WR #	GSCN Name	Effective Date
WR 24- 011	Verification template update	Sep 2024

Associated Work Request (WR) Number:

Background:

As the 2D in retail initiative has evolved, it was recognized that the verification templates contained in the General Specifications need to be updated to reflect current language and usage.

Disclaimer

GS1®, under its IP Policy, seeks to avoid uncertainty regarding intellectual property claims by requiring the participants in the Work Group that developed this **General Specifications Change Notification** to agree to grant to GS1 members a royalty-free licence or a RAND licence to Necessary Claims, as that term is defined in the GS1 IP Policy. Furthermore, attention is drawn to the possibility that an implementation of one or more features of this Specification may be the subject of a patent or other intellectual property right that does not involve a Necessary Claim. Any such patent or other intellectual property right is not subject to the licencing obligations of GS1. Moreover, the agreement to grant licences provided under the GS1 IP Policy does not include IP rights and any claims of third parties who were not participants in the Work Group.

Accordingly, GS1 recommends that any organization developing an implementation designed to be in conformance with this Specification should determine whether there are any patents that may encompass a specific implementation that the organisation is developing in compliance with the Specification and whether a licence under a patent or other intellectual property right is needed. Such a determination of a need for licencing should be made in view of the details of the specific system designed by the organisation in consultation with their own patent counsel.

THIS DOCUMENT IS PROVIDED "AS IS" WITH NO WARRANTIES WHATSOEVER, INCLUDING ANY WARRANTY OF MERCHANTABILITY, NONINFRINGMENT, FITNESS FOR PARTICULAR PURPOSE, OR ANY WARRANTY OTHER WISE ARISING OUT OF THIS SPECIFICATION. GS1 disclaims all liability for any damages arising from use or misuse of this Standard, whether special, indirect, consequential, or compensatory damages, and including liability for infringement of any intellectual property rights, relating to use of information in or reliance upon this document.

GS1 retains the right to make changes to this document at any time, without notice. GS1 makes no warranty for the use of this document and assumes no responsibility for any errors which may appear in the document, nor does it make a commitment to update the information contained herein.

GS1 and the GS1 logo are registered trademarks of GS1 AISBL.

5.12.7 GS1 barcode verification template

5.12.7.1 Introduction

These GS1 barcode verification templates were developed in co-operation with retailers, manufacturers, logistic providers and equipment providers to ensure a common reporting approach on a global level. They help to ensures consistency regardless of where and by whom the barcodes ~~symbols~~ are tested thus removing the costly and inefficient requirements for multiple testing of identical ~~symbols~~ barcodes and reducing the cost of compliant equipment.

These templates do not introduce any requirements in and of themselves. The ~~sole~~ aim is to provide a common reporting format to measure compliance with the numbering and barcoding standards as well as HRI rules of GS1 laid down elsewhere in these *GS1 General Specifications*.

5.12.7.2 Background

GS1 has developed these verification templates on the basis of *ISO/IEC 15416 Information technology – Automatic identification and data capture techniques, Bar Code Print Quality Test Specifications for Linear Symbols* and *ISO/IEC 15415 Information technology – Automatic identification and data capture techniques – Bar code print quality test specification – Two dimensional symbols*. These templates ~~is not only~~ allows for ~~assessing~~ reporting the quality of printed barcodes but also checks against other key aspects of GS1 system (~~symbol location~~barcode placement, fit-for purposes, data integrity, etc.).

Note: The acceptance criteria are intended to ensure that ~~symbols~~ barcodes adhere to all the requirements in the GS1 SSTs with an allowance for a small measurement variation.

A GS1 initiated Verifier Conformance Testing Project was conducted because of concerns expressed that different verifiers or verification services were unable to perform consistently. The perception was that different verifiers gave substantially different results when measuring the same ~~symbol~~barcode. A precisely defined test programme was performed under the auspices of GS1 and concluded that:

- All verifiers tested (each one ISO compliant) demonstrated the capability of consistent performance.
- Operators of verifiers require proper training and instruments require regular calibration in accordance with manufacturer recommendations.
- Most verifiers tested were capable of conforming to GS1 requirements.

It is therefore important to stress the need for professional verification services and that barcode print quality should be integral part of an overall quality programme. Section 5.12.3 provides a quick reference list of ~~symbol~~ barcode quality specifications depending on the ~~symbol~~ barcode type, the application, the syntax, printing method (e.g. direct printing) and~~or~~ the identification number ~~the symbol is carrying~~.

All GS1 user companies should perform quality control of barcode production and most GS1 Member Organisations offer a verification service. These report templates may be used by any organisation or company as part of a quality programme while respecting the Copyright of the GS1 logo (or any heading or text that imply actual GS1 endorsement (subject to local licensing agreements such as accreditation programmes, which may allow exceptions)).

The two templates below highlight~~ing~~ critical issues relating to verification and provide~~s~~ a common template for reporting on the most common areas of application. Note that an image of the barcode generated by the verifier is often provided along with the template information. ~~They are not a guarantee of scan performance.~~

5.12.7.3 GS1 barcode verification template for linear ~~symbols~~barcodes

Example template:

<Name>	**Issue date:** <Date of issue>
<Line one address>	
<Line two address>	
<Town>	
<Postcode>	
Product Description:	<Brand and name of product>
Type of barcode:	<Barcode type detected>
Print method:	<Print method>
Number of barcodes on product:	<Number of barcodes>
Verifier device:	<Type/model>
Verification software version:	<Version>
Last verifier calibration date:	<Date>

Please Note: **These assessments are based on meeting the minimum GS1 standards. To ensure efficient scanning, the barcode should exceed the minimum.**

Testing summary of the linear barcode

GS1 General Specifications for linear barcodes tested environments:
PASS or FAIL when verified in accordance with GS1 symbol specification table **Note:** Provide symbol specification table name and table number used from the *GS1 General Specifications*. If barcode is tested against more than one symbol specification table, one report should be provided for each table.

Complies with GS1 barcode placement rules	Does/Does not comply with specification (& comment on business critical issue)
If multiple retail barcodes are present: Is the GS1 compliant two dimensional barcode within a 50 mm radius from the centre of the linear POS barcode? (informative only)	Yes/No
ISO/IEC 15416 print quality grade	

Decoded text
Business critical comments

~~**5.12.7.3**~~

~~<NAME>~~ ~~Issue date <Date of Issue>~~

<Line one address>
<Line two address>
<Town>
<Postcode>

Product Description:	<Brand and name of product>
Type of barcode:	<Symbol type>
Data encoded:	< Data encoded>
Number of barcodes on product:	<Number of symbols>

Please Note: **These assessments are based on meeting the minimum GS1 standards. To ensure efficient scanning, the barcode should exceed the minimum.**

Testing summary of the linear symbol

GS1 General Specifications for linear symbols tested environments:
PASS or FAIL or Not assessed for retail point-of-sale scanning
PASS or FAIL or Not assessed for general distribution and logistics scanning
PASS or FAIL or Not assessed for other scanning applications (specify) _____

Complies with GS1 symbol location recommendations	In/out spec (& comment on business critical issue)
ISO/IEC print quality grade	ISO/IEC <x.x>/06/660 (0.0 – 4.0) PASS/FAIL

Business critical comments

Technical analysis of the linear ~~symbol~~barcode

GS1 parameters	Comment reference	Assessed	Within standard range	Required
~~Symbol~~ Barcode structure[1]			~~✓~~	~~(dependent on symbol encoded)~~
X-dimension (magnification)		~~0.330mm[3] (0.0130 inch)~~	~~✓~~	~~0.264 -0.660 mm (0.0104 - 0.0260 inch)~~
Barcode height		~~23mm (0.9 inch)~~	~~✓~~	~~22.85mm (0.900 inch)~~
Quiet Zone (left)			~~✓~~	~~3.63mm (0.143 inch)~~
Quiet Zone (right)			~~✓~~	~~2.31mm (0.091 inch)~~
Human readable			~~✓~~	~~One-to-one match with barcode data~~
Barcode width			~~✓~~	~~≤165.10 mm (≤6.500 inch)~~
Validity of GS1 Company Prefix			~~✓~~	
Data structure[1] (syntax)			~~✓~~	~~(dependent on structure encoded)~~

ISO/IEC parameters	Comment Reference	~~Grade~~ ISO/IEC grade 4.0 to 0.0	Within standard range	Required
Overall ISO/IEC grade[2]		~~3.8/06/660~~	~~✓~~	~~≥1.5~~
Decode		~~4.0~~	~~✓~~	
Symbol contrast		~~3.8~~	~~✓~~	
Minimum reflectance		~~4.0~~	~~✓~~	
Edge contrast		~~4.0~~	~~✓~~	
Modulation		~~4.0~~	~~✓~~	
Defects		~~4.0~~	~~✓~~	
Decodability		~~4.0~~	~~✓~~	
Print growth				

Educational comments[4]

(1) Datra structure (syntax) indicates that the barcode is compliant with GS1 data syntax rules defined in the *General Specifications*.~~Includes check digits, ITF-14 wide-to-narrow ratio, etc.~~

~~**(3)** The text in red in this table provides sample results from the testing of an EAN/UPC symbol.~~

~~**(2)** 0.5 acceptable for ITF-14 with X-dimension ≥ 0.635mm~~

(2~~4~~) Educational comments are based on the technical analysis of the ~~symbol~~barcode. In this comment box the operator comments on what the problem is and how to make the symbol better.

Notes (informative localised)

It is the responsibility of the GS1 identification licensee to ensure the correct use of the GS1 Company Prefix and/or the individually licensed keys and the correct allocation of the data content.

Rejection of products should not necessarily be based only on an out of specification results

Barcode verifiers are measuring devices and are tools that can be used for assisting in quality control. The results are not absolute in that they do not necessarily prove or disprove that the barcode will scan.

This report may not be amended after issue. In the event of a dispute over contents the version held at [TESTING AGENCY] will be deemed to be the correct and original version of this report.

Notes (informative localised)

This Verification Report may contain privileged and confidential information intended only for the use of the addressee named above. If you are not the intended recipient of this report you are hereby notified that any use, dissemination, distribution or reproduction of this message is prohibited. If you received this message in error please notify [TESTING AGENCY].

Disclaimer (legal localised)

This report does not constitute evidence for the purpose of any litigation, and [TESTING AGENCY] will not enter into any discussion, or respond to any correspondence in relation to litigation.

Every possible effort has been made to ensure that the information and specifications in the Barcode Verification Reports are correct, however, [TESTING AGENCY] expressly disclaims liability for any errors.

© 2024 GS1 AISBL

5.12.7.4 GS1 barcode verification template for two dimensional ~~symbols~~barcodes

Example template:

<Name>	**Issue date:** <Date of issue>
<Line one address>	
<Line two address>	
<Town>	
<Postcode>	
Product Description:	<Brand and name of product>
Type of barcode:	<Barcode type detected>
Print method:	<Print method>
Number of barcodes on product:	<Number of barcodes>
Verifier device	<Type/model>
Verification software version:	<Version>
Last verifier calibration date:	<Date>

Please Note: **These assessments are based on meeting the minimum GS1 standards. To ensure efficient scanning, the barcode should exceed the minimum.**

Testing summary of the two-dimensional barcode

GS1 General Specifications for two-dimensional barcodes, environments tested:
PASS or FAIL when verified in accordance with GS1 symbol specification table _____ **Note:** Provide symbol specification table name and number used from the *GS1 General Specifications*. If barcode is tested against more than one symbol specification table, one report should be provided for each table.

Complies to GS1 barcode placement recommendations	In/out spec (& comment on business critical issue)
If multiple retail barcodes are present: Is the GS1 compliant two dimensional barcode within a 50 mm radius from the centre of the linear POS barcode? (informative only)	Yes/No
Overall ISO/IEC 15415 print quality grade	

Decoded text
Business critical comments

~~5.12.7.4~~

<NAME> Issue date <Date of Issue>
<Line one address>
<Line two address>
<Town>
<Postcode>
Product Description: <Brand and Name of Product>
Type of barcode: <Symbol Type>
Data encoded: < Data encoded>
Print Method: <Print Method>
Number of barcodes on product: <Number of Symbols>

Please Note: **These assessments are based on meeting the minimum GS1 standards. To ensure efficient scanning, the barcode should exceed the minimum.**

Testing summary of the two dimensional symbol

GS1 General Specifications for two dimensional symbols, environments tested:
PASS or FAIL or Not assessed Healthcare items (healthcare retail consumer item or healthcare non-retail consumer item or healthcare trade item)
PASS or FAIL or Not assessed Direct part marking (DPM)
PASS or FAIL or Not assessed Extended packaging

Complies to GS1 symbol location recommendations	In/out spec (& comment on business critical issue)
ISO symbol grade	ISO <x.x>/06/660 (0.0 – 4.0) PASS/FAIL

Business critical comments

Technical analysis of the two dimensional barcode

GS1 parameters	Comment reference	Values	Compliant to standard	Required
Matrix size		NN X NN		
X-dimension/ cell size[1]		mm (inch)		
Data structure[2] (syntax)				Dependent on structure encoded
Validity of GS1 Company Prefix				
Human readable				

ISO/IEC parameters	Comment reference	ISO grade 4.0 to 0.0	Compliant to standard	Required
Overall ISO/IEC grade				
Decode				
Symbol contrast				
Modulation				
Axial nonuniformity				
Grid nonuniformity				
Unused Error Correction				
Print growth (horizontal)				
Print growth (vertical)				
Fixed pattern damage				
Clock track and solid area regularity[4]				
Quite Zones (QZL1, QZL2)[4]				
L1 and L2[4]				
Format information[5]				
Version information[5]				

Educational comments[3]:

(1) X-dimension/cell size is the average of both the x dimension and y dimension of the cell

(2) Data structure (syntax) indicates that the barcode is compliant with GS1 data syntax rules defined in the GS1 General Specifications or GS1 Digital Link URI Syntax standard.

(3) Educational comments are based on the technical analysis of the barcode. In this comment box the operator comments on what the problem is and how to make the barcode better by explaining the parameter's meanings.

(4) Data Matrix Only, see *ISO/IEC 16022*

(5) QR Code Only, see *ISO/IEC 18004*

Notes (informative localised)

It is the responsibility of the GS1 identification licensee to ensure the correct use of the GS1 Company Prefix and/or the individually licensed keys the correct allocation of the data content.

Rejection of products should not necessarily be based only on an out of specification results

Barcode verifiers are measuring devices and are tools that can be used for assisting in quality control. The results are not absolute in that they do not necessarily prove or disprove that the barcode will scan.

This report may not be amended after issue. In the event of a dispute over contents the version held at [TESTING AGENCY] will be deemed to be the correct and original version of this report.

Important Note (normative localised)

This Verification Report may contain privileged and confidential information intended only for the use of the addressee named above. If you are not the intended recipient of this report you are hereby notified that any use, dissemination, distribution or reproduction of this message is prohibited. If you received this message in error please notify [TESTING AGENCY].

Disclaimer (legal localised)

This report does not constitute evidence for the purpose of any litigation, and [TESTING AGENCY] will not enter into any discussion, or respond to any correspondence in relation to litigation.

Every possible effort has been made to ensure that the information and specifications in the Barcode Verification Reports are correct, however, [TESTING AGENCY] expressly disclaims liability for any errors.

Technical analysis of the two dimensional symbol

GS1 parameters	Comment reference	Values	Within standard range	Required
Symbol structure			✓	Dependent on symbol encoded
Matrix size		NN X NN	✓	
X-dimension/ cell size		mm (inch)	✓	
Data structure			✓	Dependent on structure encoded
Validity of GS1 Company Prefix			✓	
Human readable			✓	

ISO/IEC parameters	Comment reference	ISO grade 4 to 0	Within standard range	Required
Overall ISO grade			✓	
Decode		PASS/FAIL	✓	
Cell contrast/Symbol contrast		4 - 0	✓	
Cell modulation/ Modulation		4 - 0	✓	
Axial nonuniformity		4 - 0	✓	
Grid Nonuniformity		4 - 0	✓	
Unused Error Correction (UEC)		4 - 0	✓	
Print growth (horizontal) informative only		0% - 100%	Non-graded	
Print growth (vertical) informative only		0% - 100%	Non-graded	
Fixed pattern damage		4 - 0	✓	
Clock track and solid area regularity*		4 - 0	✓	
Quite Zones (QZL1, QZL2)*		4 - 0	✓	
L1 and L2*		4 - 0	✓	
Format information**				
Version information**				

Educational comments [5]

Notes (informative localised)

It is the responsibility of the GS1 identification licensee to ensure the correct use of the GS1 Company Prefix and/or the individually licensed keys the correct allocation of the data content.

Rejection of products should not necessarily be based only on an out of specification results

Barcode verifiers are measuring devices and are tools that can be used for assisting in quality control. The results are not absolute in that they do not necessarily prove or disprove that the barcode will scan.

This report may not be amended after issue. In the event of a dispute over contents the version held at [TESTING AGENCY] will be deemed to be the correct and original version of this report.

* GS1 DataMatrix Only, see *ISO/IEC 15415*

** GS1 QR Code Only, see *ISO/IEC 15415*,

all others are both for GS1 DataMatrix and GS1 QR Code and GS1 Dotcode

Important Note (normative localised)

This Verification Report may contain privileged and confidential information intended only for the use of the addressee named above. If you are not the intended recipient of this report you are hereby notified that any use, dissemination, distribution or reproduction of this message is prohibited. If you received this message in error please notify [TESTING AGENCY].

Disclaimer (legal localised)

This report does not constitute evidence for the purpose of any litigation, and [TESTING AGENCY] will not enter into any discussion, or respond to any correspondence in relation to litigation.

Every possible effort has been made to ensure that the information and specifications in the Barcode Verification Reports are correct, however, [TESTING AGENCY] expressly disclaims liability for any errors.

[5] Educational comments are based on the technical analysis of the symbol. In this comment box the operator comments on what the problem is and how to make the symbol better by explaining the parameter's meanings.