UT 84043

(7K) Carrier Code #
22-FEDEX 2ND

(10) PO #
4500926831

(P) Material #
980-02927

(11K) Packing Slip #
50900707

(7Q) Qty. & UOM
1000+EA

(13Q) # of Boxes
1/10

<table>
<thead>
<tr>
<th>Feature Size</th>
<th>Recommended</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>6.5 (165 mm)</td>
<td>4.0 (102 mm)</td>
<td>6.5 (165 mm)</td>
</tr>
<tr>
<td>b</td>
<td>4.0 (102 mm)</td>
<td>4.0 (102 mm)</td>
<td>5.0 (127 mm)</td>
</tr>
<tr>
<td>c</td>
<td>0.8 (20 mm)</td>
<td>0.6 (16 mm)</td>
<td>1.0 (25.4 mm)</td>
</tr>
<tr>
<td>d</td>
<td>0.3 (8 mm)</td>
<td>0.27 (7 mm)</td>
<td>0.4 (10 mm)</td>
</tr>
<tr>
<td>Font Size</td>
<td>0.1 (2.54 mm)</td>
<td>0.1 (2.54 mm)</td>
<td>0.2 (5.08 mm)</td>
</tr>
</tbody>
</table>

Dimensions are in inches (mm)
### Exhibit 4 - Micron’s commonly used carrier codes

<table>
<thead>
<tr>
<th>No.</th>
<th>Delivery Carrier and Service</th>
<th>Barcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>02-Deliver</td>
<td><img src="image1" alt="Barcode Image" /></td>
</tr>
<tr>
<td>2</td>
<td>04-UPS Blue</td>
<td><img src="image2" alt="Barcode Image" /></td>
</tr>
<tr>
<td>3</td>
<td>07-UPS Red</td>
<td><img src="image3" alt="Barcode Image" /></td>
</tr>
<tr>
<td>4</td>
<td>10-UPS Ground</td>
<td><img src="image4" alt="Barcode Image" /></td>
</tr>
<tr>
<td>5</td>
<td>69-UPS Freight</td>
<td><img src="image5" alt="Barcode Image" /></td>
</tr>
<tr>
<td>6</td>
<td>19-FedEx P1</td>
<td><img src="image6" alt="Barcode Image" /></td>
</tr>
<tr>
<td>7</td>
<td>22-FedEx 2nd</td>
<td><img src="image7" alt="Barcode Image" /></td>
</tr>
<tr>
<td>8</td>
<td>25-FedEx Standard</td>
<td><img src="image8" alt="Barcode Image" /></td>
</tr>
<tr>
<td>9</td>
<td>68-FedEx Intl</td>
<td><img src="image9" alt="Barcode Image" /></td>
</tr>
<tr>
<td>10</td>
<td>2H-FedEx Heavy 1 Day</td>
<td><img src="image10" alt="Barcode Image" /></td>
</tr>
<tr>
<td>11</td>
<td>2M-FedEx Ground</td>
<td><img src="image11" alt="Barcode Image" /></td>
</tr>
<tr>
<td>12</td>
<td>3C-DHL</td>
<td><img src="image12" alt="Barcode Image" /></td>
</tr>
<tr>
<td>13</td>
<td>5F-Estes</td>
<td><img src="image13" alt="Barcode Image" /></td>
</tr>
<tr>
<td>14</td>
<td>6G-Transport</td>
<td><img src="image14" alt="Barcode Image" /></td>
</tr>
<tr>
<td>15</td>
<td>50-Sonic Air</td>
<td><img src="image15" alt="Barcode Image" /></td>
</tr>
<tr>
<td>16</td>
<td>82-BellaIR</td>
<td><img src="image16" alt="Barcode Image" /></td>
</tr>
<tr>
<td>17</td>
<td>9P-Quick</td>
<td><img src="image17" alt="Barcode Image" /></td>
</tr>
</tbody>
</table>
Exhibit 5 – Label and Package Slip Location

Locations of receiving label and packing slip on shipments of various categories

- **BOX OR CARTON**
  - Label should be located on upper corner.

- **PALLET BOX**
  - Label should be located on upper corner.

- **CARTONS ON PALLET**
  - Rack
  - Tag with label on one visible piece near top.

- **DRUMS, BARRELS, OR CYLINDRICAL CONTAINERS**
  - Label should be located near center as shown.

- **BUNDLE**
  - Tag with label should be located at one end.

- **BALES**
  - Label should be located on upper corner.

- **BAG**
  - Place one label at center of face.

- **BASKET, WIRE MESH CONTAINER**
  - Label should be located on upper corner.

- **ROLL**
  - Hang tag with label near end of material and if wrapped, on outer wrapper.

- **METAL BIN OR TUB**
  - Tag with label attached to one piece in top of bin.

- **CABLE REEL**
  - Place a label on a tag attached to the start end of the cable as shown.