



## Introduction

Traditionally, the printing industry has used manual design, paste-up, and stripping, for the implementation of barcode symbols, but today, the computer is used more often to generate barcode symbols. Using software like **Barcode Toolbox** will allow you to record the barcode design information in a vector-based graphics file. The file is then sent to a raster image processor (RIP), which converts the vector-based information to final film, or in some cases, by imaging direct-to-plate and digital offset printing.

Using **Barcode Toolbox** plug-ins graphic designers and packaging professionals, responsible for the development of product packaging and identification, can now design barcode symbols directly into their creative design flow. Position and size, accurate barcode symbols directly within the package design. You don't have to use external fonts or paste a barcode symbol file from an external source; the barcode symbol becomes a part of your design.

### What's New

Version 3.6 of **Barcode Toolbox** adds support for Adobe Illustrator CS2

### Installation and requirements

The **Barcode Toolbox** requires Adobe Illustrator version 8, 9, 10, CS (11) or CS2 (12). On Apple Macintosh, Mac OS 8.6 or higher is required.

To install on Macintosh, Adobe Illustrator 8 or 9

To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator 8 & 9* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Macintosh, Adobe Illustrator 10

To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator 10* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Macintosh, Adobe Illustrator CS (11)

To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator CS* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Macintosh, Adobe Illustrator CS (12)



To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator CS2* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Windows, Adobe Illustrator 8, 9  
To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator 8 & 9* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Windows, Adobe Illustrator 10  
To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator 10* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Windows, Adobe Illustrator CS (11)  
To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator CS* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

To install on Windows, Adobe Illustrator CS2 (12)  
To install **Barcode Toolbox**, copy the Adobe Illustrator **Barcode Toolbox** plug-in you find in the *Adobe Illustrator CS2* folder to the 'plug-ins' folder in the Adobe Illustrator application folder.

This installation in Adobe Illustrator adds  
- a floating palette 'Barcodes'  
- and 2 tools, a 'Barcode Create' tool and a 'Barcode Measure' tool.

The next time you launch Adobe Illustrator, a license dialog will pop-up to enter the license key that will enable the full functionality of the toolbox. Only limited functionality will be available when no valid license is entered. (see Appendix 'Troubleshooting' for more info on upgrading, re-installation and license problems)  
On Macintosh the licenses are *not* shared between Mac OS 9.x and Mac OS X applications, but the licenses are the same. This means for example that you will have to enter your license twice if you run Adobe Illustrator X both under Mac OS 9.x and Mac OS X: once upon the first launch in Mac OS 9.x, and once upon the first launch in Mac OS X.

Note: some barcodes require special fonts. The **Barcode Toolbox** will use these fonts when available, but will default to Helvetica when these fonts are missing. You will find the required fonts for each barcode in the list of supported barcodes



## Supported Barcodes

<i>Barcode Type</i>	<i>Required Fonts</i>
EAN 8	
EAN 13 (standard, and 2 and 5 digit add-ons)	
Code 128	
UPC/A (standard, and 2 and 5 digit add-ons)	OCRB
UPC/E (standard, and 2 digit add-on)	OCRB
ITF (interleaved 2 of 5)	
UCC/EAN 128	
Code 39 (3 of 9)	
ITF14	
JAN 8	
JAN 13	
ISBN (Bookland)	OCRB
ISBN-13 (Bookland)	OCRB
ISSN	OCRB
EAN13 Coupon	
UPC/A Coupon	OCRB
Marks & Spencer 7B	Gill Sans Bold and OCRB



## Operation

### Creating barcodes

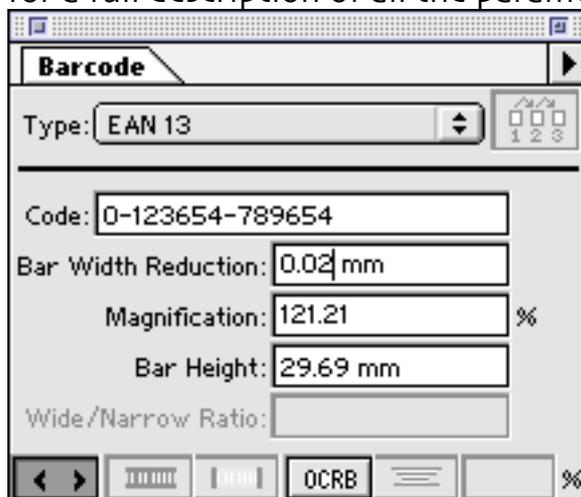
To create a barcode, proceed as follows:  
First, select the Barcode Create tool.



This tool is one of the 2 tools added to the standard Illustrator toolbox. This tool is combined in one group with the measure tool. This will also open the Barcode Dialog if the dialog is not open at the time you select the barcode create tool.

The cursor will change to the barcode create cursor.

Fill in all the parameters of the barcode you want to create. See below for a full description of all the parameters.



Click somewhere on the page, and the barcode will be generated using the selected parameters with its lower left corner at the location where you clicked. All the artwork of the barcode will be selected so that you can position the barcode accurately with the standard tools.

### The Barcode Dialog



At the top there is a menu to select a barcode type.

Below this are several fill-in fields. All these fields have one thing in common: a warning icon will be displayed at the right of the fill-in field when invalid values are selected.

The first fill-in field is the actual **code** to be encoded in the barcode. The code you enter will be checked for correctness. The warning icon will be made visible if the code is incorrect and cannot be corrected (for example if the user did not enter enough digits). The user will be alerted and the code will be corrected if the entered code is incorrect but can be corrected automatically (for example if the check digit is incorrect).

The following table gives an overview of the required formatting for the specific barcodes. A 'd' can be replaced by any digit, a 'c' is the checksum character of the code, and must be set to the correct value, a 'a' can be set to any alpha-numeric value. Note: Barcode Toolbox adds dashes in some codes like EAN 13 that are not really part of the standard, but that make it simpler to read and verify.

<i>Barcode Type</i>	<i>Code Entry format</i>
EAN 8	d-ddd-dddd
EAN 13	d-ddddddd-dddddc
EAN 13, 2 add-on digits	d-ddddddd-dddddc-dd
EAN 13, 5 add-on digits	d-ddddddd-dddddc-ddddd
Code 128	Any ascii string
UPC/A	d-ddddd-ddddd-c
UPC/A, 2 add-on digits	d-ddddd-ddddd-c-dd
UPC/A, 5 add-on digits	d-ddddd-ddddd-c-ddddd
UPC/E	o-ddddd-ddddd-c OR o-ddddddd-c
	Please note that in the long version



	the characters must be compliant to the limits imposed for UPC/E
UPC/E, 2 add-on digits	o-ddddd-ddddd-c-dd OR o-dddddd-c-dd Please note that in the long version the characters must be compliant to the limits imposed for UPC/E
ITF (interleaved 2 of 5)	An even number of digits
UCC/EAN 128	One of more times (d...d)d...d OR (d...d)a...a
Code 39 (3of 9)	Digits, upper case characters (A...Z),dash, percent, dollar, space, dot, plus, slash
ITF14	ddddddddddddd
JAN 8	dddd-dddd, where the first 2 digits must be 45 or 49
JAN 13	d-ddddd-ddddd, where the first 2 digits must be 45 or 49
ISBN (Bookland)	d-ddd-ddddd-c note that the first and second dash can be at a different position depending on the actual code
ISBN (Bookland), 5 add-on digits	d-ddd-ddddd-c-ddddd note that the first and second dash can be at a different position depending on the actual code
ISBN-13 (Bookland EAN)	ddd-d-ddd-ddddd-c, where the first 3 digits must be 978 or 979 note that the first and second dash can be at a different position depending on the actual code
ISBN-13 (Bookland EAN), 5 add-on digits	ddd-d-ddd-ddddd-c-ddddd, where the first 3 digits must be 978 or 979 note that the first and second dash can be at a different position depending on the actual code
ISSN	dddd-dddc OR dddd-dddc(dd)
ISSN, 2 add-on digits	dddd-dddc-dd OR dddd-dddc(dd)-dd
EAN13 Coupon – Format 1	d-ddddd-ddddd (8100)d dddd
EAN13 Coupon – Format 2	d-ddddd-ddddd (8101)d dddd dddd
EAN13 Coupon – Format 3	d-ddddd-ddddd (8100)d dddd (21)d...d
EAN13 Coupon – Format 4	d-ddddd-ddddd (8101)d dddd dddd (21)d...d
EAN13 Coupon – Format 5	d-ddddd-ddddd (8102)dd
UPC/A Coupon – Format 1	d-ddddd-ddddd-c (8100)d dddd
UPC/A Coupon – Format 2	d-ddddd-ddddd-c (8101)d dddd dddd



UPC/A Coupon – Format 3	d-ddddd-ddddd-c (8100)d dddd (21)d...d
UPC/A Coupon – Format 4	d-ddddd-ddddd-c (8101)d dddd dddd (21)d...d
UPC/A Coupon – Format 5	d-ddddd-ddddd-c (8102)dd
Marks & Spencer 7B	dddddc

The second field is the **bar width reduction**. A Positive value will reduce the width of the bars in the barcode. The legal values are limited to any value that will still generate a valid bar code. For example, when setting the bar width to a high value, some bars might disappear.

The third field is the **magnification**. All barcodes have a 'standard' size. The magnification sets the enlargement or reduction of the barcode versus the standard size. The maximum and minimum value for this field is determined by the barcode type.

The fourth field is the **bar height**. This specifies the height for the 'standard' bars in the barcode. Keep this value set to 0 if you want to keep the nominal bar height as defined by the standard. Specify a value if you want bars that are higher than the standard size.

Then there is the **wide/narrow ratio** field. This field is not always enabled, since it is only used by certain types of barcodes. For example, it is enabled for the ITF barcode type.

### Options

At the bottom of the dialog are some options that control the final look of the barcode. Some of these options are not always enabled, since the actual barcode type determines what options are valid.



This dialog gives an overview of all options (from left to right)

- Add Quiet Zone Indicators
- Add Bearer Bars
- Add End Bearer Bars
- Use OCRB as default font
- Align Human Readable text centered
- Scaling factor for Human Readable text.

The following paragraphs explain all these options in more detail.



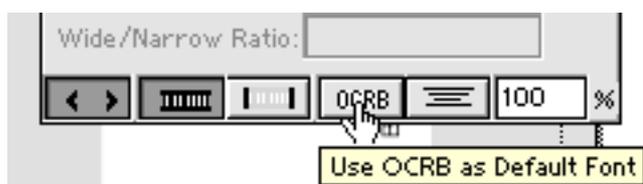
**Add Quiet Zone Indicators:** The barcode tool will add to the left of the human readable text of the barcode a '<' and to the right a '>' to indicate the left and right border of the quiet zones (the extreme point of the signs match the borders of the quiet zones). These characters will be omitted if there is human readable text in the zone where they should be placed. For example, a UPC/A barcode has both a character to the left of the first bar and to the right of the last bar. These characters would overlap with the quiet zone indicators.



**Add Bearer Bars:** some barcodes like ITF and Code 128 have the option to add a bearer bar at the top and the bottom of the bars. This will prevent misreading of these type of barcodes when the barcode scanner reads the bars diagonal. Enabling this option will add the bearer bars at the correct position.



**Add End Bars on Bearer Bars:** barcodes that support Bearer Bars also have the option to add a thicker end bar at both sides, to make the barcodes even more reliable. This option is only enabled in combination with Bearer Bars. Note however that in some cases the option is enabled while the Bearer Bars option is disabled: this means that you will be creating a barcode where the Bearer Bars are obligatory, while the End Bars are optional. This is the case for ITF14 for example.



**Use OCRB as Default Font:** Barcode Toolbox will use Helvetica for all Human Readable text where the font is not specified in the barcode specifications. However, some users prefer to use OCRB for the default



font. Selecting this option will use OCRB in all default cases, given that the OCRB font is available on the computer.



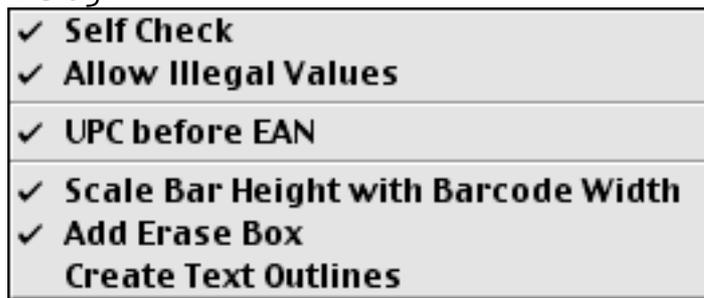
**Align Human Readable Text Left or Centered:** Several barcodes do not specify where to position the Human Readable Text under the bars. Examples: Code 128, UCC/EAN128 and ITF. If this option is not enabled, the text will be aligned left, and if it is enabled, the text will be aligned centered.



**Text Scaling:** Barcodes that support non-digit characters sometimes give unexpected small human readable text on creation. This can for example happen for Code128: this barcode supports ascii characters, so the font scaling must be selected to properly include all these characters. However, when using digits only, this scaling might be too small. Use this field to add an additional font scaling.

## General Options

The following options can be specified in the side menu of the Barcode dialog:



**Self Check:** The Barcode tool will measure each generated barcode when this option is enabled. This means the following: immediately after generating the specified Barcode in the artwork, the tool itself will measure the generated barcode (in exactly the same way as you would with the measure tool after generating the barcode). You will be notified if the measure fails. Failure can happen for 2 reasons:



- 1) In most cases, you might have specified incorrect parameters. For example, a large bar width reduction might make the barcode unreadable, or a normal bar width reduction with a small value for magnification yields the same unreadable barcodes.
- 2) An internal error in the barcode tool generated an incorrect barcode.

This option is enabled by default. The only advantage of disabling this option is that generating barcodes will be (marginally) faster.

**Allow Illegal Values:** you can generate Barcodes using illegal parameters when this option is enabled. Disable this option if you want to prevent operators from generating out-of-spec barcodes. The option is enabled by default.

**Scale Bar Height with Barcode Width:** Barcode toolbox will not change the bar heights when you change the magnification of barcodes. However, some people prefer to scale the bar height always *together* with the magnification. Barcode Toolbox will change the default bar height linked to the magnification if this option is enabled.

**Add Erase Box:** Barcode Toolbox will by default add an erase box behind the barcode. This will properly erase any data that could interfere with the barcode itself. This box is of course not needed when the design is already adjusted in such a way that there will be no interference. No erase box will be added if this option is disabled.

**Create Text Outlines:** Barcode Toolbox will automatically convert all used characters in the barcode to outlines on creation of a new barcode. This is very practical since it removes the need to have special fonts for the barcodes on all your workstations.

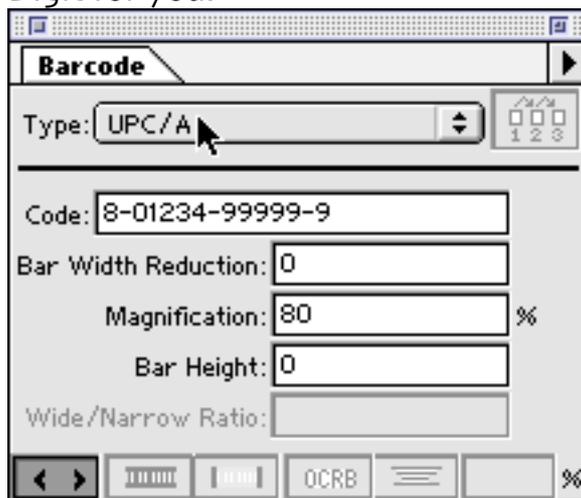
**(Other options):** other options in this menu apply to Barcode Measuring, and are documented in that section.



## Creating barcodes, example: UPC/A

When you decide on a UPC/A code, you have two choices based on the number of products (items) your company sells. For companies that require up to 100,000 items, the UCC will provide you with a 6-digit Company Prefix, which leaves you with a 5-digit Item Reference number. For companies that require up to 1,000 items, the UCC will provide you with an 8-digit Company Prefix, which leaves you with a 3-digit Item Reference number.

1. Select the Barcode Create tool 
2. Select *UPC/A* barcode type from the "pull-down" menu.
3. Enter your barcode number, Company Number, Item Number, and Check Digit. If you do not know your check digit, enter a zero "0" as your 13th digit, Barcode Toolbox will calculate and verify the Check Digit for you.



4. Enter the Bar Width Reduction (BWR) value. Your film house usually supplies this figure.
5. Enter the symbol's magnification (size). The Uniform Code Council recommends that you maintain a magnification size, not less than 80% of the standard size (100%) and not greater than 200%.
6. Set the bar height. This value specifies the height of the bar code bars. Insert a value if you want bars that are higher than the standard size. The Uniform Code Council does not recommend the truncation of barcodes; the readability can be effected.



7. Determine where the barcode symbol will be located in your artwork, and click at that location. This will generate the barcode artwork: the Human Readable Interpretation and symbol characters are generated from the data.





## Measuring barcodes

To measure a barcode that is already in the design, proceed as follows: First, select the Barcode Measure tool.



This tool is one of the 2 tools added to the standard Illustrator toolbox. This tool is combined in one group with the create tool. This will also open the Barcode Dialog if the dialog is not open at the time you select the barcode measure tool.

Now, the cursor will change to the barcode measure cursor.

Drag a line with the tool over the barcode you want to measure. Make sure you cover the complete barcode. The tool will limit the line to vertical and horizontal.

When you release the drag, the tool will search for the barcode that is located under the line you drew, and interpret the barcode. If a valid barcode is found, the artwork making up the barcode will be selected, and all the barcode parameters will be filled-in in the dialog. A beep will sound if no valid barcode is found at all. Please note that in some cases the plug-in will not be able to select the artwork (for example if the artwork is on a locked layer). In this case you will have to rely on the 'beep' to detect whether a valid barcode was found (no beep) or a no valid barcode was found (a beep will sound).

In some rare cases, the same barcode can be generated from two different barcode types. For examples, some EAN13 and UPC/A codes can generate the same barcodes. If this is the case, the 'try again'

button  will be enabled, and clicking the button will display the next matching barcode

**Note:** the measure tool does not measure the following properties:

- The quiet zone. This means that barcodes with a quiet zone that is too narrow will be read fine (which means you will get the code readout) but no warning will be given that the barcode is not compliant to the specs
- Contrast and background objects. If the barcode is positioned on artwork without a masking background, the tool will be able to read the barcode, and again, you will not be warned that the



contrast is too low, or that background objects might interfere with the barcode while reading.

## The Barcode Dialog

The same Barcode dialog is used as during generation of barcodes. However, after a measure operation, some fields will be added:



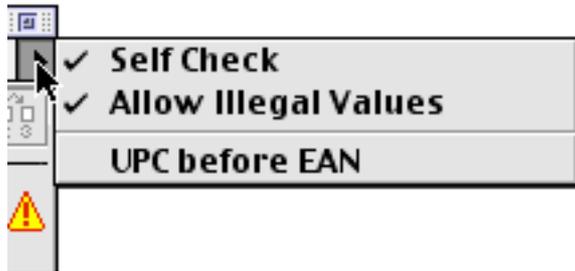
The first field 'max' contains the maximum deviation between any edge of a bar found in the barcode you measured and the actual location where the edge should be in the ideal case, and the second field 'mean' contains the mean deviation over all the edges of the bars when compared with the ideal edges.

In the above, the ideal location of the edge is calculated based on the measured settings like barcode type, barcode code, bar width reduction, etc. With this information, an ideal barcode is generated, and the edges of this barcode are used as 'ideal' edges and compared against the edges from the measured barcode.

These deviation values allow you to evaluate the quality of the measured barcode, and whether you need to re-create it or whether it is acceptable for output.

## Options

The following option can be specified in the side menu of the Barcode dialog:



**UPC before EAN:** some EAN13 barcodes contain exactly the same bar sequence as UPC/A codes. This means that if you measure an UPC/A barcode, you will get the readout of an EAN13 code, and you have to use 'try again' to get access to the UPC/A values. This is fine in Europe where EAN13 is used more often, but it is cumbersome in the US where UPC/A is used more often. Enabling this option will switch the search order for UPC/A and EAN13, so that UPC/A barcodes will be read as UPC/A first. This option is not enabled by default.

**(Other options):** other options in this menu apply to Barcode Generation, and are documented in that section.



## Appendix A: Troubleshooting

### **Plug-in keeps asking for a license**

**Problem:** I enter the license I received from Yin4Yang, but the plug-in keeps asking for a license number without giving any error message.

**Answer:** in some cases, the plug-in requires more than one license to operator correctly. This is for example true when you purchased an upgrade license.

The plug-in should know the other licenses that are needed, but there are several reasons why the plug-in might forget (some) licenses. For example Barcode Toolbox 3 will lose the original version 1 license when upgrading on OS X. Other possibilities are: A clean install from the OS, re-installing the software on a new computer.

When this happens, first enter the original license in the license dialog, and accept. The next time the license dialog returns, enter the next license and accept, and continue until you have entered all your licenses.

Please consult <http://www.yin4yang.com/support/licenseoverview.php> for a full overview about the license keys that are accepted by Yin4Yang products.

### **Problems when upgrading**

**Problem:** Upgrading from Barcode Toolbox 1.x and 2.x to 3.x requires an upgrade license key. When this new number is entered, Barcode Toolbox 3 does not continue start-up, but displays the same dialog again? What is wrong?

**Answer:** It is possible that Barcode Toolbox loses the original license key due to an error in earlier versions of Barcode Toolbox 1.x and 2.x. Enter your original license key in the same dialog as where you need to enter the upgrade license key. It does not matter in what order you enter the original and upgrade number: start-up will continue as soon as both license keys are recognized.

### **Upgrading Adobe Illustrator**

**Problem:** I upgraded Adobe Illustrator and Barcode Toolbox no longer works.

**Answer:** you need to another version of Barcode Toolbox depending of the version of Adobe Illustrator. So, if you upgrade Adobe Illustrator, you probably need to install another version of Barcode Toolbox. First download the latest version of Barcode Toolbox from <http://www.yin4yang.com/support/download.php> if you do no longer have the full download. Then select the correct version that matches your new version of Adobe Illustrator, and install that version. The



license keys are the same for all these versions, so you do not need to purchase a new license when upgrading Adobe Illustrator to a supported version. Barcode Toolbox 3 supports Adobe Illustrator 8,9,10 and CS(11)

#### **OS X: Installing the license on a standard user account**

**Problem:** I tried to enter the license for Barcode Toolbox, and the software says I need to install the license from an administrative account.

**Answer:** Barcode Toolbox installs the license in a central file, so that all users on the same computer can use a single license of Barcode Toolbox.

However, this file can only be installed if you install the software from an 'administrator account'.

So, log out from the user that are currently using, and log in again from an account that has administrative rights. Launch Adobe Illustrator from that account, and enter the license. You can go back to your other account once the license is accepted.

From now on, the license will be available for all users.

#### **OS X: The license could not be saved**

**Problem:** I am installing the license from an administrative account, but still the license cannot be saved.

**Answer:** In this case, Barcode Toolbox cannot write in the license file. This can happen for example in the following cases:

After upgrading from Barcode Toolbox 3.0. (this problem is fixed in 3.0.1 and later), or

If you re-installed the OS X operating system, and the administrative account does not match with the previous account.

To fix this, do the following:

In the Finder, go to the folder /Library/Preferences/

In that Folder, you will see a file called 'Yin4Yang Common Preferences'  
Delete this file.

Now launch Adobe Illustrator again, and you should be able to install the license.



## Appendix B: Verifying EPS and PDF barcodes

It is possible to open EPS files and PDF files directly in Adobe Illustrator. However, verifying barcodes in these files can give unexpected results when it comes to 'deviations'.

What is the problem: PostScript (used in EPS files) is a 'dynamic' file format: the results from reading a PostScript file can change depending on the environment where they are processed. One of the common practices is/was to adapt the linework dynamically to map to the output resolution of the device.

Now, Adobe Illustrator 'claims' to be a device of 800 DPI. This results in linework that is sometimes adapted to that resolution. The same is true when distilling EPS/PS files with Adobe Acrobat or any other PostScript to PDF conversion tool. In distiller there are options to control the resolution.

This can result in barcodes that appear to have a large mean and maximum deviation. We noticed this for example with barcodes generated from Barcode Pro.

The advice we give you in this matter is the following: Check your workflow if you encounter large deviations when verifying barcodes: if it contains one or more conversions between formats, it might be worth investigating if the deviations are introduced during one or more of those conversions.

On the other hand, you should be warned that if you measure these deviations, these deviations **will** also be rendered during your print job!



## Appendix C: Contacting barcode standards organizations

### The EAN.UCC

System enables any specified product, container, or transaction to be uniquely identified by a number anywhere in the world. To ensure that identification numbers are unique, the Uniform Code Council (UCC) manages the assignment of Company Prefixes in the United States and Canada and EAN International manages the assignment of EAN.UCC Company Prefixes outside of the United States and Canada.

EAN (European Artical Number) International  
Rue Royal, 145  
B-1000 Brussels,  
Belgium  
Homepage: <http://www.ean.be>  
Phone: +32/2/227.1020  
Fax: +32/2/227.1021

### Electronic Commerce Council of Canada (ECCC)

885 Don Mills Road, Suite 301  
Don Mills, Ontario,  
Canada M3C 1V9  
Homepage: <http://www.eccc.org>  
Phone: +1/416/510.8039  
Fax: +1/416/510.8043

### Uniform Code Council (UCC)

7887 Washington Village Drive Suite 300  
Dayton, OH 45459  
Homepage: <http://www.uc-council.org>  
Phone: +1/937/435.3870  
Fax: +1/937/435.7317