9.2.7 ITF-14 (Interleaved 2-of-5) Symbol Specifications

The ITF-14 Bar Code is used to encode a GTIN-14, a GTIN-13 or a GTIN-12. It is intended for scanning in a General Distribution Scanning environment.

Note: An ITF-14 Bar Code encodes a fixed length data string of 14 digits therefore when encoding a GTIN-13 or GTIN-12 in an ITF-14 Bar Code, one or two filler zero(s) respectively must be added in front of the GTIN.

The diagram below is of a GTIN-13 with a filler zero encoded in an ITF-14 Bar Code.

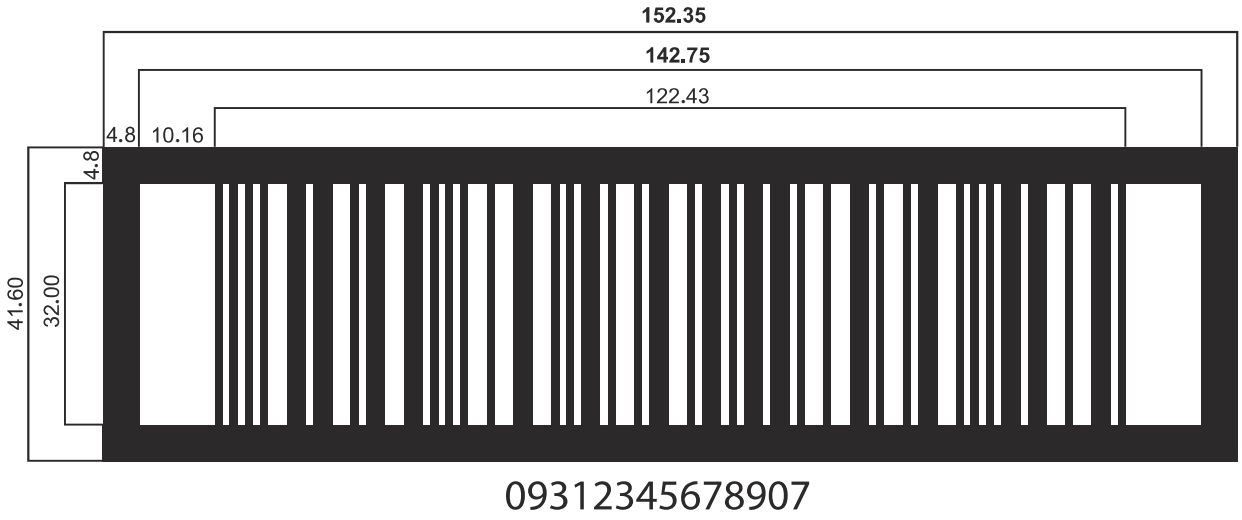

Figure 12 ITF-14 Bar Code at 100%

Bearer Bars

Bearer Bars are bars abutting the tops and bottom of the symbol bars in a bar code, or a frame surrounding the entire symbol. The purpose of the Bearer Bar is:

To equalise the pressure exerted by the printing plate over the entire surface of the bar code

To enhance the reading reliability assisting in the reduction of the probability of misreads or short scans which may occur when a skewed scanning beam enters or exits the bar code through the top or bottom edge

To possibly provide a visible check that all the print head elements are working if using a thermal print process

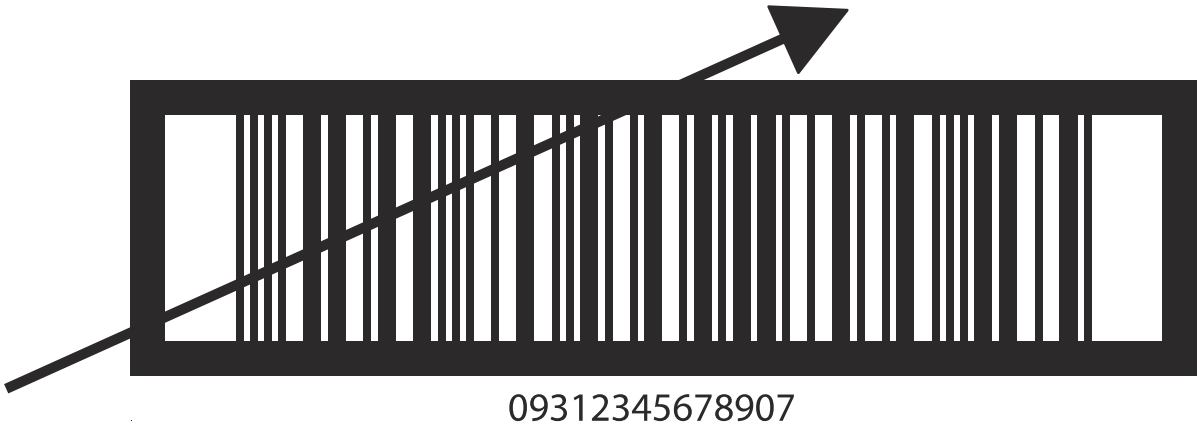

Figure 13 Example of a Skewed Scanning Beam

The top and bottom Bearer Bars are mandatory unless it is not technically feasible to apply it, in which case reading reliability is reduced. The vertical Bearer Bars are optional when using printing methods not requiring printing plates.

For printing methods requiring printing plates, the nominal Bearer Bar has a constant thickness of 4.8mm and must completely surround the bar code, including its Quiet Zones and butt directly against the top and bottom of the symbol bars.

For printing methods that do not require printing plates, the Bearer Bar only needs to be applied to the top and bottom of the bar code butting directly against the top and bottom of the symbol bars. The Bearer Bar may extend above and below the Quiet Zones. Make the Bearer Bar a minimum of two times the X-dimension (width of the narrow bar), which at nominal size (100%) is:

X-dimension (nominal narrow bar width) x 2 = 1.02 x 2 = 2.04mm.

Magnification

The specified magnification range for ITF-14 Bar Codes that are to be scanned in a General Distribution Scanning environment (automated scanning) is between 50% and 100% (X-dimension 0.51mm – 1.02mm). For other scanning environments (not automated scanning), the allowable magnification range is between 25% and 100% (X-dimension 0.25mm – 1.02mm).

For all scanning environments printing at the higher end of the magnification range is recommended.

Regardless of the scanning environment, ITF-14 Bar Codes with a magnification less than 62.5% (X-dimension 0.64mm) should not be printed directly onto corrugate fibreboard.

Magnifications between 100% and 120% (X-dimension between 1.02mm and 1.22mm) are acceptable based on historical specifications, but a migration to the 100% maximum magnification should be made on new artwork.

Mathematically, when W is width, 48 is the total number of narrow elements, 29 is total the number of wide elements, BWR is the Bar Width Ratio which is nominally 2.5, and X is X-dimension (module width), which is 1.02mm at 100% magnification.

W = (48X) + (29X)BWR (excluding Quiet Zones and Bearer Bars)

Height of Bars

For scanning in a General Distribution Scanning environment (automated scanning), the minimum recommended bar height for an ITF-14 Bar Code is 32mm.

For all other scanning environments the bar height should be printed as high as possible. In no case shall the bar height be less than 13mm. While 13mm is the minimum height for bar codes not being scanned in an automated scanning environment, every effort should be made to increase the bar height to as close to 32mm as possible.

Human Readable Interpretation

Print the Human Readable Interpretation clearly and in proportion to the size of the bar code. Character size and font are not specified, and the digits may be printed anywhere in the area surrounding the bar code, although the preference is directly below the symbol ensuring Quiet Zones are not infringed upon.

Bar Width Ratio

Bar width ratio is the comparison in bar widths between the wide modules and the narrow modules in an ITF-14 Bar Code.

The target bar width ratio is 2.5:1, meaning that the wide bars are 2.5 times the width of the narrow bars.

While the preferred bar width ratio is 2.5:1, the acceptable range is 2.25:1 to 3:1.

ITF-14 Bar Code Dimensions

Magnification	X-Dimension	Width	Bar Height	Quiet Zones
25%	0.25	30.62	13.00	2.54
30%	0.30	36.73	13.00	3.05
35%	0.36	42.85	13.00	3.56
40%	0.41	48.97	13.00	4.06
45%	0.46	55.09	13.00	4.57
50%	0.51	61.21	32.00	5.08
55%	0.56	67.34	32.00	5.59
60%	0.61	73.46	32.00	6.10
62.5%	0.64	76.52	32.00	6.35
65%	0.66	79.58	32.00	6.60
70%	0.71	85.70	32.00	7.11
75%	0.76	91.82	32.00	7.62
80%	0.81	97.94	32.00	8.13
85%	0.86	104.06	32.00	8.64
90%	0.91	110.19	32.00	9.14
95%	0.97	116.31	32.00	9.65
100%	1.02	122.43	32.00	10.16

Note: In the heading of this table, Width = Width of bar code excluding Quiet Zones and Bearer Bars and assumes a Bar Width Ratio of 2.5:1, Bar Height = Bar Height excluding Bearer Bars.
It is recommended to always allow slightly more than the minimum required Quiet Zone to allow for any possible ink spread or registration issues.
All measurements are in millimetres.

TABLE 134 ITF-14 Bar Code Dimensions