

Encoding RFID Tags with the Label Design Module

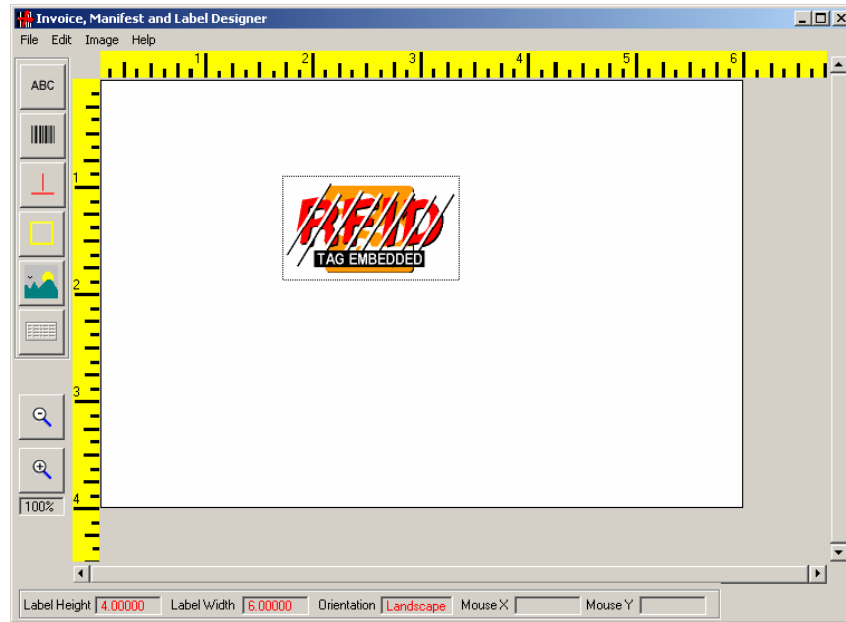
RFID tags can be encoded with the Label Design Module using the built-in high-speed thermal printer drivers. Refer to our web site (<http://www.bartechsol.com>) for a list of supported printers. In addition to a supported printer, RFID tag media is also required that is read by the supported printer. Printer's configuration (on the printer's front panel) needs to be set to read and write to the type of tag media that is installed. Refer to the printer's user manual, or contact the printer or media supplier for more information.

To encode a RFID tag on a supported printer, add a bar code image to the label design. Select **"RFID Tag"** as the **"Bar Type"**. Select the **"Tag Format"** to match the type of data desired, and then enter the data to be encoded.

The screenshot shows the 'Bar Code Properties' dialog box. The 'Image Name' is 'Image1', 'Top' is '0.50000', 'Left' is '0.50000', and 'Height' is '0.50000'. The 'Bar Type' is set to 'RFID Tag' and the 'Tag Format' is 'ASCII'. The 'Text' field contains '0 test value'. The 'Alignment' is set to 'Left'. The 'Rotation' is set to '0 Degrees'. The 'Origin points for rotated images' section shows a diagram with four bars labeled '0 degrees', '90 degrees', '180 degrees', and '270 degrees'. The 'Variables' section has 'Variable Image' unchecked and 'Max Length' set to '0'. The 'Done' button is highlighted.

RFID Tag Using ASCII Format

Once **"Done"** is clicked the **"RFID Image"** placement holder will come up on screen.



RFID Image

The “**RFID Image**” does not actually print on the label; it is simply an image to link the RFID data to the label. The RFID image’s value can be linked to other printable images by using the “**Image Value**” variable.

RFID Tag Formats

ASCII

The “**ASCII**” tag format allows users to encode standard text information into a tag. The first character must be a number (0-9). After the number any text information can be encoded up to the maximum amount of data that the tag can hold. Many RFID tags can only encode 96 bits of data (some less and a few more). Since each character requires 8 bits, only 11 characters can be encoded after the number. Check the specifications on the RFID tags to determine the amount of data that they can hold. If an attempt is made to encode more data than can be encoded, the tags will be “voided” by the printer.

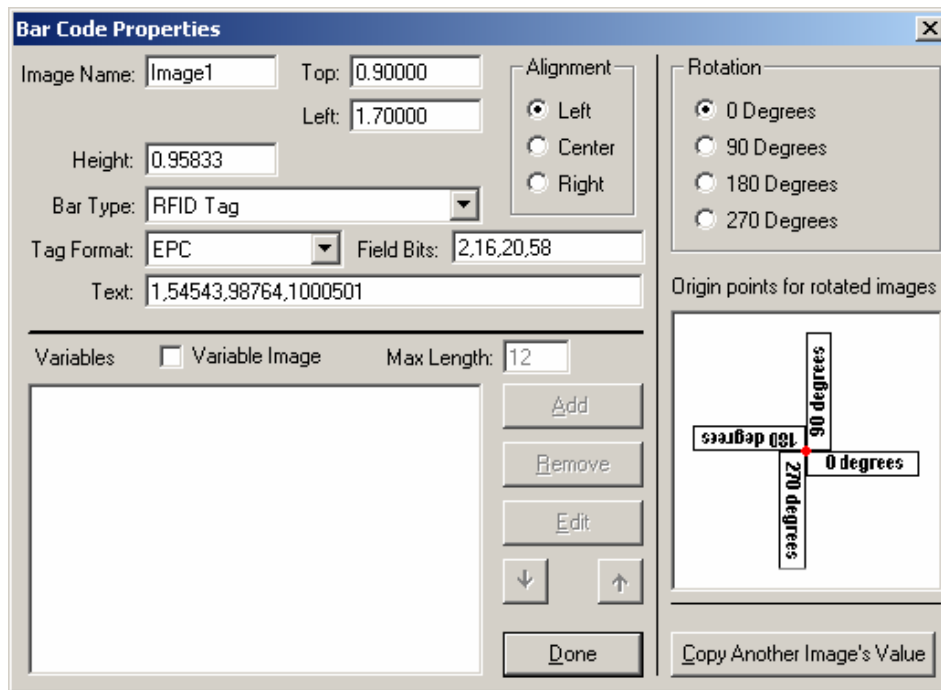
Hexadecimal

The “**Hexadecimal**” tag format allows users to encode raw binary data or numeric data to the tag. The tag value supplied by the label design module must be a HEX encoded string. Each character must be a “0-9”, or “A-F”. Simply convert the information desired into a Hexadecimal number.

EPC

The “**EPC**” or “**Electronic Product Code**” standard is an easy way to encode detailed product information onto an RFID tag. Refer to the Uniform Code Council’s (UCC) web page for more information on this standard (<http://www.uc-council.org>). Generally the EPC format defines 4 or more fields. Typically there is a header, a manager or company #, a product code, and a serial number. More fields can be defined in some variations of this standard. The UCC standard will dictate the fields and sizes.

The fields are defined with the “**Field Bits**” entry box. Each field’s size is entered into this entry box, separated with commas. The data that is to be encoded must also be separated into the same number of fields and separated by commas.

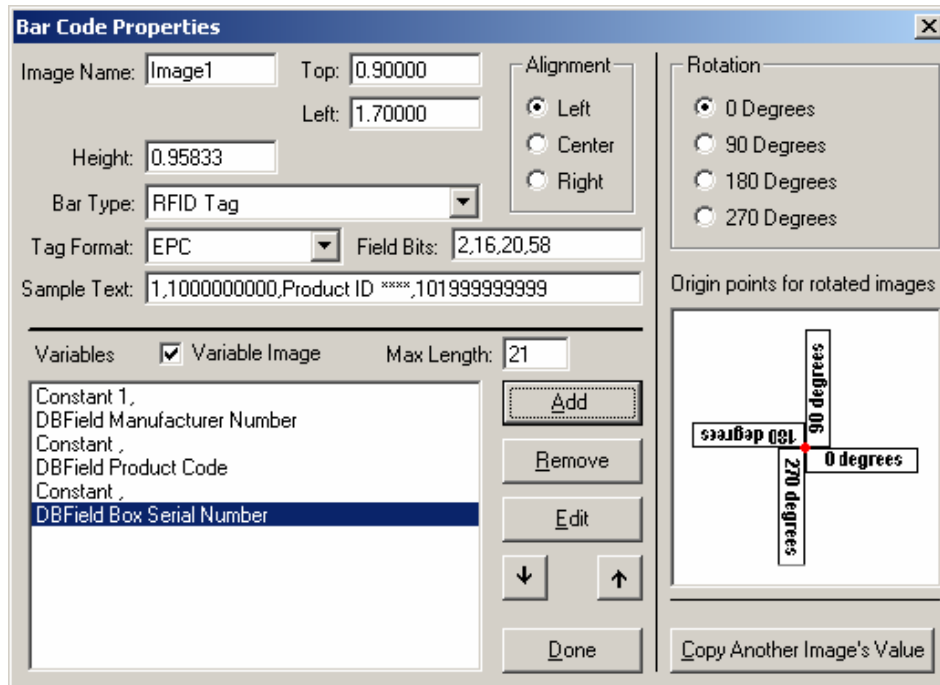


Sample EPC Tag

The example above defines an EPC tag record with 2-bits for the header, 16 bits for the company number, 20 bits for the item code, and 58 bits for the serial number. The associated values are a 1 for the header, 54543 for the company number, 98764 for the item code, and 1000501 for the serial number.

The total number of bits entered in the “**Field Bits**” entry box must not exceed the number of bits that the RFID tag can encode. The values for each field supplied by the label design module must not exceed the maximum value that each field can hold. To determine the maximum value that each field can encode, raise the number two (2) to the power of the “**Field Bits**”, and then subtract 1 ($2^{\text{[field bits]}} - 1$). For example, the company number field is 16 bits. $2^{16} = 65536$. $65536 - 1 = 65535$. So the company number that can be encoded is between 0 and 65535.

Linking EPC Data to Database Values

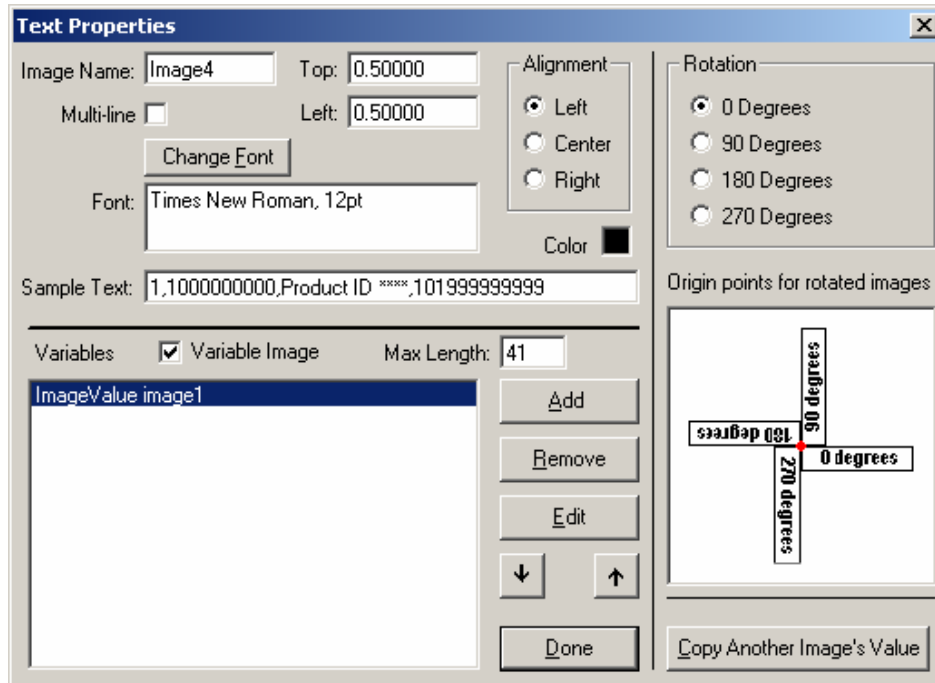


Sample Showing EPC Data Link

RFID tag data can be linked to database fields. Care must be taken to ensure that the values contained in the database are appropriate to be encoded into the RFID tags using the selected format.

The example above shows that a “**Constant 1**” has been added for the header, the “**Manufacturer Number**” has been added for the company number, and the “**Product Code**” and “**Box Serial Number**” has been added for the last two fields. Constant commas (,) were added to separate the fields.

The RFID tag’s data can also be printed onto the label by adding a text image, and by adding an “**Image Value**” variable. The following example shows how a text image with the value of “**Image1**” (the RFID image’s name) selected would appear in the label designer and on the label preview when “**Done**” is pressed.



RFID Label with Text Property



RFID Tag with Text Preview