

V3



**Tactile marks
for the correct location
of QR codes**



Technical document V 3: Tactile marks for the correct location of QR codes

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Technical Documents of the Spanish Braille Commission related to various matters and available in English

Technical Document V 1: Spanish ANSI table for computerised braille

Technical Document V 2: Tactile marks on swipe cards

Technical Document V 3: Tactile marks for the correct location of QR codes

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1. Foreword

The inclusion of QR codes on different types of products and on all types of printed media—cardboard packaging, adhesive labels, plastic materials, etc.—can be a great source of additional information for visually impaired users. Although braille is the simplest method to recognize and identify a product immediately, this reading and writing system does not allow any of the packaging to include information as extensive as that usually included in print.

It is common to see in standard labelling how printing capabilities are used to the maximum to fit as much information as possible in a small space, massively using excessively small fonts that, sometimes, are even difficult to read for people without visual impairments. In these cases, it is tremendously important to have an accessible document or website that collects all the information not available in braille and to which a user can be immediately forwarded via a QR or other similar code.

Since the publication of the first version of this technical document in June 2016, there has been a marked technological advance in the tools available to smartphones to locate these codes. On the one hand, the cameras on these devices have an increasingly higher resolution to recognize images and, on the other hand, the mobile applications for QR code recognition are increasingly functional and allow them to be located more easily in the environment in which they are located.

However, if this QR code is not perfectly marked so that the user can notice its existence and find it relatively easily and thus be able to correctly place their mobile device in front of it, its inclusion in the packaging may be useless.

The widespread use of QR codes means that they can appear on almost any type of product and on almost any type of surface, and, as with the standard braille labelling of different goods and consumer products, the material used to present and describe the product will also condition the most appropriate way to «mark» the QR code for its correct location.

In accordance with this, the Spanish Braille Commission has decided to address, with specific documents such as this one, the different casuistry in which QR codes can be found, providing the manufacturers of these products or their packaging and labels with the most appropriate and up-to-date options for highlighting these codes.

The recommendations contained in this document may be applied to other types of quick response codes that, without being strictly QR codes, aim to allow visually impaired people to locate and identify a product with the use of a mobile device with the appropriate *software*, such as, for example, NaviLens codes.

2. Technical specifications

The size of the surface on which the quick response code is to be included will determine the most appropriate way to label it in relief for its quick and unambiguous location.

On surfaces where available space is limited, a small angle mark will be used to indicate the position of the code. However, locating this small angle in the tactile exploration of a wider surface will be much more difficult than if the code is clearly framed in a full raised box.

Either of these two marks is considered valid from the point of view of their usefulness, and it will be the manufacturer of the packaging or the product to be labelled who decides which option is most likely to favour the user.

2.1. On surfaces without space restrictions

In general, a QR code printed on any surface will be marked by adding to its entire contour one of the following elements:

- A frame made of a continuous or a dotted line, not combinable, with the same dimensions, and in relief.

Figure 1. Correct and incorrect examples of QR codes with different contours

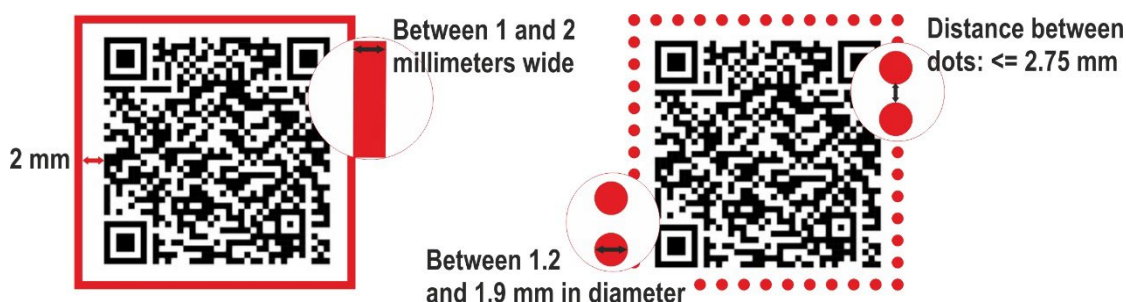


- The thickness of the relief will never be less than 1 mm, and will have a maximum of 2 mm. In the case of a dotted line, they will have a diameter at their base similar to that of standard braille dots, i.e. 1.5 mm, and may vary in this case between 1.2 and 1.9 mm as they are not braille dots per se (see *Technical Document B 1: Dimensional Parameters of Braille*).¹ Likewise, the dots can be

¹ <https://www.once.es/servicios-sociales/braille/comision-braille-espanola/documentos-tecnicos/technical-documents-of-the-spanish-braille-commission>.

printed at any distance from each other provided that the gap between the edges of the bases of two adjacent points does not exceed 2.75 mm so that the idea of continuity is not lost (see Figure 2).

Figure 2. Dimensions of raised lines and dots



- Between the edges of the QR code and the tactile mark it is advisable to leave at least 2 mm, especially when using the die technique on paper or cardboard, since, if they overlap, the QR code might be deformed and affect its recognition. If marking is done using transparent ultraviolet inks or a similar system, this separation is not as critical, although it is still recommended.
- If the mark must appear close to the edge of the packaging due to the location of the QR code established in the original design, it is recommended to leave a distance of at least 2 mm between the mark and the edge of the packaging. In accordance with the previous point, this would mean that the QR code should not be located less than 4 mm from the edge of the packaging to leave room for the tactile mark and its separation from the edge.
- The recommended relief height will be between 0.4 and 1 mm. In the event that it is necessary to ensure that the tactile mark does not break through the surface on which the QR is printed because it will be produced using a dry punch die—for example, on paper or cardboard—the mark may have a lower height than the recommended one, but never below 0.2 mm. In the event that other stamping techniques are used for the tactile mark, such as ultraviolet ink or any other that does not pose a risk of damaging the packaging, the height of the dot will be the one initially recommended.

- In the case of QR codes that are accompanied by some type of frame, illustration, message, etc. around it, it is recommended not to include the aforementioned elements within the tactile mark. In this way, the user will be able to recognize any type of QR code by touch in any circumstance, regardless of its graphic form.

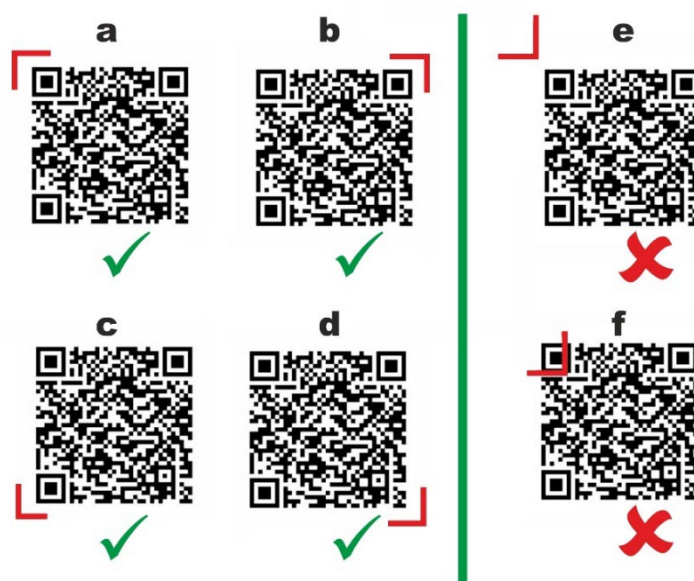
Figure 3. QR code signage with illustrations



2.2. On surfaces with space restrictions

The QR code will be highlighted in these cases by marking any of its corners with a 90° angle in relief formed by two continuous lines. The chosen corner of the QR must be within the angle formed by the two raised lines (Figure 4, cases a, b, c, and d).

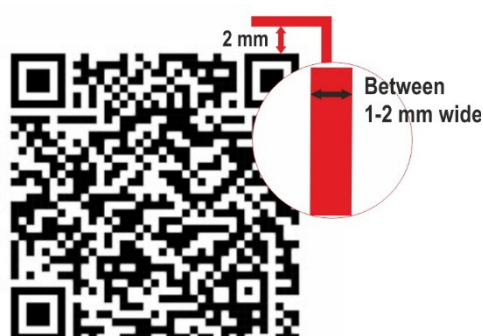
Figure 4. Correct and incorrect examples of QR codes in different positions



It will have the following technical specifications:

- QR codes must always be located on the inside of the angle (Figure 4, cases a, b, c and d), never outside it or superimposed on the graphic that makes up the QR (Figure 4, cases e and f).
- A minimum of 2 mm should be left between the edges of the QR code and the tactile mark, as overlapping could deform the QR code and affect its recognition (Figure 5).

Figure 5. Dimensions of embossed lines



- The thickness of the relief will never be less than 1 mm, and will have a maximum of 2 mm (Figure 5).
- The length of the two lines that make up the angle will be 6 mm, with a minimum admissible for correct detection of the mark of 5 mm per line (Figure 6).

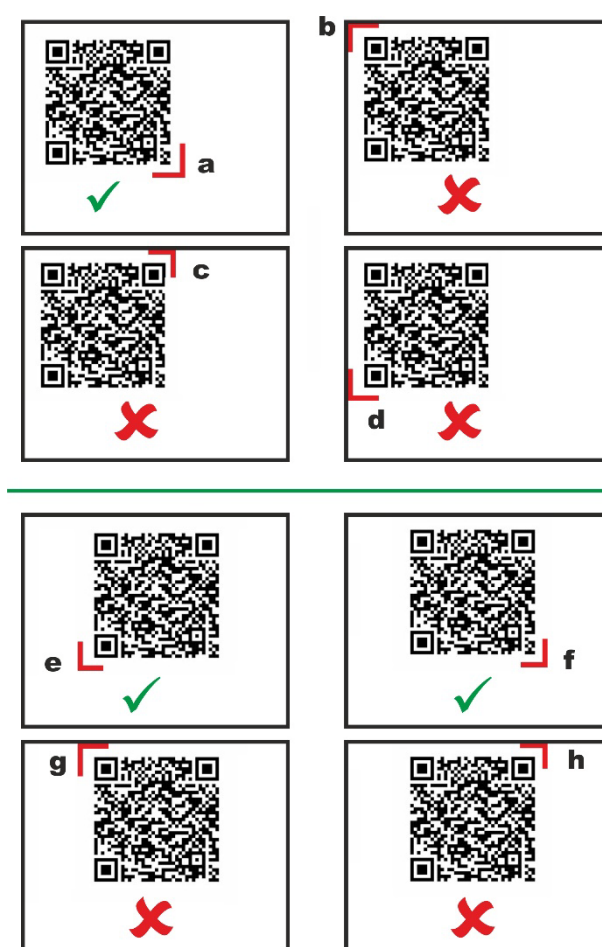
Figure 6. Length of angle lines



- The height of the relief will be between 0.2 and 0.5 mm, always coinciding with the height chosen for the braille text included in the packaging, if that is the case.

While the choice of the corner of the QR to be marked is at the discretion of the manufacturer, whenever the QR is located next to one or more edges of the packaging, the raised mark is required to be located in any of the other corners that are furthest from the edge. In Figure 7, in the first case, option a is valid, while any of the options b, c or d would not be correct. In the second case, either of the two bottom corners (e or f, the furthest from the edge of the package) would be correct choices, but not either of the g or h options.

Figure 7. Location of marks within the packaging



Technical Documents of the Spanish Braille Commission

