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1 Introduction

2D barcodes, such as the GS1 DataMatrix, Data Matrix and QR Code, have achieved widespread adoption. The GS1 DataMatrix is widely utilised in the healthcare and retail sectors, while the QR Code is increasingly being adopted for consumer engagement and retail applications. Brand marketing teams have embraced the QR Code as a tool to connect consumers to online information, leveraging the ability of smart device cameras to instantly recognize web addresses in the barcode. Some in the consumer goods industry are taking advantage of the error correction capabilities of 2D barcodes to incorporate design elements into the QR Code, such as customised barcode shapes and embedded logos within the barcode matrix, see examples below.

Figure 1-1 Standard QR Code (left)**,** customised QR Code (centre) and QR Code with logo (right) examples

The purpose of this document is to provide industry stakeholders with insights into what colours and other elements are possible for 2D barcodes in retail and consumer settings. The retail sector—including retailers, suppliers, brands, manufacturers, and solution providers—has agreed that GS1 DataMatrix, Data Matrix, and QR Code will be the 2D barcodes used at retail point-of-sale (POS). Detailed instructions on how to generate 2D barcodes are beyond the scope of this guide. While other industries can benefit from this guide, the focus on 2D barcodes used in retail.

All barcode examples in this document are shown for illustrative purposes only and may not represent the sizes approved for use in the GS1 General Specifications. The Symbol Specifications Tables defined by the GS1 General Specifications Standard SHALL be used for all normative references to ensure conformance requirements are met.

To ensure fast and efficient barcode readability across the supply chain and at the point-of-sale (POS), barcode customisation or the addition of logos, as shown in Figure 1-1, should be avoided. This is particularly crucial for 2D barcodes at POS where speed and accuracy are essential—unlike scenarios where barcodes are scanned without time constraints using a smartphone camera.

2 2D barcode quality

As the retail industry transitions to 2D barcodes, it is essential to ensure that both linear and 2D barcodes are printed to meet minimum quality standards. Most products today feature an EAN/UPC barcode so familiar that we barely notice it —until a scanner fails to read it correctly at the point-of-sale (POS). Maintaining the same level of efficient scanning at the POS with 2D barcodes is crucial to preserving retail efficiency, productivity and trust in the POS process.

ISO/IEC 15415 specifies methodologies for measuring, evaluating and grading specific attributes of two-dimensional barcode symbols and the GS1 General Specifications Standard establishes the minimum quality standards for both linear and 2D barcodes used in the retail ecosystem. Section 5 of the GS1 General Specifications Standard outlines the overall requirements, including those for trade items scanned in general retail POS and not in general distribution or trade items scanned in general retail POS and general distribution. Below are two excerpts from Table 1 of the GS1 Symbol Specification (SST1). For the latest complete and detailed information, please refer to Section 7 of the GS1 General Specifications Standard.

Table 2-1 GS1 symbol specification table 1 excerpt (See GS1 General Specification's Figure 5.12.1-1)

Main symbol(s) specified	X-dimension mm (inches)			(**) Minimum symbol height for given X mm (inches)			Quiet Zone		Minimum quality specification
	(*) Minimum	Target	Maximum	For minimum X-dimension	For target X-dimension	For maximum X-dimension	Left	Right	
EAN-13	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	11*X*	7*X*	1.5/06/660
EAN-8	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	14.58 (0.574")	18.23 (0.718")	36.46 (1.435")	7*X*	7*X*	1.5/06/660
UPC-A	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9*X*	9*X*	1.5/06/660
UPC-E	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9*X*	7*X*	1.5/06/660
GS1 DataBar Omni-directional	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	12.14 (0.478")	15.19 (0.598")	30.36 (1.195")	None	None	1.5/06/660
GS1 DataBar Stacked Omni-directional	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	25.10 (0.988 ")	31.37 (1.235")	62.70 (2.469")	None	None	1.5/06/660
GS1 DataBar Expanded	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	8.99 (0.354")	11.23 (0.442")	22.44 (0.883")	None	None	1.5/06/660
GS1 DataBar Expanded Stacked	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.75 (0.738")	23.44 (0.923")	46.86 (1.845")	None	None	1.5/06/660

Table 2-2 GS1 symbol specification table 1 addendum 2 for 2D barcodes excerpt (See GS1 General Specification's Figure 5.12.1-3)

Symbol(s) specified	X-dimension mm (inches)			Minimum symbol height for given X mm (inches)			Quiet Zone	Minimum quality specification
	Minimum	Target	Maximum	For minimum X-dimension	For target X-dimension	For maximum X-dimension	Surrounding Symbol	
GS1 DataMatrix (ECC 200)	0.396 (0.0150")	0.495 (0.0195")	0.990 (0.0390")	Height is determined by X-dimension and data that is encoded			1X on all four sides	1.5/12/660
Data Matrix (GS1 Digital Link URI) (ECC 200)	0.396 (0.0150")	0.495 (0.0195")	0.990 (0.0390")	Height is determined by X-dimension and data that is encoded			1X on all four sides	1.5/12/660
QR Code (GS1 Digital Link URI)	0.396 (0.0150")	0.495 (0.0195")	0.990 (0.0390")	Height is determined by X-dimension and data that is encoded			4X on all four sides	1.5/12/660

Note: For the latest complete and detailed information, please refer to Section 7.12.3.1 of the GS1 General Specifications Standard

For the barcode quality standards in other application areas, please refer to the GS1 General Specifications standard.

Linear and 2D barcodes play a critical role in ensuring efficiency and interoperability in product distribution and purchasing. This highlights the importance of maintaining high-quality standards throughout the barcode production process. Packaging designers must prioritise barcode quality during the design and packaging stages, while printer solution providers need to carefully select the appropriate printing technology to achieve optimal results.

2.1 2D barcode size

The X-dimension is the length and width of an individual matrix square in a 2D barcode. Smaller X-dimensions produce more compact barcodes, while larger X-dimensions result in larger barcodes. In Table 2-2 the minimum height and width of the 2D barcode's individual square has an X-dimension of 0.396 millimetre (0.0150 inch) and maximum of 0.990 millimetre (0.0390 inch). The range of X-dimensions have been selected to ensure compatibility with the resolution and capabilities of scanning devices in the target application. The X-dimension is a critical parameter in ensuring that barcodes are both printable and scannable under practical conditions throughout the open supply chain. The final parameter that will affect the size of the barcode is the amount of encoded data in the barcode. To learn more about optimising the 2D barcode size see the 2D Barcodes at Retail Point-of-Sale Implementation Guideline.

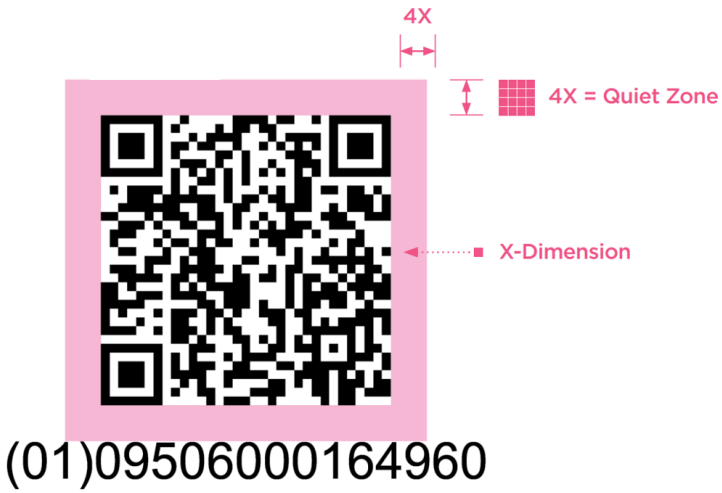


Figure 2-1 QR Code X-dimension example

2.2 2D barcode Quiet Zone

The Quiet Zone is the empty space that surrounds all four sides of a 2D barcode (see pink "bands" around the barcodes in Figure 2-2 and 2-3). This space helps barcode scanners locate the barcode's finder pattern (see green pattern in Figure 2-2 and 2-3) and begin to process the information in the barcode. Removing the Quiet Zone or putting graphics, colours or other printed elements in the Quiet Zone space can deteriorate barcode reading performance. As seen in Table 2-2 the minimum Quiet Zone for Data Matrix (and GS1 DataMatrix) is 1 X-dimension on all sides and for QR Code it is 4 X-dimensions on all sides. Within a layout design, it is always a good practise to define a little larger Quiet Zone than the minimum to allow for tolerances in the production process.

Figure 2-2 Data Matrix Quiet Zone (pink area) example

Figure 2-3 QR Code Quiet Zone (pink area) example

Figure 2-4 QR Code Quiet Zone reverse reflectance example

2.3 2D barcode minimum quality specification

The print quality assessment method is defined in the International Standard ISO/IEC 15415 which is used for measuring and grading of 2D barcodes. The print quality grade is determined using verifiers that adhere to ISO and GS1 quality guidelines and is in conformance to ISO/IEC 15426-1 and ISO/IEC 15426-2. The print quality grade report includes a minimum grade level, the measuring aperture and the wavelength of light used for the measurement.

The minimum quality grade for 2D barcodes in retail applications is 1.5 / 12 / 660 as seen in table 2-2.

- **1.5** is the **overall symbol quality grade**.
- **12** is the measuring **aperture** reference number (corresponding to a 0.30 millimetre or 0.012 inch diameter aperture). The aperture value is 80% of the minimum X-dimension as defined by ISO/IEC 15415
- **660** defines the **illumination** or the peak response wavelength in nanometres.

2.3.1 Overall symbol quality grade

Each time a linear or 2D barcode is evaluated (verified), a barcode verifier measures numerous characteristics. These are compiled to arrive at an overall quality grade between the lowest score of 0.0 and the highest possible score of 4.0. 2D barcode quality standards use the following compliance factors:

- **Decode:** Verification uses the reference decoding algorithm defined by ISO/IEC for decoding the 2D barcode. Valid decoding results in a grade of 4.0. If the barcode cannot be decoded, the resulting grade is 0.0.

- **Symbol contrast:** Symbol contrast is the difference between the darkest and lightest areas of the barcode. This is measured in is displayed in a decimal grade from 0.0-4.0.
- **Axial nonuniformity:** Most 2D barcodes should be square, with evenly spaced elements. Axial nonuniformity is a measure of how 'out of square' a barcode is when checked against its expected horizontal and vertical axes. This is measured and then graded from 0.0-4.0.
- **Grid nonuniformity:** Grid nonuniformity measures how the symbol is distorted in reference to how much the implied x and y axes are not at an angle of 90°. It is, in effect, measuring how "twisted" is the image.
- **Modulation:** A barcode should be evenly dark and light across the 2D barcode. Modulation compares the least dark-to-light area of the symbol to the greatest difference between the dark and light elements. This is measured and then graded from 0.0-4.0.
- **Unused error correction:** All 2D barcodes include error correction characters that may be used to reconstruct damaged parts of the symbol. A perfectly printed barcode will not require any use of the error-correction characters and will receive a grade of 4.0. The parameter is measured and then graded from 0.0-4.0.
- **Fixed pattern damage:** Fixed elements of a 2D barcode are used by the scanner to find the barcode. If any of these are damaged the barcode will be more difficult to read, so any damage is measured and contributes to the grade from 0.0-4.0.
- **Print growth:** This refers to the amount of matrix cells being wider or narrower than nominal. This was introduced as a graded parameter in ISO/IEC 15415:2024.

In addition, the appropriate module size range and correctness of the GS1 data structure can be added as application specific graded parameter.

For more information on barcode quality please refer to the GS1 General Specifications, ISO/IEC 15415 and the GS1 compliant retail barcode section of the 2D Barcodes at Retail Point-of-Sale Implementation Guideline.

2.3.2 Imager aperture

The aperture of a camera is a critical element as it controls the amount of light entering the camera and reaching the imager sensor. This has a significant impact on the overall quality of the captured image. The aperture in a smart device such as a smartphone camera typically has a fixed or an adjustable aperture setting depending on the device and its capabilities. The smartphone aperture is typically 1.875 millimetre (0.074inch) to 2.5 millimetre (0.098 inch) which is significantly larger than the 0.30 millimetre (0.012 inch) used in the verification of 2D barcodes at retail. The smart device's aperture allows significantly more light in making them less sensitive to low contrast barcodes.

2.3.3 Imager illumination (lighting)

Both traditional laser diode POS scanners for linear barcodes and modern imaging-based POS scanners for linear and 2D barcodes typically operate with red light in the 630–680 nanometre range. Retail scanners and verifiers use narrow-band illumination with a 660 nanometre peak wavelength, aligning with the red visible spectrum. The selection of 660 nanometre light illumination for verifying the barcode ensures the measurement process will coincide with the typical barcode scanners used at POS.

In contrast, smart devices, such as smartphones, use natural broadband illumination or white light (e.g., from LED flashes). This difference in lighting significantly impacts imaging performance, as the reflectance profile (i.e., the "view" of the scanner) varies between POS scanners and smart devices. For instance, the red QR Code shown below can be decoded by a smart device but may not be detected by a POS scanner due to its reliance on narrow-band red light.

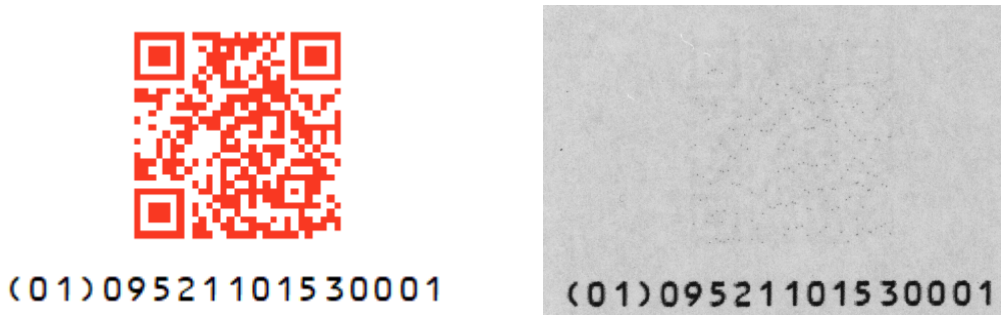


Figure 2-5 View of red QR Code by a smart device imager (left) and a red illuminated POS imager (right)

Barcode scanners that use a red light to scan the reflected area may interpret the red 2D barcode as white. Red appears red because it reflects only the red wavelengths of a broad-spectrum light source while absorbing other wavelengths, such as green and blue. When red light is used as the illumination source, both white and red surfaces reflect the same amount of light, making them indistinguishable.

3 2D barcode colour & contrast

A 2D barcode consisting of a matrix of dark squares (data elements) and light spaces (background), is a normal reflectance 2D barcode, as shown in Tables 3-1 and 3-2. Retail 2D barcodes used at POS can also employ reverse reflectance, where light squares represent the data elements, and the background is dark, as illustrated in Table 3-3.

Note: To maintain backward compatibility, linear barcodes are printed with normal reflectance, typically as black bars on a white background.

As shown in Figure 2-5, the choice of colours significantly affects the ability of POS scanners and verifiers to decode the barcode. The illuminating colour determines the contrast between the dark and light elements. This plays a crucial role in enabling the scanning device to distinguish the matrix and accurately read the 2D barcode.

Modulation and contrast are important factors influencing barcode readability. Black and white provide the identical contrast if using different light sources (red, white etc) and are ideal for 2D barcodes. Colour gradients (or similar shades) should be avoided as they offer poor contrast.

Red should be avoided for 2D barcodes, as POS scanners and verifiers operating at 660 nanometres cannot detect red. A 2D barcode on a red substrate can be scanned under red light if dark black, blue or green is used for the barcode.

While some scanners can decode barcodes with weak contrast, it is recommended to use very dark colours for the matrix squares and very light colours for the background to ensure optimal readability of normal reflectance 2D barcodes (or reflectance reversal with the same contrast).

Table 3-1 Preferred normal reflectance matrix square colours

"Good" 2D matrix square colours (normal reflectance)			
Black	**Dark Green**	**Dark Blue**	**Dark Brown**
			

Table 3-2 Preferred normal reflectance matrix background colours

"Good" 2D matrix background colours (normal reflectance)			
White	**Yellow**	**Light Orange**	**Red**

Table 3-3 Preferred reverse reflectance 2D barcodes colours examples

"Good" 2D matrix background colours (reverse reflectance)			
Black	**Dark Green**	**Dark Blue**	**Dark Brown**
			

Note: While yellow, light orange and red could be used for the reverse reflectance 2D barcode matrix squares, matte white is recommended for maximum contrast of the data elements.

3.1 Reflective and transparent substrates

Reflective and transparent substrates create challenges for scanning solutions as the substrates make the 2D barcode difficult to read.

3.1.1 Reflective substrates

Substrates like aluminium, tin cans, and metallised film have highly reflective surfaces that can appear black or white to the scanner depending on the type of lighting. Avoid printing 2D barcodes on high sheen or glossy substrates as the reflective properties can produce spectral reflections that

obscure the barcode or distort the perceived shape of the 2D barcode's matrix squares, depending on the angle of the reflected light (see Figure 3-1 left image). Packaging designers have used the reflective surface with a white outlined background as part of the barcode design. This technique can work with a POS imaging scanners that utilise angled red light, but the design technique often fails the verifier quality tests.

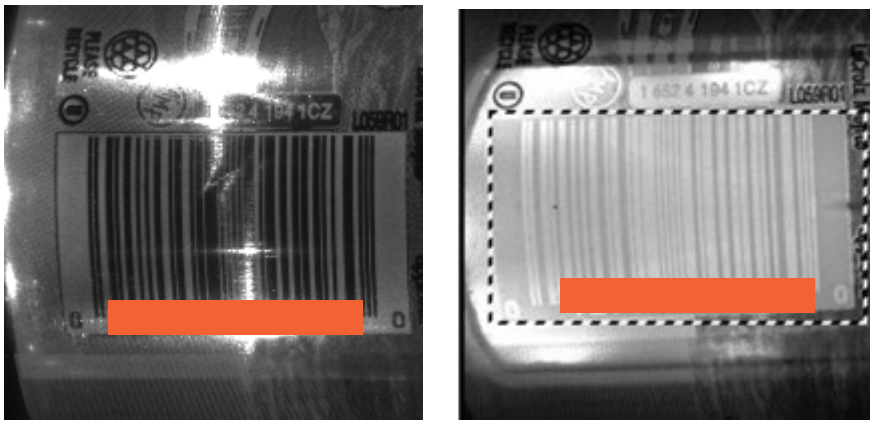


Figure 3-1 Aluminium can image with scanner 45°(left) and dome (right) lighting

Another packaging design technique is to use a black barcode on metal or metallised film. This appears legible to the human eye but presents challenges to a scanner with angled lighting (see Figure 3-2).

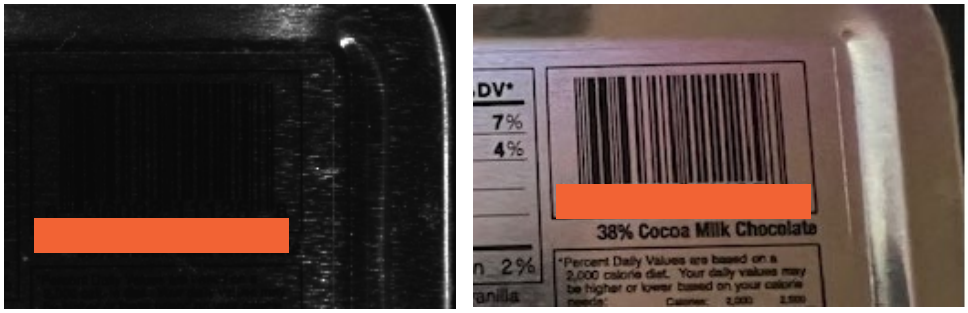


Figure 3-2 Tin box image with scanner 45°(left) and smart device natural (right) lighting

Note: To address this issue matte black 2D barcodes with a white background provide the highest contrast and are ideal for barcodes on reflective substrates.

3.1.2 Transparent substrates

Flexible packaging used for frozen vegetables, nuts, and grains often consists of transparent or semi-transparent substrates. Barcodes printed directly on these materials can be difficult for scanners to detect and decode. The contrast of a barcode can vary depending on the package contents (e.g., white or blue paper tissues). Increased contrast can negatively impact modulation, making it harder to differentiate between light and dark 2D barcode elements. Additionally, if the package content has irregular reflectance properties (e.g., vegetables in the background), it may interfere with barcode readability—this effect is more pronounced with clear or lower opacity packaging.

Note: To address this issue, a matte, opaque white area should be printed on the transparent or semi-transparent substrate, with a black 2D barcode placed on top. This approach significantly improves scanning accuracy and reliability.

3.2 Key points to remember for printing 2D barcodes

1. **Recommended contrast**: A scanner will have difficulty reading barcodes with a low contrast ratio, such as a yellow barcode on a white background. Ensure a symbol contrast of at least 30% (per ISO/IEC 15415 and ISO/IEC 15416) to achieve a minimum quality grade of 1.5. For greater reliability, a contrast of around 50% is recommended. On white carton boxes with black codes, symbol contrast typically exceeds 70%. Contrast can be estimated using design software or measured with a Colour Contrast Analyser; however, analysers using white light may produce misleading results.
2. **Reflectance:** Colour combinations where red light is absorbed to achieve dark and for light colours which reflect the maximum of the red light provides the best readability for POS scanners and verifiers.
3. **Normal reflectance 2D barcodes**:
    a. Use dark colours for the barcode matrix squares, such as black, dark blue, dark green, or dark brown.
    b. Matte black (non-reflective) is especially effective for improving barcode readability on POS scanners and verifiers.
    c. Select light background colours (matrix spaces) like white, yellow, orange, or red, which provide a high light reflectance to the barcode scanner.
4. **Reverse reflectance 2D barcodes**:
    a. Use light colours for the barcode matrix squares (data elements), such as white, yellow, orange, or red. Matte white (non-reflective) provides the best readability for POS scanners and verifiers.
    b. For the background (matrix spaces), use dark colours like black, dark blue, dark green, or dark brown to ensure high contrast for scanner readability.
5. **Reflective materials**: Do not print 2D barcodes directly on shiny or reflective materials, such as metal or glossy film. These materials reflect the scanner's red light, making the barcode unreadable for POS scanners.
6. **Quiet Zone**: Maintain a clear Quiet Zone (unprinted area) around the 2D barcode to enhance scanner recognition and readability.
7. **Quality assurance**: Use a barcode verifier to measure the 2D barcode and ensure that it meets or exceeds quality standards for readability. Ensure that these devices are ISO/IEC 15426-2 and ISO/IEC 15426-1 compliant.

Important: Logos that obscure the encoded data within a 2D barcode, along with alterations to the matrix squares or colour choices for the square and background, can compromise barcode quality, potentially disrupting product scanning and POS operations.

See **Appendix** for scanning results of example 2D barcodes with varying matrix and background colours.

4 Customised 2D barcodes and logos

"Customised" 2D barcodes, have artistic modifications or have been visually enhanced to align with a specific brand, design style, or aesthetic. Unlike traditional black-and-white 2D barcodes, customised QR Codes or Data Matrix barcodes can incorporate colours, logos, patterns, and unique shapes. While these customised QR Codes remain scannable with smart devices, they can pose challenges in the retail ecosystem, where high-speed identification and decoding are essential to maintain product and point-of-sale throughput.

4.1 Customised 2D barcodes

Table 4-1 shows artistic modifications to the 2D barcode's matrix squares, including reshaping and colour variations. These design choices frequently lead to quality issues, as highlighted by the verifier results shown in Figures 4-1 to 4-4.

Table 4-1 Customised QR Code examples

Customised QR Code			
Design #1	**Design #2**	**Design #3**	**Design #4**
			

- **Symbol contrast**: Symbol contrast is the difference between the darkest and lightest areas of the barcode.

Figure 4-1 Design #1 fails contrast compliance test

- **Modulation**: A barcode should be evenly dark and light across 2D barcode. Modulation compares the least dark-to-light area of the symbol to the greatest difference between the dark and light elements. This is measured and then graded from 0.0-4.0.

Figure 4-2 Design #2 fails modulation compliance test

- **Fixed pattern damage:** The fixed patterns of a 2D barcode are used by the scanner to find the barcode. If any of these are damaged the barcode will be more difficult to read, so any damage is measured and graded from 0.0-4.0.

Figure 4-3 Design #3 fails fixed pattern damage compliance test

- **Undetectable:** The colour choice and artistic pattern make the 2D barcode unrecognisable.

Figure 4-4 Design #4 was not detectable

4.2 2D barcodes and logos

Placing logos or branding elements within or over a 2D barcode is occurring with increasing frequency. Logos and other images are not an integrated part of the Data Matrix (ISO/IEC 16022) and QR Code (ISO/IEC 18004) internationally approved standards. Logos and other images result in barcode damage since they sit on top of data, blocking the encoded information. The reason they still may be readable is the result of error correction characteristics that allow the data to be ”recovered” despite this damage. Error correction is used in 2D barcodes, such as QR Codes and Data Matrix codes, to enhance their reliability and readability. It allows the barcode to remain scannable even if parts of it are damaged, obscured, or printed with errors. If the logo is too large or positioned in a way to compromise the locating feature or error correction modules, this will cause a decode failure. Utilising the error correction capabilities to overcome this type of purposeful damage to the barcode will make the barcode more susceptible to scanner decode failure if the barcode is further damaged as it moves through the supply chain. Table 4-2 demonstrates the effect of an example logo on a 2D barcode with increasing error correction. Damage to the fixed pattern areas (locating features and clocking pattern) of a 2D barcode is particularly critical, as error correction cannot compensate for disruptions in this essential structural component.

Table 4-2 QR Code with https://example.com/01/09521101530001/10/ABC123?17=270104 encoded and a logo.

Error Correction (ECC) & Dimension	QR Code with Logo	Verifier image	Compliance results	
ECC: L (7%) Version 3 (29x29) 2D Size ~26 X 26 mm² Logo Dia. ~16 mm			Failure 0.0/12/660, **Undetectable**	**Fail** 
ECC: M (15%) Version 4 (33X33) 2D Size ~29 X 29 mm² Logo Dia. ~16 mm			Failure 0.0/12/660, **All error correction used** and reflectance margin	**Fail** 
ECC: Q (25%) Version 5 (37x37) 2D Size ~33 X 33 mm² Logo Dia. ~16 mm			Failure 1.3/12/660 **55% of error correction used**, low reflectance margin	**Marginal Failure** 
ECC: H (30%) Version 6 (41x41) 2D Size ~37 X 37 mm² Logo Dia. ~16 mm			Pass 3.5/12/660 **35% of error correction used**. Acceptable reflectance margin	**Pass** 

Important: Logos that obscure the encoded data within a 2D barcode, along with alterations to the matrix squares or colour choices for the square and background, can compromise barcode quality, potentially disrupting product scanning and POS operations.

5 Appendix

5.1 Various 2D barcode examples

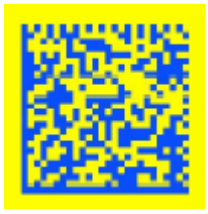
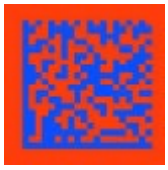
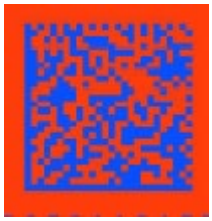
This section contains 2D barcodes with high level quality results for various colours, modifications and embedded logos.

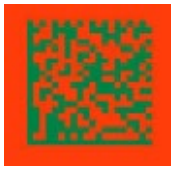
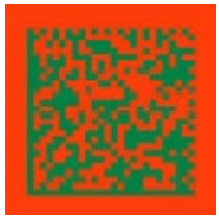
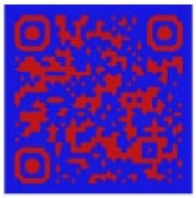
Quality legend:

- **Pass =** ☑
- **Fail =** ☒
- **Not detected =** ?

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Black	White		☑		☑		☑
Blue	White		☑		☑		☑
Green	White		☑		☑		☑
Yellow	White		?		?		?
Orange	White		?		?		?

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Red	White		?		?		?
Brown	White		☑		☑		☑
Gold	White		?		?		?
Black	Yellow		☑		☑		☑
Black	Orange		☑		☑		☑
Black	Red		☑		☑		☑
Black	Gold		☑		☑		☑

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Black	Blue		?		?		✗
Black	Green		?		?		?
Black	Brown		✗		✗		✗
Red	Gold		?		?		?
Blue	Yellow		☑		☑		☑
Blue	Orange		☑		☑		☑
Blue	Red		☑		☑		☑

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Green	Yellow		☑		☑		☑
Green	Orange		☑		☑		☑
Green	Red		☑		☑		☑
Purple	Yellow		☒				
Blue	Green		☒				
Red	Blue		?				
Black	White		☒				

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Black & Logo	White						
Black & Logo	White						
Black & Logo	White						
Black & Logo	White						
Blue & Logo	White						
Green & Logo	White						

2D Barcode Colour	Back-ground Colour	QR Code	QR Quality	GS1 DataMatrix	GS1 DM Quality	Data Matrix	DM Quality
Brown & Logo	White