



GSMP:

Pending Ratification: General Specifications Change Notification (GSCN)

GSCN #	GSCN Name	Effective Date
GSCN 16-160	Pending Ratification - High Speed Barcode Printing (HSBP) Solution	17 Oct 2016

Associated Work Request (WR) Number:

16-160

Background:

Without a new barcode standard, GS1 members producing tobacco in high volumes declare that they would be unable to comply with the World Health Organization Framework Convention on Tobacco Control (WHO FCTC); Protocol to eliminate illicit trade in tobacco products and Directive 2014/40/EU.

With a new barcode standard, other companies in the tobacco supply chain will be required to replace or upgrade scanning equipment. With or without a new barcode, all parties affected will be required to develop new processes and systems for record keeping.

The Restricted AIDC Application Standard: High-Speed Printing of Dynamic Barcodes would support any regulation that meets the following criteria:

1. For barcode marking on consumer trade items inline at high speeds (approximately 500-100 parts per minute) where static data (e.g. GTIN) and dynamic data (e.g., serial numbers) are required in one symbol
2. Where scanner installation levels comply with Policy B11 or where a migration plan exists
3. Not for use at point-of-sale
4. Not for open supply chain use
5. Not for use where current GS1 barcodes support existing application standards (printing speed needs approximately 1-500 parts per minute)

GS1 is giving priority to this development based on Directive 2014/40/EU implementation timeline to stem the illicit trade of tobacco. After consultation with GS1 Public Policy, GS1 in Europe Chair, additional MO CEOs, and the GS1 Barcodes and Technology Group, the Global Office Leadership Team has requested a restricted use application standard to be ratified by September 2016. This date corresponds to the timing from when the implementation process of the new legal requirements will enter in a more concrete phase. Other implementations of the WHO Protocol will occur in other markets, but no timeline has been noted before the EU requirement. Currently, Ecuador is progressing a non-GS1 solution to the protocol.

GS1 General Specification Change:

The changes are highlighted on the following pages.

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The Global Language of Business

GS1 General Specifications

The foundational GS1 standard that defines how identification keys, data attributes and barcodes must be used in business applications.

Pending Ratification, Oct 2016 – changes for WR16-160

2.1.9 Inline barcode printing on tobacco consumer trade items

This application standard addresses an industry need to print serialised GTIN for traceability purposes inline (directly on the package) and adds a new barcode option where GS1 barcodes cannot accommodate current production speeds . It provides the industry with the complete list of symbols that may be used per brand owner discretion. Other application standards which support inline barcode printing include 2.1.2.4 and 2.1.2.5 (GS1 DataMatrix preferential use in regulated healthcare) and 2.1.7.1 (GS1 DataBar Expanded or GS1 DataBar Expanded Stacked use in fresh food identification.) For the purpose of general retail POS scanning of tobacco consumer trade items please see also section 2.1.2.1.

GS1 key

Definition

- The GTIN-8 is the 8-digit GS1 identification key composed of a GS1-8 Prefix, item reference, and check digit used to identify trade items.
- The GTIN-12 is the 12-digit GS1 identification key composed of a U.P.C. Company Prefix, item reference, and check digit used to identify trade items.
- The GTIN-13 is the 13-digit GS1 identification key composed of a GS1 Company Prefix, item reference, and check digit used to identify trade items.

Rules

GTIN is used exclusively within GS1 traceability solutions (e.g., EPCIS-based solutions.)

If an additional barcode (beyond the retail point-of-sale (POS) barcode) is required to support inline printing, the GTIN in the POS barcode and the GTIN in the additional barcode SHALL be the same per Section 4.15.

All the GTIN Allocation Rules described in section 4.

For human readable interpretation rules see section 4.14.

Attributes

Required

Serial Number

Rules

This solution supports interoperability by specifying Global Trade Item Number (GTIN) as the primary identification key and serialization as an attribute. Based upon previous requests to support proprietary identifiers, GS1 introduced the rule below. It is specific to this application standard.

GS1 identifiers SHALL be used without paying a third party "additional" licence fees to use non-GS1 identifiers within GTIN attributes defined for broader purpose (e.g., serial number) and without third parties prescribing serialization schemes to GS1 members (even royalty free) to support non-GS1 Key use in a non-GS1 solution.

Optional

No restriction

Data carrier specification

Carrier choices

GS1 DataBar

GS1 DataMatrix or GS1 QR Code

GS1 DotCode

Symbol X-dimensions, minimum symbol height, and minimum symbol quality

[See section 5.5.2.7.4, GS1 system symbol specification table 4.](#)

Symbol placement

[If GS1 DataBar is used to support this application standard as well as retail point-of-sale, then POS placement rules apply. If a symbol is required for this application in addition to the symbol used at retail POS, see 4.15.1, Rule 4 Non-Adjacent Placement.](#)

Unique application processing requirements

[For a description of processing requirements, see section 7.](#)

2.7 Summary of applications and operative scanning environments for GS1 system symbols

The figure below provides a cross-reference for all system applications defined in section 2 and the GS1 symbol specification tables (SSTs) in section 5. The application where the barcode will be used SHALL be determined prior to locating the correct symbol specification table (SST) entry. Use the "See SST(s) #" column to find the SST appropriate for the application area. Because most application areas provide a reference to two symbol specification tables based on the operative scanning environment, a decision must be made between the two. See the decision tree figure 5.5.2.6.1 - 2 to determine the correct symbol specification table.

Figure 2.7-1. Areas of GS1 system application

Application	See section	See SST(s) #	Carrier choices
Medical devices (non-retail trade items)	2.1.1.9	7	GS1 DataMatrix
Fixed measure trade items – general retail consumer trade items scanned in general retail at POS:	2.1.2.1		
<ul style="list-style-type: none"> ▪ GTIN-12 and GTIN-13 scanned in general retail at POS 	2.1.2.1.2	1	UPC-A, EAN-13, GS1 DataBar Retail POS family
<ul style="list-style-type: none"> ▪ GTIN-12 carried by a UPC-E barcode scanned in general retail at POS 	2.1.2.1.3	1	UPC-E
<ul style="list-style-type: none"> ▪ GTIN-8 carried by an EAN-8 barcode scanned in general retail at POS 	2.1.2.1.4	1	EAN-8, GS1 DataBar Retail POS family
<ul style="list-style-type: none"> ▪ Hardcover books and paperbacks: ISBN, GTIN-13, and GTIN-12 scanned in general retail at POS 	2.1.2.1.5	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
<ul style="list-style-type: none"> ▪ Serial publications: ISSN, GTIN-13, and GTIN-12 scanned in general retail at POS 	2.1.2.1.6	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
Fixed measure trade item - fresh food trade items scanned at POS	2.1.2.2	1	GS1 DataBar Omnidirectional, GS1 DataBar Stacked Omnidirectional, UPC-A, EAN-13, EAN-8
Trade Items intended for general distribution and POS	2.1.2.3	3	EAN/UPC, GS1 DataBar Retail POS family
Healthcare primary packaging (Non-retail trade items)	2.1.2.4	6	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF- 14, Composite Component
Healthcare secondary packaging (regulated healthcare retail consumer trade items)	2.1.2.5	8 or 10	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF-14, Composite Component
Trade items intended for general distribution scanning only	2.1.2.6	2	EAN/UPC, ITF-14, GS1-128, GS1 DataBar
<ul style="list-style-type: none"> ▪ Trade items intended for general distribution scanning only – regulated healthcare trade items 	2.1.2.6	8	GS1-128, GS1 DataBar, GS1 DataMatrix, EAN/UPC, ITF-14

Application	See section	See SST(s) #	Carrier choices
Trade item packed in several physical units NOT scanned at POS	2.1.3	2	GS1-128, GS1 DataBar
Trade item packed in several physical units not scanned at POS – Healthcare	2.1.3	See 2.1.2.4	See 2.1.2.4
Direct part marking	2.1.4	7	GS1 DataMatrix, GS1 QR Code
Variable measure trade items – Packages/containers NOT scanned in general retail at POS	2.1.5	2	GS1-128, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, ITF-14
Fixed measure trade items – Restricted distribution company internal numbering – RCN-8 Prefix 0 or 2	2.1.6.1	1	EAN-8
Fixed measure trade items – Restricted distribution company internal numbering – RCN- 13 GS1 Prefix 04 (RCN-12 U.P.C. Prefix 4)	2.1.6.2	1	EAN-13, UPC-A
Fixed measure trade items – Restricted distribution company internal numbering – RCN- 12 U.P.C. Prefix 0 (LAC and RZSC)	2.1.6.3	1	UPC-E
Fixed measure trade items – Restricted distribution GS1 Prefixes 02, 20 to 29 - Restricted Circulation	2.1.6.4	1	EAN-13 symbols
Variable measure fresh food trade items scanned at point-of-sale using GTIN	2.1.7.1	1	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked
Variable measure trade items scanned at point-of-sale using Restricted Circulation Numbers	2.1.7.2	1	EAN-13, UPC-A
Trade Item extended packaging (general retail trade items)	2.1.8	1 Addendum for AI (8200)	GS1 DataMatrix, GS1 QR Code
Trade item extended packaging (regulated healthcare trade items)	2.1.8	6, 7, 8, or 10	GS1 DataMatrix only
Inline barcode printing on tobacco consumer trade items	2.1.9	4	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, GS1 DataMatrix, GS1 QR Code, GS1 DotCode
Logistics units - individual logistic units	2.2.1	5	GS1-128
Logistics units - multiple logistic units (GSIN, GINC)	2.2.2 , 2.2.3	2	GS1-128
Assets – Global Returnable Asset Identifier – multi-sector	2.3.1	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Assets – Global Individual Asset Identifier - multi-sector	2.3.2	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Identification of a physical location	2.4.3.1	9	GS1-128
Service relationships	2.5	11	GS1-128, GS1 DataMatrix, GS1 QR Code
Coupons identified using the Global Coupon Number	2.6.2	1	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked
Coupon identification for restricted geographic distribution (GS1 Prefix 99) GS1 common currency coupon identification (GS1 Prefixes 981 to 983)	2.6.3.3 2.6.3.4 2.6.3.5	1	EAN-13

Application	See section	See SST(s) #	Carrier choices
Coupon code identification for use in North America (AI 8110, 8112)	2.6.3.6 2.6.3.7	NOTE: See "US Coupon Application Guideline Using GS1 DataBar Expanded symbols" for the appropriate SST.	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked or digitally transmitted
Refund receipts	2.6.4	1	EAN-13
Electronic serial identifier for cellular mobile telephones (CMTI): AI(8002)	2.6.5	4	GS1-128
Payment slips	2.6.6	4	GS1-128
Customer specific articles	2.6.7	1	EAN-13, UPC-A, ITF-14, GS1-128
Custom trade item	2.6.8	4	GS1-128, GS1 DataBar, GS1 DataMatrix, GS1 QR Code
Global Document Type Identifiers for document control	2.6.9	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Internal applications using GS1-128 symbols	2.6.10	N/A	GS1-128 symbols
Consumer trade item production control	2.6.11	N/A	GS1 DataBar, GS1 DataMatrix, GS1 QR Code, GS1-128, Composite Component
Component / part identification	2.6.12	N/A	GS1-128, GS1 DataMatrix, GS1 QR Code



Note: GS1 DataBar has the capacity to carry GTIN-14, GTIN-14 is not intended for use at point-of-sale (POS) applications; therefore GS1 DataBar symbols for POS must not encode GTIN-14.

4.14.3 Small Item Marking Where GTIN is Encoded in Two Symbols

Where GTIN is encoded in a barcode used at retail POS and another barcode, and where space constraints for human-readable interpretation exist, it is permissible to display GTIN in HRI only below the POS symbol. For example

Where GTIN in an EAN/UPC is used for retail point-of-sale (POS) and serialised GTIN is carried in a GS1 DotCode for upstream tobacco traceability.

Where GTIN plus attributes in a GS1 DataBar Expanded are used for retail point-of-sale (POS) and GTIN with Product URL is carried in a GS1 DataMatrix or GS1 QR Code for extended packaging.

5.1 Introduction

A data carrier is a means of representing data in machine readable form. Data carriers that are endorsed by GS1 are described in sections [5.1](#), [5.2](#), [5.3](#), [5.4](#), [5.6](#), [5.7](#), [5.7.3.7](#); barcode production and quality assessment are covered in section [5.5](#).

The GS1 system specifies the data carrier used to represent any given element string. Section 2 covers rules indicating which data carrier should be used to represent which element strings in particular applications. The GS1 system uses the following data carriers:

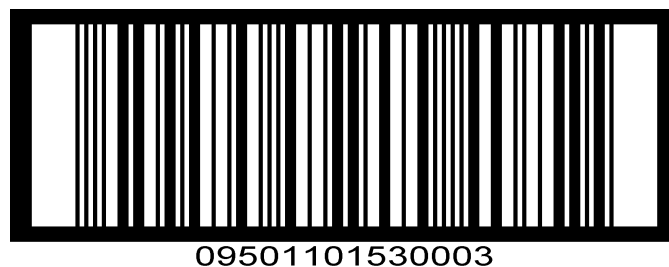
- The EAN/UPC symbology family of barcodes (UPC-A, UPC-E, EAN-13, and EAN-8 barcodes and the two- and five-digit add-on symbols) can be read omnidirectionally. These symbols must be used for all items that are scanned at the point-of-sale and may be used on other trade items.

Figure 5.1-1. UPC-A and EAN-13 barcodes



- ITF-14 (Interleaved 2-of-5) barcodes carry ID numbers only on trade items that are not expected to pass through the point-of-sale. ITF-14 symbols are better suited for direct printing onto corrugated fibreboard.

Figure 5.1-2. ITF-14 barcode



- The GS1-128 barcode is a subset of the Code 128 barcode symbology. Its use is exclusively licensed to GS1. This extremely flexible symbology encodes element strings using Application Identifiers.

Figure 5.1-3. GS1-128 barcode



- GS1 DataBar is a family of linear symbologies used within the GS1 system. This family of linear symbologies in most cases implicitly encodes Application Identifier (01) and in the case of GS1 DataBar Expanded explicitly encodes element strings using Application Identifiers.

Figure 5.1-4. GS1 DataBar Omnidirectional barcode

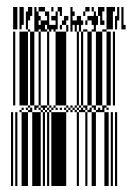


(01)20012345678909

- Composite Component symbols do not exist in isolation. The primary identification number is always encoded in the linear symbol and supplementary Application Identifier element strings are encoded in the two-dimensional (2D) component where they take up less space.

Figure 5.1-5. GS1 DataBar Stacked Omnidirectional barcode with a Composite Component

(17)050101(10)ABC123



(01)04012345678901

- Data Matrix ISO version ECC 200 is the only version that supports GS1 system data structures, including Function 1 Symbol Character. Implementation of GS1 DataMatrix SHALL be done per approved GS1 system application standards, such as those for regulated healthcare retail consumer trade items.

Figure 5.1-6. GS1 DataMatrix barcode

(17) 050101 (10) ABC123



(01) 04012345678901

- GS1 QR Code, is a subset of ISO/IEC 18004 QR Code 2005. QR Code 2005 supports GS1 system data structures, including Function 1 Symbol Character. Implementation of GS1 QR Code SHALL be done per approved GS1 system application standards.

Figure 5.1-7. GS1 QR Code barcode



- GS1 DotCode, supporting GS1 system data structures is supported by the AIM DotCode Specification, Rev 3.0, August 2014. Per the specification, "Message segments that begin with a pair of digits, without a FNC1 either before or immediately following those two digits are regarded as conveying GS1 formatted data by excluding Function 1 Symbol Character." Implementation of GS1 DotCode SHALL be done per approved GS1 system application standards.

- **All sections:** *ISO/IEC 646: Information technology; ISO 7-bit coded character set for information interchange.*

2.7.25.1.2 Symbology identifiers

The symbology identifier is not encoded in the barcode, but is generated by the decoder after decoding and is transmitted as a preamble to the data message.

All scanning equipment has the ability to recognise the symbology that has been scanned. Some scanners have the optional feature of being able to transmit a symbology identifier. The symbology identifier is a three-character data string comprising a flag character, code character, and a modifier character. The symbology identifiers used in the GS1 system are shown in figure 5.1.2-1.

Figure 5.1.2-1. Structure of the symbology identifiers

Character	Description
] 	The flag character (which has an ASCII value of 93). This denotes that the two characters following it are Symbol Identifier characters.
c	The code character. This denotes the type of symbology.
m	The modifier character. This indicates the mode in which the symbology is used.



Note: If used, the symbology identifier is transmitted as a prefix to the data message.

Figure 5.1.2-2. ISO/IEC 15424 symbology identifiers used in the GS1 system

Symbology identifier (*)	Symbology format	Content
]E0	EAN-13, UPC-A, or UPC-E	13 digits
]E1	Two-digit add-on symbol	2 digits
]E2	Five-digit add-on symbol	5 digits
]E3	EAN-13, UPC-A, or UPC-E with add-on symbol (**)	15 or 18 digits
]E4	EAN-8	8 digits
]I1	ITF-14	14 digits
]C1	GS1-128	Standard AI element strings
]e0	GS1 DataBar	Standard AI element strings
]e1	GS1 Composite	Data packet containing the data following an encoded symbol separator character.
]e2	GS1 Composite	Data packet containing the data following an escape mechanism character.
]d2	GS1 DataMatrix	Standard AI element strings
]Q3	GS1 QR Code	Standard AI element strings
<u>]J1</u>	<u>GS1 DotCode</u>	<u>Standard AI element strings</u>

(*) Symbology identifiers are case sensitive.

(**) Barcodes with add-on symbols may be considered either as two separate symbols, each of which is transmitted separately with its own symbology identifier, or as a single data packet. The system designer SHALL select one of these methods, but the method using symbology identifier]E3 is preferable for data security.

~~2.7.2.15.5.2.7~~ GS1 system symbol specification tables

In order to find the correct barcode specification, you must:

- Find the appropriate GS1 system application area using figure 5.5.2.6-1.
- If the application area references two symbol specification tables, use the decision tree in figure 5.5.2.6.1-2 to determine which one to use.

The figure below provides a quick reference list of the symbol quality parameters depending on their type and their application.

Figure 5.5.2.7-1. Quick reference on symbol quality

Symbology	Application or ID key	ISO (ANSI) symbol grade	Aperture	Wavelength
EAN/UPC	GTIN-8	1.5 (C)	See symbol specification tables 1, 2, 3, 4, 6, 8 and 10 for values	660 nm +/-10
EAN/UPC	GTIN-12	1.5 (C)	See symbol specification tables 1, 2, 3, 4, 6, 8 and 10 for values	660 nm +/-10
EAN/UPC	GTIN-13	1.5 (C)	See symbol specification tables 1, 2, 3, 4, 6, 8 and 10 for values	660 nm +/-10
GS1-128	GTIN-12, GTIN-13, GTIN-14	1.5 (C)	See symbol specification tables 2, 4, 5, 6, 8, 9 and 10 for values	660 nm +/-10
GS1-128	SSCC	1.5 (C)	10 mils	660 nm +/-10
ITF-14 (<0.635 mm (0.025 in.) X)	GTIN-12, GTIN-13, GTIN-14	1.5 (C)	See symbol specification tables 2, 4, 6, 8, and 10 for values	660 nm +/-10
ITF-14 (≥0.635 mm (0.025 in.) X)	GTIN-12, GTIN-13, GTIN-14	0.5 (D)	20 mils	660 nm +/-10
Composite	GTIN-8, GTIN-12, GTIN-13,GTIN-14 and other AIs	1.5 (C)	6 mils	660 nm +/-10
GS1 DataBar	GTIN-8, GTIN-12, GTIN-13,GTIN-14 and other AIs	1.5 (C)	See symbol specification tables 1, 2, 3, 4, 6, 8 and 10	660 nm +/-10
GS1 DataMatrix	Direct part marking, regulated healthcare retail or non-retail consumer trade items extended packaging	1.5 (C)	See symbol specification tables 6, 7, 8, 9, 10 and 11 Table 1 Addendum for values.	660 nm +/-10
GS1 QR Code	Direct part marking, custom trade item, extended packaging GDTI, and GSRN	1.5 (C)	See symbol specification table 1 Addendum, 7, 9, and 11 for values.	660 nm +/-10
<u>GS1 DotCode</u>	<u>Inline high-speed printing of SGTIN directly on tobacco consumer trade items with space constraints for barcodes exist</u>	<u>1.5 (C)</u>	<u>See symbol specification tables 4</u>	<u>660 nm +/- 10</u>

2.7.2.1-15.5.2.7.4 Symbol specification table 4 – Trade items – packages/containers not scanned at POS or general retail - also not scanned in general distribution or regulated healthcare (retail or non-retail)

Figure 5.5.2.7.4-1. GS1 system symbol specification table 4

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")	11X	7X	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")	7X	7X	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")	9X	9X	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")	9X	7X	1.5/06/660
GS1 DataBar Omni-directional	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	8.71 (0.343")	10.90 (0.429")	21.78 (0.858")	NA	NA	1.5/06/660
GS1 DataBar Stacked Omni-directional	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.24 (0.718")	27.78 (1.094")	45.54 (1.794")	NA	NA	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")	NA	NA	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")	NA	NA	1.5/06/660
GS1 DataBar Stacked	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	3.43 (0.135")	4.29 (0.169")	8.58 (0.338")	N/A	N/A	1.5/06/660
GS1 DataBar Limited	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	2.64 (0.104")	3.30 (0.130")	6.60 (0.260")	N/A	N/A	1.5/06/660
GS1 DataBar Truncated	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	3.43 (0.135")	4.29 (0.169")	8.58 (0.338")	N/A	N/A	1.5/06/660
ITF-14	0.250 (0.00984")	0.495 (0.0195")	0.495 (0.0195")	12.70 (0.500")	12.70 (0.500")	12.70 (0.500")	10X	10X	1.5/06/660
GS1- 128	0.250 (0.00984")	0.495 (0.0195")	0.495 (0.0195")	12.70 (0.500")	12.70 (0.500")	12.70 (0.500")	10X	10X	1.5/06/660
GS1 DataMatrix (ECC 200) (***)	0.380 (0.0150")	0.380 (0.0150")	0.495 (0.0195")	Height is determined by X-dimension and data that is encoded			1X on all four sides		1.5/08/660
GS1 QR Code (***)	0.380 (0.0150")	0.380 (0.0150")	0.495 (0.0195")	Height is determined by X-dimension and data that is encoded			4X on all four sides		1.5/08/660
<u>GS1 DotCode</u>	<u>0.380 (0.0150")</u>	<u>0.380 (0.0150")</u>	<u>0.495 (0.0195")</u>	<u>Height is determined by X-dimension and data that is encoded</u>			<u>3X on all four sides</u>		<u>1.5/08/660</u>

(*) ITF-14 symbols with X-dimensions below 0.635 millimetre (0.0250 inch) SHOULD NOT be printed directly on corrugate with conventional (plate based) processes. The ITF-14 symbol's bar width ratio target is 2.5:1, and the acceptable range is 2.25:1 to 3:1.

Section 5.5.3.4 gives full details on when barcodes can be printed at less than the minimum X-dimension. In general, barcodes may only be printed using an X-dimension below 0.264 millimetre (0.0104 inch) or 80 percent magnification under the following conditions:

- The allowance for X-dimensions between 0.249 millimetre (0.0098 inch) or 75 percent magnification and 0.264 millimetre (0.0104 inch) or 80 percent magnification is only applicable to on demand (e.g., thermal,

laser) print processes. For all other printing processes, an X-dimension of 0.264 millimetre (0.0104 inch) is attainable and is the minimum allowable size.

- When printing a minimum symbol with any method of printing, the area provided for printing the symbol and the required Quiet Zone **SHOULD** never be less than the area required for an X-dimension of 0.264 millimetre (0.0104 inch).
- When printing a minimum symbol with any method of printing, the symbol height SHALL never be truncated.

(**)

The minimum symbol height dimensions listed for all symbologies including EAN/UPC symbols do not include the human readable interpretation (or bearer bars for ITF-14 symbols), The minimum heights of EAN/UPC symbols do not include the extended bars: see section 5.2.1.4.2 for dimensions of the extended bars.

Because of the operative scanning environment for EAN/UPC symbols, there is a direct relationship between the symbol's height and width. This means the minimum symbol height listed is tied to the minimum, target, and maximum X-dimension listed.

The minimum bar height for ITF-14 and GS1-128 symbols in this operative scanning environment is 12.70 millimetres (0.500 inch), but if the package is physically too small to accommodate this rule, further truncation is permitted. In no case SHALL the bar height be less than 5.08 millimetres (0.200 inch).

There is no maximum for the symbol height, but if the maximum X-dimension is used, the symbol height must be equal to or greater than those listed in the Minimum Symbol Height column.

Whereas, linear symbol heights are set at a fixed dimension, Composite Components are printed at the same X-dimension as the linear portion of the Composite symbology, and the barcode height varies depending on the amount of data, the X-dimension, and which linear symbol is used in conjunction with the Composite Component. Note that Composite Components have to be printed with a linear symbol such as GS1 DataBar, GS1-128, UPC-A, or EAN-13. ITF-14 cannot be used with Composite Components.

(***)

2D X-dimension - Optical effects in the image capture process require that the GS1 DataMatrix and GS1 QR Code symbols be printed at 1.5 times the equivalent printing X-dimension allowed for linear symbols.



Note: See section [2.7](#) to ensure the correct symbol specification table is used.

5.5.3.3.10.8

GS1 DotCode

Determining symbol quality for items marked with GS1 DotCode symbols involves a specialised approach due to the physical nature of the marking and the optical systems used to read those marks. The minimum symbol quality grade for GS1 DotCode symbols SHALL be specified by the application specification. The overall grade is shown in the form minimum grade/aperture/measuring wavelength.

Grade/Aperture/Light/Angle

Where:

- **"Grade"** is the overall symbol grade as defined in *ISO/IEC 15415 Information technology - Automatic identification and data capture techniques - Bar code print quality test specification - Two-dimensional symbols* (e.g., the arithmetic mean to one decimal place of the Scan Reflectance Profile or scan grades). For GS1 DotCode, the grade number may be followed by an asterisk, *, which indicates that the surroundings of the symbol contain extremes of reflectance that may interfere with reading. For most applications, this should be specified as causing the symbol to fail.
- **"Aperture"** is the diameter in thousandths of an inch (to the nearest thousandth) of the synthetic aperture defined in *ISO/IEC 15415 Information technology - Automatic identification and data capture techniques - Bar code symbol print quality test specification - Two-dimensional symbols*.
- **"Light"** defines the illumination: A numeric value indicates the peak light wavelength in nanometres (for narrow band illumination); the alphabetic character W indicates that the symbol has been measured with broadband illumination ("white light"), the spectral response characteristics of which must imperatively be defined or have their source specification clearly referenced.
- **"Angle"** is an additional parameter defining the angle of incidence (relative to the plane of the symbol) of the illumination. It SHALL be included in the reporting of the overall symbol grade when the angle of incidence is other than 45 degrees. Its absence indicates that the angle of incidence is 45 degrees.

The aperture is normally specified as being 80 percent of the minimum X-dimension allowed for the application

2.7.2.1.25.5.3.5.4 GS1 barcode verification template for two dimensional symbols

<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 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	✓	
Quiet Zones (QZL1, QZL2)*		4 - 0	✓	
L1 and L2*		4 - 0	✓	
Format information**				
Version information**				

Educational comments ¹

Notes (informative localised)

It is the responsibility of the brand owner to ensure the correct use of the GS1 Company Prefix 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

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)

¹ 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.

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, GS1 QR Code, and [GS1 DotCode](#)

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.

5.10 Two dimensional barcodes – GS1 DotCode symbology

5.10.1 Introduction

This section provides a summary description and overview of the GS1 DotCode symbology. A more detailed technical specification can be found in the *Information Technology – Automatic Identification and Data Capture Techniques – Bar Code Symbology Specifications – DotCode, Rev 3.0, August 2014* which is available from AIM. When AIM DotCode supports GS1 system data structures, it is referred to as GS1 DotCode by GS1.

The GS1 system has adopted GS1 DotCode based on its ability to encode GS1 identifiers while printing the barcode inline at high production speeds. Implementation of GS1 DotCode SHALL be done per approved GS1 system application standard Section 2.1.9.

5.10.2 GS1 DotCode symbology

The technical description of GS1 DotCode contained within this section provides additional information based on *AIM DotCode Specification*. It is provided as a further aid in the development of specific applications.

Not supported for the GS1 system: Structured append

This feature allows files of data to be represented logically and continuously in DotCode symbols. These may be scanned in any sequence to enable the original data to be correctly reconstructed.

Not supported for the GS1 system: Extended channel interpretations

This mechanism enables data using character sets other than the default encodable set (e.g. Arabic, Cyrillic, Greek) and other data interpretations (e.g. compacted data using defined compression schemes) or other industry-specific requirements to be encoded.

5.10.2.1 Data transmission and symbology identifier prefixes

The GS1 system requires the use of symbology identifiers. GS1 DotCode uses the symbology identifier of "J11" (see figure 5.10.2.1-1) for GS1 system compliant symbols. This indicates that Application Identifier (AI) data is encoded equivalent to the symbology identifier "JC1" for GS1-128 symbols, Jd2 for GS1 DataMatrix symbols, JQ3 for QR Code symbols, and "Je0" for GS1 DataBar and Composite symbols. For more information on symbology identifiers, see the International standard *ISO/IEC 15424 Information technology – Automatic identification and data capture techniques – Data Carrier Identifiers*.

For example, a GS1 DotCode symbol encoding AI (01) element string 10012345678902 produces the transmitted data string "]J10110012345678902." Data transmission follows the same principles that apply to the concatenation of AI element strings in any GS1 barcode that encodes Application Identifiers (see section 7.8).

Figure 5.10.2.1-1. Symbology identifier for GS1 DotCode

	Message content	Separator
]Jm	Standard AI element strings	None

5.10.2.2 Width and height of a module (X)

The range of the X-dimensions will be defined by the application specification, having due regard to the availability of equipment for the production and reading of symbols and complying with the general requirements of the application.

The X-dimension SHALL be constant throughout a given symbol. The X-dimension SHOULD apply to both the width and height of the modules.

5.10.2.3 Symbol quality grade

The International Standard *ISO/IEC 15415 Information technology - Automatic identification and data capture techniques - Bar code symbol print quality test specification - Two-dimensional symbols methodology* SHALL be used for measuring and grading GS1 DotCode Symbols as augmented in the AIM DotCode Specification.

Recommended Minimum symbol grades for GS1 DotCode are identified specified in individual applications standards in Section 2 which refer to symbol specification tables in section 5.5.

5.10.2.4 Advice for selecting the symbology

Any use of GS1 DotCode ~~should~~SHOULD comply with GS1 system global application standards and be restricted to those applications defined by the GS1 system for GS1 DotCode. GS1 DotCode will not replace other GS1 system symbologies. Existing applications that are satisfactorily utilising EAN/UPC symbols, ITF-14 symbols, GS1-128 symbols, GS1 DataBar symbols, GS1 DataMatrix, GS1 QR Code, -or GS1 composite symbols may continue to use them.



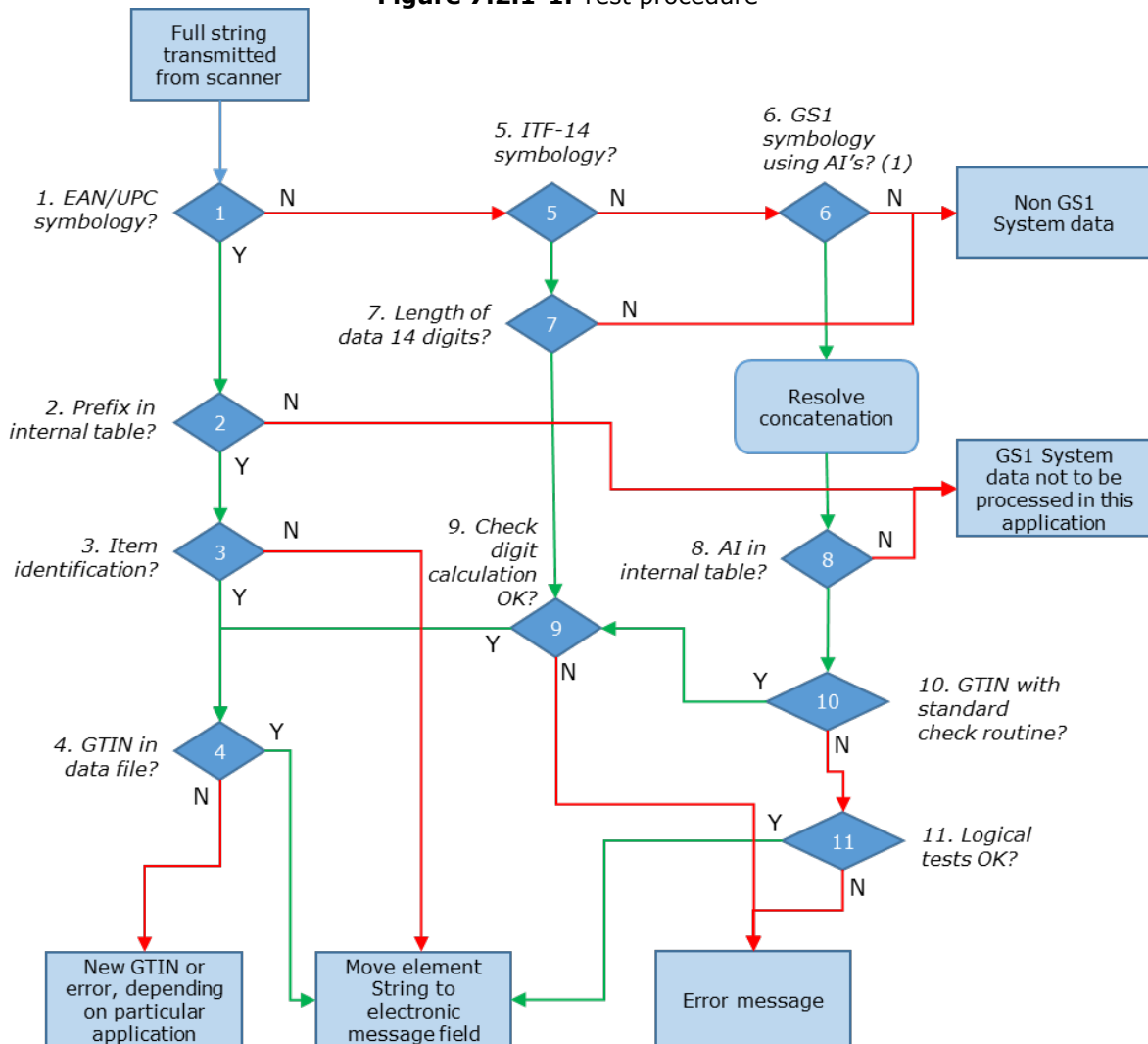
Note: Scanning systems that need to read GS1 DotCode symbols must be 2D imaging scanners and be appropriately programmed to read the GS1 system versions of AIM DotCode Specification, Rev 3.0, August 2014.

5.10.2.5 Human readable interpretation of GS1 DotCode symbols

For human readable interpretation rules see section 4.14.

7.2.1 Analysis of the data carrier and plausibility test for element strings

Figure 7.2.1-1. Test procedure



(1) GS1 symbologies that encode data using GS1 Application Identifiers include GS1-128, GS1 DataMatrix, GS1 QR Code, GS1 DataBar, [GS1 DotCode](#), and Composite and are shown in [7.8](#). For further details on any of the actions in figure 7.2.1-1, see the sections [7.2.2](#), [7.2.3](#), [7.2.4](#), [7.2.5](#), [7.2.6](#), [7.2.7](#), and [7.2.8](#).

7.2.7 Check digit calculation and other system checks

In EAN/UPC symbology, the check digit verifies reading and decoding of barcodes as well as Global Trade Item Numbers (GTINs). This is performed automatically by the barcode reader.

Barcode readers processing ITF-14 symbols may be programmed to verify the GTIN's check digit as well. If this recommended verification has been performed, it is indicated by the symbology identifier]I1 (see section 5). For data transmitted from ITF-14 symbols with symbology identifier]I0, the GTIN's check digit SHALL be verified separately.

GS1-128 and GS1 DataBar have an integral symbol check character that verifies correct decoding of scanned data while GS1 DataMatrix, GS1 QR Code, and [GS1 DotCode](#) have a Reed Solomon error checking and correction feature. If an element string encoded in one of these symbol types includes a check digit, the check digit will not normally be verified by the barcode reader and SHALL be verified separately. While the data security provided by the symbol check character or error checking guarantees proper decoding of the entire element string, correctness of the contained

identification number is achieved by having the application software verify the ID number's check digit. Other logical tests checks are recommended for reasonable data content, such as verifying:

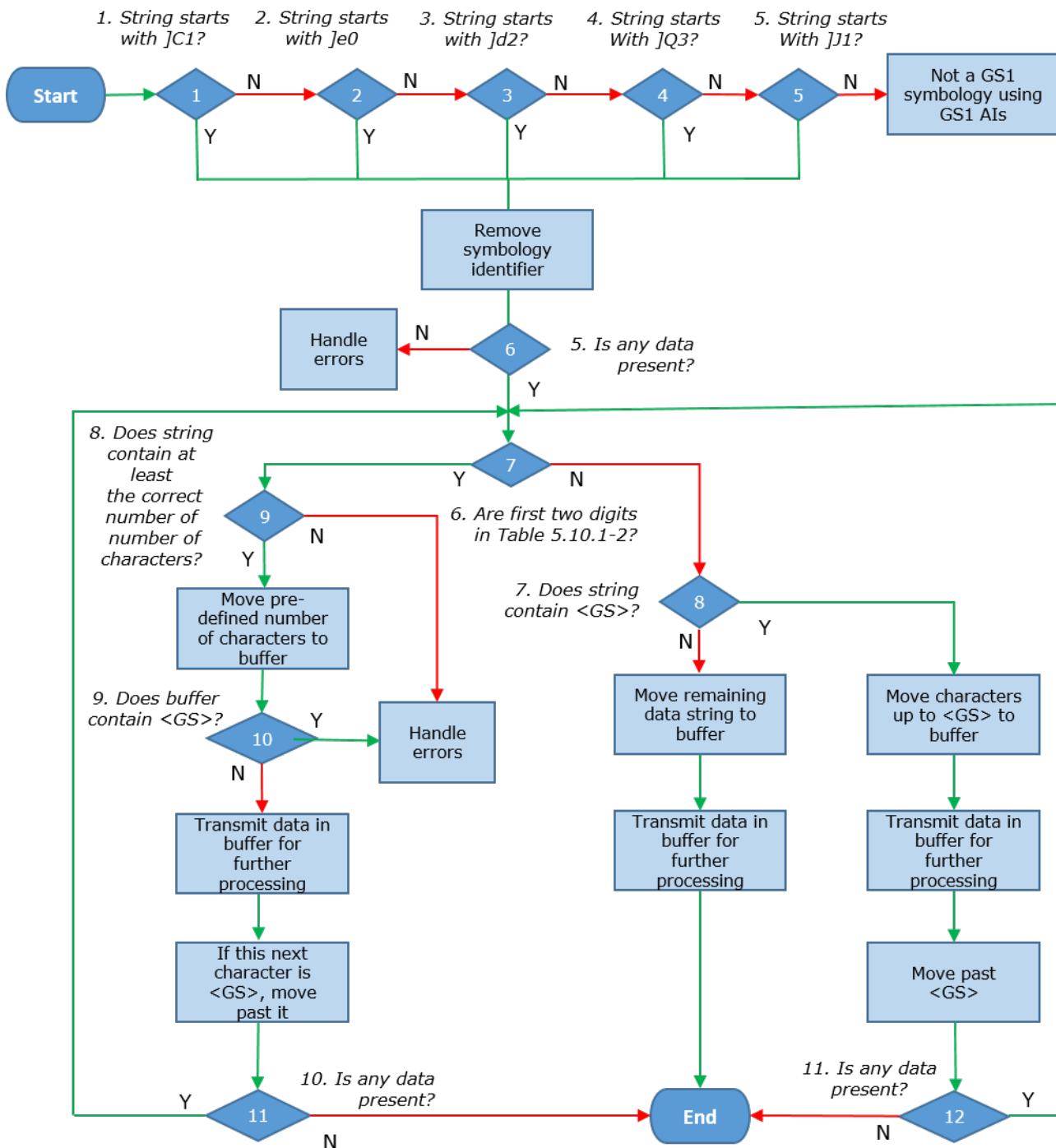
- Data field ranges (e.g., month < 13 and > 00).
- The maximum length of a variable length element string.
- No alphanumeric characters in numeric only fields.
- Correct GS1 Prefixes.

7.7.2 Element strings represented in a GS1 symbology using GS1 Application Identifiers

The element strings encoded in any GS1 symbology that uses GS1 Application Identifiers (such as GS1-128, GS1 DataMatrix, GS1 DataBar, GS1 QR Code, [GS1 DotCode](#) and GS1 Composite) are composed of one or more GS1 Application Identifiers and one or several data fields. The Application Identifier denotes the contents and structure of the respective data fields. Full details are contained in section 3.

7.8 Processing of data from a GS1 symbology using GS1 Application Identifiers

Figure 7.8-1. Data processing overview



This system logic holds true for any GS1 symbology using GS1 Application Identifiers. The symbology identifiers listed in figure 7.8-1 are:

-]C1 = GS1-128.
-]e0 = GS1 DataBar and GS1 Composite symbols.
-]d2 = GS1 DataMatrix.

- [\]Q3](#) = GS1 QR Code.
- [\]J1](#) = [GS1 DotCode](#)

7.8.3 The Function 1 Symbol Character (FNC1)

[When it is](#) used as a separator character the Function 1 Symbol Character (FNC1) [is](#) transmitted in the decoded data string as <GS> (ASCII character 29, seven-bit character set *ISO 646*).

[If <GS> is used as the separator character in GS1 DataMatrix, GS1 QR Code, or GS1 DotCode, its transmitted value will remain as <GS>.](#) All element strings not [included](#) in the pre-defined table shown in section [5.10](#) [MUST](#) be delimited when followed by another element string in a single barcode.

A delimiter [SHOULD not be used](#) at the end of the last element string represented in a barcode or for certain AI combinations defined by the symbology specification (e.g., some types of GS1 DataBar).

8.1 GS1 glossary of terms and definitions

The following glossary was updated for the Jan-2016 publication of this document. Please refer to the www.gs1.org/glossary for the latest version.

Term	Definition
2-dimensional symbology	Optically readable symbols that must be examined both vertically and horizontally to read the entire message. Two-dimensional symbols may be one of two types: matrix symbols and multi-row symbols. Two-dimensional symbols have error detection and may include error correction features.
acceptance criteria	An allowance for a small measurement variation between commercial verifiers or operators during barcode verification testing.
active potency	Represents the measured actual ("Active") potency of a biologic such as haemophilia products.
add-on symbol	A barcode used to encode information supplementary to that in the main barcode.
adjacent symbols	Multiple barcodes placed next to one another without infringing on Quiet Zones.
AIDC data validation	Verification of scanned/read data from barcodes or RFID tags to determine whether it meets the application rules for system logic and consistency and/or a particular user's requirements, prior to processing in applications.
AIM DotCode	A two dimensional barcode symbology rendered by printing dots per the AIM DotCode Specification.
alphanumeric (an)	Describes a character set that contains alphabetic characters (letters), numeric digits (numbers), and other characters, such as punctuation marks.
aperture	A physical opening that is part of the optical path in a device such as a scanner, photometer, or camera. Most apertures are circular, but they may be rectangular or elliptical.
asset type	A component of the Global Returnable Asset Identifier (GRAI) assigned by the owner of the GS1 Company Prefix to create a unique GRAI.
attribute	An element string that provides additional information about an entity identified with a GS1 identification key, such as batch number associated with a Global Trade Item Number (GTIN).
Authentication	The act of determining if the entity in question is genuine through means of checking visible, invisible or electronic attributes of the item.
autodiscrimination	The capability of a reader to automatically recognise and decode multiple barcode symbologies.
automatic identification and data capture (AIDC)	A technology used to automatically capture data. AIDC technologies include barcodes, smart cards, biometrics and RFID.
auxiliary patterns	Components of the EAN/UPC symbology. The centre guard bar pattern, the left guard bar pattern, and the right guard bar pattern are examples of these.
barcode	A symbol that encodes data into a machine readable pattern of adjacent, varying width, parallel, rectangular dark bars and pale spaces.
barcode verification	The assessment of the printed quality of a barcode based on ISO/IEC standards using ISO/IEC compliant barcode verifiers.
bar gain/loss	The increase/decrease in bar width due to effects of the reproduction and printing processes.
batch / lot	The batch or lot number associates an item with information the manufacturer considers relevant for traceability of the trade item. The data may refer to the trade item itself or to items contained in it.
bearer bars	Bar abutting the tops and bottoms of the bars in a barcode or a frame surrounding the entire symbol, intended to equalise the pressure exerted by the printing plate over the entire surface of the symbol and/or to prevent a short scan by the barcode reader.
brand owner	The party that is responsible for allocating GS1 identification keys. The administrator of a GS1 Company Prefix.

Term	Definition
carrier (logistics)	The party that provides freight transportation services or a physical or electronic mechanism that carries business information.
check digit	A final digit calculated from the other digits of some GS1 identification keys. This digit is used to check that the data has been correctly composed. (See GS1 check digit calculation.)
Character Set 39	The set of characters found in <i>ISO 646: Unique Graphic Character Allocations</i> which includes numeric, alphabetic upper-case, plus the characters "#", "-", and "/".
Character Set 82	The set of characters found in <i>ISO 646: Unique Graphic Character Allocations</i> which includes numeric, alphabetic upper-case and lower-case, plus twenty special characters but excluding "space".
component / part	An item that is intended to undergo at least one further transformation process to create finished goods for the purpose of downstream consumption
Component / Part Identifier (CPID)	The unique identifier for a component / part, comprising a GS1 Company Prefix and a component / part reference
Composite Component	This term is used to refer to the 2D symbol component within a composite symbol.
Composite symbology	A GS1 system composite symbol consists of a linear component (encoding the item's primary identification) associated with an adjacent Composite Component (encoding attribute data, such as a batch number or expiration date). The composite symbol always includes a linear component so that the primary identification is readable by all scanning technologies, and so that imager scanners can use the linear component as a finder pattern for the adjacent 2D Composite Component. The composite symbol always includes one of three multi-row 2D Composite Component versions (e.g., CC-A, CC-B, CC-C) for compatibility with linear- and area-CCD scanners and with linear and rastering laser scanners.
concatenation	The representation of several element strings in one barcode.
configuration level	Assignment or grouping of trade items that includes one or more of the same trade item.
consignment	A grouping of logistic or transport units assembled by a freight forwarder or carrier to be transported under one transport document (e.g. HWB)
country subdivision	Principle administrative divisions, or similar areas, of a country included in <i>ISO 3166-1</i> . Examples are a state in the US, a region in France, a canton in Swiss.
coupon	A voucher that can be redeemed at the point-of-sale for a cash value or free item.
Coupon Extended barcode	A supplemental barcode, used only in North America, that can be printed on a coupon to provide additional information, such as offer codes, expiration dates, and household identification numbers.
coupon instance ID	The identification of a unique instance of a digital coupon.
coupon issuer	Party issuing the coupons, bearing the commercial and financial responsibility for the coupons.
Coupon-12	A 12-digit Restricted Circulation Number for coupons structured according to the rules defined in the target market.
Coupon-13	A 13-digit Restricted Circulation Number for coupons structured according to the rules defined in the target market.
customer	The party that receives, buys, or consumes an item or service.
data character	A letter, digit, or other symbol represented in the data field(s) of an element string.
Data Matrix	A standalone, two-dimensional matrix symbology that is made up of square modules arranged within a perimeter finder pattern. Data Matrix ISO version ECC 200 is the only version that supports GS1 system identification numbers, including the Function 1 Symbol Character. Data Matrix symbols are read by two-dimensional imaging scanners or vision systems.
data field	A field that contains a GS1 identification key, an RCN, or attribute information
data titles	Data titles are the abbreviated descriptions of element strings which are used to support manual interpretation of barcodes.

Term	Definition
default front	The side of a retail consumer trade item that is used as the starting point to capture dimensional attributes for the purpose of data alignment.
digital coupon	A digital coupon is an electronic presentation, that is distributed and presented without manifesting as "paper" or in other hard-copy form, and that can be exchanged for a financial discount or for loyalty points when making a purchase.
direct mode	Mobile device information retrieval function when the barcode contains either the address (URL) of the content or service, or the content itself, in-line.
direct part marking (DPM)	Direct part marking refers to the process of marking a symbol on an item using an intrusive or non-intrusive method.
direct print	A process in which the printing apparatus prints the symbol by making physical contact with a substrate (e.g., flexography, ink jet, dot peening).
document type	A component of a Global Document Type Identifier (GDTI) assigned by the brand owner to create a unique GDTI.
dynamic assortment	An assortment that comprises a fixed count of a changing assortment of two or more different retail consumer trade items, each identified with a unique GTIN. All of the retail consumer trade items and their GTINs will have been communicated to the recipient before trading takes place and are declared on the package. The recipient has accepted that the supplier may change the assortment without any prior notice.
EAN/UPC Composite symbology family	A family of barcodes comprising the UPC-A Composite symbology, UPC-E Composite symbology, EAN-8 Composite symbology, and EAN-13 Composite symbology.
EAN/UPC symbology	A family of barcodes including EAN-8, EAN-13, UPC-A, and UPC-E barcodes. Although UPC-E barcodes do not have a separate symbology identifier, they act like a separate symbology through the scanning application software. See also EAN-8 barcode, EAN-13 barcode, UPC-A barcode, and UPC-E barcode.
EAN-8 barcode	A barcode of the EAN/UPC symbology that encodes GTIN-8 or RCN-8.
EAN-13 barcode	A barcode of the EAN/UPC symbology that encodes GTIN-13, Coupon-13, RCN-13, and VMN-13.
electronic commerce	The conduct of business communications and management through electronic methods, such as electronic data interchange (EDI) and automated data collection systems.
electronic message	A composition of element strings from scanned data and transaction information assembled for data validation and unambiguous processing in a user application.
Electronic Product Code (EPC)	An identification scheme for universally identifying physical objects (e.g. trade items, assets, and locations) via RFID tags and other means. The standardised EPC data consists of an EPC (or EPC Identifier) that uniquely identifies an individual object, as well as an optional filter value when judged to be necessary to enable effective and efficient reading of the EPC tags.
EPCIS	The GS1 Electronic Product Code Information Service (standard).
element	A single bar or space of a barcode.
element string	The combination of a GS1 Application Identifier and GS1 Application Identifier data field.
encounter	Situation on the uninterrupted course of which one or more healthcare provider or individual providers delivers healthcare services to a subject of care
enhanced level of AIDC marking (for regulated healthcare trade items)	A level within a graduated system of AIDC trade item marking that provides GTIN plus attribute information
episode of care	An encounter or series of encounters related to the detection and subsequent care for a particular healthcare requirement.
even parity	A characteristic of the encodation of a symbol character whereby the symbol character contains an even number of dark modules.
Extended Packaging	An approach to giving consumers access to additional information or services about trade items through their mobile device. It is the ability to retrieve additional information about the trade item through mobile devices or in general between link a trade item with virtual information or services.

Term	Definition
extension digit	The first digit within the SSCC (Serial Shipping Container Code) which is allocated by the user and is designed to increase the capacity of the SSCC.
final filled consumer trade item package	A trade item as it is distributed to the consumer or end-user.
finished consumer trade item	A product after all production and packaging processes are completed and it is ready for distribution to the end consumer.
fixed length	Term used to describe a data field in an element string with an established number of characters.
fixed measure trade item	An item always produced in the same pre-defined version (e.g., type, size, weight, contents, design) that may be sold at any point in the supply chain.
freight forwarder	The party that arranges the carriage of goods including connected services and/or associated formalities on behalf of the shipper (consignor) or consignee.
fresh foods	Trade items in the following product categories: fruits, vegetables, meats, seafood, bakery and ready to serve food such as cheeses, cold cooked or cured meats, and salad, etc. Fresh foods are defined as food that is not preserved by canning, dehydration, freezing or smoking.
full string	The data transmitted by the barcode reader from reading a data carrier, including the symbology identifier as well as the encoded data.
Function 1 Symbol Character (FNC1)	A symbology character used in some GS1 data carriers for specific purposes.
general distribution scanning	Scanning environments that include barcoded trade items packaged for transport, logistic units, assets, and location tags.
general retail consumer trade item	A retail consumer trade item identified with a GTIN-13, GTIN-12 or GTIN-8 utilising omnidirectional linear barcodes that can be scanned by high-volume, omnidirectional scanners.
Global Electronic Party Information Registry (GEPIR®)	A web-browser interface and a machine to machine set of protocols for GS1 Member Organisation (MO) membership databases to communicate company information for selected GS1 keys including information about the allocation of the GS1 Company Prefixes used to create GS1 keys and/or individually assigned GS1 keys. Created in 1997 as a tool for MO staff, GEPIR's initial scope was to provide a search engine for member addresses and phone numbers using MO GS1 Company Prefix (GCP) databases as the source of information. In more recent versions, GEPIR also provides a very limited set of information on parties (GLNs) and trade items (GTINs).
GINC	See Global Identification Number for Consignment.
GLN extension component	The GLN extension component is used to identify internal physical locations within a location which is identified with a GLN (stores, factories, buildings, etc.).
Global Coupon Number (GCN)	A GS1 identification key that provides a globally unique identification for a coupon, with an optional serial number
Global Document Type Identifier (GDTI)	The GS1 identification key used to identify a document type. The key comprises a GS1 Company Prefix, document type, check digit, and optional serial number.
Global Identification Number for Consignment (GINC)	The GS1 identification key used to identify a logical grouping of logistic or transport units that are assembled to be transported under one transport document (e.g. HWB). The key comprises a GS1 Company Prefix and the freight forwarder's or carrier's transport reference.
Global Individual Asset Identifier (GIAI)	The GS1 identification key used to identify an individual asset. The key comprises a GS1 Company Prefix and individual asset reference.
Global Location Number (GLN)	The GS1 identification key used to identify physical locations or parties. The key comprises a GS1 Company Prefix, location reference, and check digit.
Global Returnable Asset Identifier (GRAI)	The GS1 identification key used to identify returnable assets. The key comprises a GS1 Company Prefix, asset type, check digit, and optional serial number.
Global Service Relation Number (GSRN)	The Global Service Relation Number is the GS1 identification key used to identify the relationship between an organisation offering services and the recipient or provider of services. The key comprises a GS1 Company Prefix, service reference and check digit.

Term	Definition
Global Shipment Identification Number (GSIN)	The GS1 identification key used to identify a logical grouping of logistic or transport units that are assembled by the consignor (seller) for a transport shipment from that consignor to one consignee (buyer) referencing a despatch advice and/or BOL. The key comprises a GS1 Company Prefix, shipper reference and check digit.
Global Trade Item Number® (GTIN®)	The GS1 identification key used to identify trade items. The key comprises a GS1 Company Prefix, an item reference and check digit.
GS1®	Based in Brussels, Belgium, and Princeton, USA, it is the organisation that manages the GS1 system. Its members are GS1 Member Organisations.
GS1 AIDC data carrier	A means to represent data in a machine readable form; used to enable automatic reading of the element strings as specified for use by GS1.
GS1 Application Identifier	The field of two or more digits at the beginning of an element string that uniquely defines its format and meaning.
GS1 Application Identifier data field	The data used in a business application defined by one application identifier.
GS1 B2C Trusted Source of Data (TSD)	A GS1 managed network concept that leverages GTIN (product identification) and GDSN (product information) and would support the communication of authentic product data provided by brand owners to retailers, internet application providers, government, and consumers and shoppers using internet and mobile devices (phones, laptops, etc.).
GS1 check digit calculation	An algorithm used by the GS1 system for the calculation of a check digit to verify accuracy of data. (e.g., modulo 10 check digit, price check digit).
GS1 Common Currency Coupon Code	An identification number for coupons issued in a common currency area (e.g., the euro currency) that uses the Coupon Code-13 data structure.
GS1 Company Prefix	A unique string of four to twelve digits used to issue GS1 identification keys. The first digits are a valid GS1 Prefix and the length must be at least one longer than the length of the GS1 Prefix. The GS1 Company Prefix is issued by a GS1 Member Organisation. As the GS1 Company Prefix varies in length, the issuance of a GS1 Company Prefix excludes all longer strings that start with the same digits from being issued as GS1 Company Prefixes. See also U.P.C Company Prefix.
GS1 DataBar Composite symbology family	A family of symbols comprising all the GS1 DataBar barcodes when an accompanying Composite Component is printed directly above the linear component.
GS1 DataBar Expanded barcode	A barcode that encodes any GS1 identification key plus attribute data, such as weight and "best before" date, in a linear symbol that can be scanned omnidirectionally by suitably programmed point-of-sale scanners.
GS1 DataBar Expanded Stacked barcode	A barcode that is a variation of the GS1 DataBar Expanded barcode that is stacked in multiple rows and is used when the normal symbol would be too wide for the application.
GS1 DataBar Limited barcode	A barcode that encodes a GTIN with a leading digit of zero or indicator digit of one in a linear symbol; for use on small items that will not be scanned at the point-of-sale.
GS1 DataBar Omnidirectional barcode	A barcode that encodes a GTIN. It is designed to be read by omnidirectional scanners.
GS1 DataBar®	A family of barcodes, including GS1 DataBar Omnidirectional; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded; GS1 DataBar Expanded Stacked GS1 DataBar Truncated, GS1 DataBar Limited, and GS1 DataBar Stacked symbols.
GS1 DataBar Retail POS family	The members of the GS1 DataBar symbology family designed to be read in segments by omnidirectional scanners at retail POS: GS1 DataBar Omnidirectional; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded; GS1 DataBar Expanded Stacked.
GS1 DataBar Stacked barcode	A barcode that is a variation of the GS1 DataBar Truncated barcode that is stacked in two rows and is used when the GS1 DataBar Truncated barcode would be too wide for the application.
GS1 DataBar Stacked Omnidirectional barcode	A barcode that is a variation of the GS1 DataBar symbology that is stacked in two rows and is used when the GS1 DataBar Omnidirectional symbol would be too wide for the application. It is designed to be read by omnidirectional checkout scanners.

Term	Definition
GS1 DataBar Truncated barcode	A barcode that is a truncated version of the GS1 DataBar Omnidirectional barcode. It is used when the GS1 DataBar Omnidirectional barcode would be too tall for small item marking applications. It is not intended for omnidirectional checkout scanning.
GS1 DotCode	GS1 implementation specification for use of AIM DotCode
GS1 EANCOM®	The GS1 standard for Electronic Data Interchange (EDI) that is a detailed implementation guideline of the UN/EDIFACT standard messages using the GS1 identification keys.
GS1 DataMatrix	GS1 implementation specification for use of Data Matrix
GS1 Global Data Dictionary	A repository tool used to record GS1 member standards agreements on business terms and definitions used by all business units.
GS1 Global Standards Management Process	GS1 created the Global Standards Management Process (GSMP) to support standards development activity for the GS1 system. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input
GS1 identification key	A unique identifier for a class of objects (e.g. a trade item) or an instance of an object (e.g. a logistic unit).
GS1 Member Organisation	A member of GS1 that is responsible for administering the GS1 system in its country (or assigned area). This task includes, but is not restricted to, ensuring brand owners make correct use of the GS1 system, have access to education, training, promotion and implementation support and have access to play an active role in GSMP.
GS1 Prefix	A unique string of two or more digits issued by GS1 Global Office and allocated to GS1 Member Organisations to issue GS1 Company Prefixes or allocated to other specific areas.
GS1 QR Code	GS1 implementation specification for use of QR Code
GS1 symbologies using GS1 Application Identifiers	All GS1 endorsed barcode symbologies that can encode more than a GTIN namely GS1-128, GS1 DataMatrix, GS1 DataBar and Composite.
GS1 system	The specifications, standards, and guidelines administered by GS1.
GS1 XML	The GS1 standard for extensible markup language (XML) schemas providing users with a global business messaging language of e-business to conduct efficient internet-based electronic commerce.
GS1-128 symbology	A subset of Code 128 that is utilised exclusively for GS1 system data structures.
GS1-8 Prefix	A unique string of three digits issued by GS1 Global Office and allocated to GS1 Member Organisations to issue GTIN-8s or allocated to issue RCN-8s (see RCN-8).
GSIN	See Global Shipment Identification Number.
GTIN application format	A format for a GTIN-8, GTIN-12, or GTIN-13 used when a GTIN application uses a fixed field length, for example, when a GTIN-13 is encoded in symbology using Application Identifier (01).
GTIN plus attribute(s) flag	A trigger in systems to determine if additional processing is required by a barcode user for a given GTIN.
GTIN-8	The 8-digit GS1 identification key composed of a GS1-8 Prefix, item reference, and check digit used to identify trade items.
GTIN-12	The 12-digit GS1 identification key composed of a U.P.C. Company Prefix, item reference, and check digit used to identify trade items.
GTIN-13	The 13-digit GS1 identification key composed of a GS1 Company Prefix, item reference, and check digit used to identify trade items.
GTIN-14	The 14-digit GS1 identification key composed of an indicator digit (1-9), GS1 Company Prefix, item reference, and check digit used to identify trade items.
guard bar pattern	An auxiliary pattern of bars and spaces corresponding to start or stop patterns in barcode symbologies, and serving to separate the two halves of EAN-8, EAN-13, and UPC-A symbols.
hanging item	Any retail consumer trade item that is normally presented in the store in a hanging position.

Term	Definition
healthcare primary packaging	The first level of packaging for the product marked with an AIDC data carrier either on the packaging or on a label affixed to the packaging. For non-sterile packaging, the first level of packaging can be the packaging in direct contact with the product. For sterile packaging, the first level of packaging can be any combination of the sterile packaging system. May consist of a single item or group of items for a single therapy such as a kit. For packaging configurations that include a retail consumer trade item, primary packaging is a packaging level below the retail consumer trade item.
healthcare provider	An organisation or facility that delivers healthcare to a subject of care. Corresponds to "care delivery organisation", "healthcare organisation", etc.
healthcare secondary packaging	A level of packaging marked with an AIDC carrier that may contain one or more primary packages or a group of primary packages containing a single item.
highest level of AIDC marking (for regulated healthcare trade items)	A level within a graduated system of AIDC trade item marking that provides GTIN, serialisation, and potentially other attribute information.
House Way Bill Number	A freight forwarder's document used mainly as a control for the goods within the freight forwarder's own service system.
human readable interpretation(HRI)	Characters, such as letters and numbers, which can be read by persons and are encoded in GS1 AIDC data carriers confined to a GS1 standard structure and format. The human readable interpretation is a one-to-one illustration of the encoded data. However start, stop, shift and function characters, as well as the symbol check character, are not shown in the human readable interpretation.
identification number	A numeric or alphanumeric field intended to enable the recognition of one entity versus another.
Image Based Scanning	The process of using camera or area imager based optical systems to capture the image of a bar code for the purpose of image recognition, analysis and the decoding of that data carrier. Though specifically needed for the reading and decoding of 2D / Matrix bar code data carriers (e.g. GS1 DataMatrix, GS1 QR Code, etc.), it can also be used for the reading and decoding of 1D / Linear Data Carriers (e.g. FAN/UPC, GS1-128, etc.).
indicator	A digit from 1 to 9 in the leftmost position of the GTIN-14.
indirect mode	Mobile device information retrieval function when the code contains an identifier, which needs to be resolved to obtain the content or service. Resolving an identifier means looking it up, typically at a network service, to determine the corresponding content or service.
individual asset	An entity that is part of the inventory of assets for a given company. (See also returnable asset.)
individual asset reference	A component of the Global Individual Asset Identifier (GIAI) assigned by the brand owner to create a unique GIAI.
individual provider	Any person who provides or is a potential provider of a health care service to a subject of care
inner trade item grouping	Intermediate package of multiples of the same trade item or a pre-defined assortment of trade items. An inner trade item grouping may or may not be sold at POS. (In some regions may also be referred to as inner pack).
Interleaved 2-of-5 symbology	Barcode symbology used for the ITF-14 barcode.
inverse exponent	The GS1 Application Identifier digit that denotes the implied decimal point position in an element string.
item reference	A component of the Global Trade Item Number (GTIN) assigned by the brand owner to create a unique GTIN.
ITF symbology	See Interleaved 2-of-5 symbology.
ITF-14 barcode	ITF-14 (a subset of Interleaved 2-of-5) barcodes carry GTINs only on trade items that are not expected to pass through the point-of-sale.
kit	A collection of different regulated healthcare items assembled for use in a single therapy.

Term	Definition
leading zero(s)	Digits (always zeroes) which must be placed in the leftmost position(s) of a data string when GTIN-8, GTIN-12, or GTIN-13 are encoded in an GS1 AIDC data carrier that requires 14-digits (see also GTIN application format) or when used for the same intent in other data structures such as GRAI.
levels of AIDC marking	A graduated system of AIDC marking. The graduated system is defined as minimum, enhanced and highest levels of AIDC marking.
linear barcode	Barcode symbology using bars and spaces in one dimension.
local assigned code (LAC)	A particular use of the UPC-E barcode for restricted distribution.
location reference	A component of a Global Location Number (GLN) assigned by the brand owner to create a unique GLN.
logistic measures	Measures indicating the outside dimensions, total weight, or volume inclusive of packing material of a logistic unit. Also known as gross measures.
logistic unit	An item of any composition established for transport and/or storage that needs to be managed through the supply chain. It is identified with an SSCC.
loose produce	Fruits and vegetables which are delivered to the store loose, in boxes or cases, and then put into a bag or selected individually by the customer for purchase.
magnification	Different sizes of barcodes based on a nominal size and a fixed aspect ratio; stated as a percentage or decimal equivalent of a nominal size.
measure verifier-digit	A digit calculated from the measure field of a variable measure number encoded using the EAN/UPC symbology. Used to check that the data has been correctly composed.
medical device	Any instrument, apparatus, implement, machine, appliance, implant, in vitro reagent or calibrator, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings for any medical purpose.
minimum level of AIDC marking (for regulated healthcare trade items)	A level within a graduated system of AIDC trade item marking that provides GTIN with no attribute information.
module	The narrowest nominal width unit of measure in a barcode. In certain symbologies, element widths may be specified as multiples of one module. Equivalent to X-dimension.
modulo 10	The name of the algorithm – a simple checksum formula in the public domain – used to create a check digit for those GS1 identification keys that require one.
modulo 103 GS1-128 symbol check character	A number, which results from a modulo calculation, that is encoded in the GS1-128 barcode as a self-checking symbol character. It is created automatically by software as a symbol overhead character and is not expressed in the human readable interpretation.
multiple unit blister / package	Immediate package for a medicine with more than one single unit. Package which fully encloses the pill / caplet / capsule. Each dosage form may be individually packaged. The individually blistered dosage forms are attached to each other in one strip.
National Healthcare Reimbursement Number (NHRN)	National and/or regional identification numbers used on pharmaceutical and/or medical devices where required by national or regional regulatory organisations for product registration purposes and/or for the management of healthcare provider reimbursement.
National Trade Item Number (NTIN)	A coding scheme, administered in the healthcare sector by a national organisation for which a GS1 Prefix has been issued to permit its uniqueness within the GTIN pool but without assurance of full compatibility with GTIN functionality. The result is a product identification number assigned by a third party (not the brand owner or manufacturer). Example: the CIP (Club Inter Pharmaceutique) in France administered by the French Health Products Safety Agency (AFSSAPS).
natural base	The side of a non-retail consumer trade item package that is used as a reference point for capturing dimensional attributes for the purpose of data alignment.
non-GTIN packs	A packaging level for trade items where there is no trading partner requirement for GTIN identification. If a GTIN is required, then this item becomes a retail consumer trade item or trade item grouping.

Term	Definition
non-HRI text	Characters such as letters and numbers that can be read by persons and may or may not be encoded in GS1 AIDC data carriers and are not confined to a structure and format based on GS1 standards (e.g., a date code expressed in a national format that could be used to encode a date field in a GS1 AIDC data carrier, brand owner name, consumer declarations).
object class	Similar to a stock keeping unit SKU or trade item level.
odd parity	A characteristic of the encodation of a symbol character whereby the symbol character contains an odd number of dark modules.
omnidirectional linear barcode	A linear barcode symbol designed to be omnidirectionally read in segments by suitably programmed high-volume omnidirectional point-of-sale (POS) scanners.
packaging component	Entities such as bottles, caps, and labels to package a consumer trade item.
packaging component number	GTIN attribute used to establish a relationship between a finished consumer trade item and packaging components.
payment slip	The end customer's notification of a demand for payment for a billable service (e.g., utility bill) comprising an amount payable and payment conditions.
platform	Pallet or slip sheet or other device used to store or move a unit load, whether a logistics unit or a GTIN.
point-of-care (POC)	Dispensing or use of a non-retail, regulated healthcare pharmaceutical or medical device to a patient based on right product, dose, and route of administration
point-of-sale (POS)	Refers to the retail checkout where omnidirectional barcodes must be used to enable very rapid scanning or low volume checkout where linear or 2D matrix barcodes are used with image-based scanners.
pre-defined assortments	An assortment that comprises a fixed count of two or more different trade items, each identified with a unique GTIN that is declared on the package. The trade items contained within the assortment may be trade items of one or more manufacturers. When an assortment contains items from multiple manufacturers the GTIN requirement for the assortment is the responsibility of the organisation that creates the assortment. Any change in the configuration of the assortment is considered a new trade item.
price check digit	A digit calculated from the price element of a variable measure number encoded using the EAN/UPC symbology. Used to check that the data has been correctly composed.
price verifier digit	See price check digit.
primary barcode	The barcode containing the identification number of the item (e.g. GTIN, SSCC). Used to determine the placement of any additional barcode information.
Quiet Zone	A clear space which precedes the start character of a barcode and follows the stop character. Formerly referred to as "clear area" or "light margin".
Quiet Zone Indicator	A greater than (>) or less than (<) character, printed in the human readable field of the barcode, with the tip aligned with the outer edge of the Quiet Zone.
QR Code	A two-dimensional matrix symbology consisting of square modules arranged in a square pattern. The symbology is characterised by a unique finder pattern located at three corners of the symbol. QR Code Version 2005 is the only version that supports GS1 system identification numbers, including Function 1 Symbol Character. QR Code symbols are read by two-dimensional imaging scanners or vision systems.
radio frequency	Any frequency within the electromagnetic spectrum associated with radio wave propagation. When a radio frequency current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space. Many wireless technologies are based on radio frequency field propagation.
radio frequency identification (RFID)	A data carrier technology that transmits information via signals in the radio frequency portion of the electromagnetic spectrum. A radio frequency identification system consists of an antenna and a transceiver, which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the radio frequency circuitry and information to be transmitted.
random assortment	An assortment that comprises items that are not uniquely identified on the package and are not marked for individual sale (e.g., a bag of individually wrapped lifesavers or colours of tooth brushes).

Term	Definition
responsible entity	The party responsible for the safety and effectiveness of the medical product at a moment in time in its lifecycle, according to the approved regulatory file (including labelling) and regulatory/legal/professional obligations associated with the medical product. (e.g., brand owner, repackager, hospital pharmacy, etc.)
RCN-8	An 8-digit Restricted Circulation Number (see Restricted Circulation Number) beginning with GS1-8 Prefix 0 or 2.
RCN-12	A 12-digit Restricted Circulation Number (see Restricted Circulation Number).
RCN-13	A 13-digit Restricted Circulation Number (see Restricted Circulation Number).
refund receipt	A voucher produced by equipment handling empty containers (bottles and crates).
regulated healthcare retail consumer trade item	A regulated healthcare trade item to be sold to the end consumer at a regulated healthcare retail point-of-sale (pharmacy). They are identified with a GTIN-13, GTIN-12 or GTIN-8 utilising linear or 2D matrix barcodes that can be scanned by image-based scanners.
regulated healthcare non-retail consumer trade item	A consumer trade item not intended for scanning at POS and identified with a GTIN-14, GTIN-13, GTIN-12 or GTIN-8 utilising linear or 2D matrix barcodes that can be scanned by image-based scanners.
regulated healthcare trade item	Pharmaceuticals or medical devices that are sold or dispensed in a controlled environment (e.g. retail pharmacy, hospital pharmacy).
Restricted Circulation Number (RCN)	Signifies a GS1 identification number used for special applications in restricted environments, defined by the local GS1 Member Organisation (e.g., restricted within a country, company, industry). They are allocated by GS1 for either internal use by companies or to GS1 Member Organisations for assignment based on business needs in their country (e.g., variable measure product identification, couponing).
retailer zero-suppression code	A group of ID numbers (separate from Local Assigned Codes), that enable the use of UPC-E barcodes in a closed system environment (not for open supply chain applications).
returnable asset	A reusable entity owned by a company that is used for transport and storage of goods. It is identified with a GRAI.
scanner	An electronic device to read barcode and convert them into electrical signals understandable by a computer device.
separator character	Function 1 Symbol Character used to separate certain concatenated element strings, dependent on their positioning in the GS1 barcodes.
serial number	A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime. Example: microscope model AC-2 with serial number 1234568 and microscope model AC-2 with serial number 1234569. A unique individual item may be identified with the combined Global Trade Item Number (GTIN) and serial number.
serial reference	A component of the Serial Shipping Container Code (SSCC) assigned by the brand owner to create a unique SSCC.
Serial Shipping Container Code (SSCC)	The GS1 identification key used to identify logistics units. The key comprises an extension digit, GS1 Company Prefix, serial reference, and check digit.
service reference	A component of the Global Service Relation Number (GSRN) assigned by the brand owner to create a unique GSRN.
service relation instance number (SRIN)	An attribute to the GSRN which allows to distinguish different encounters during the same episode, or the reuse of the same GSRN in different episodes.
shipment	A grouping of logistics and transport units assembled and identified by the seller (sender) of the goods travelling under one despatch advice and/or Bill of Lading to one customer (recipient).
short life items	An item, preparation or reconstituted product with limited use / shelf life, such as in healthcare a cytotoxic medicine, that has undergone some manipulation, such as addition of a diluent, in order to make it administrable to a specified patient.
single shipping / retail consumer trade item	A retail consumer trade item that is also regarded as a shipping item and is one to a carton (e.g. a bicycle or a television).

Term	Definition
single unit	Single item of medicine/medical device without any package, for example the single tablet in a blister or bottle, the syringe as such.
single unit package / blister	A healthcare primary package that contains one discrete pharmaceutical dosage form, i.e. a tablet, a certain volume of a liquid or that is the immediate package for a medical device like a syringe. A number of single units may be attached to each other, but are easy to separate through a perforation.
special characters	Special characters that are designated by the symbology specification.
sterile packaging system	A combination of the sterile barrier system (the minimum package that prevents ingress of microorganisms and allows aseptic presentation of the product at the point of use) and the protective packaging (configuration of materials designed to prevent damage to the sterile barrier system and its contents until the point of use).
substrate	The material on which a barcode is printed.
subject of care	Any person who uses or is a potential user of a health care service, subjects of care may also be referred to as patients or health care consumers
supplier	The party that produces, provides, or furnishes an item or service.
symbol	The combination of symbol characters and features required by a particular symbology, including Quiet Zone, start and stop characters, data characters, and other auxiliary patterns, which together form a complete scannable entity; an instance of a symbology and a data structure.
symbol character	A group of bars and spaces in a symbol that is decoded as a single unit. It may represent an individual digit, letter, punctuation mark, control indicator, or multiple data characters.
symbol check character	A symbol character or set of bar/space patterns included within a GS1-128 or GS1 DataBar symbol, the value of which is used by the barcode reader for the purpose of performing a mathematical check to ensure the accuracy of the scanned data. It is not shown in human readable interpretation. It is not input to the barcode printer and is not transmitted by the barcode reader.
symbol contrast	An <i>ISO/IEC 15416</i> parameter that measures the difference between the largest and smallest reflectance values in a Scan Reflectance Profile (SRP).
symbology	A defined method of representing numeric or alphabetic characters in a barcode; a type of barcode.
symbology element	A character or characters in a barcode used to define the integrity and processing of the symbol itself (e.g., start and stop patterns). These elements are symbology overhead and are not part of the data conveyed by the barcode.
symbology identifier	A sequence of characters generated by the decoder (and prefixed to the decoded data transmitted by the decoder) that identifies the symbology from which the data has been decoded.
<u>Traceability</u>	<u>The ability to determine the origin and successive change in ownership of a given item or grouping of items.</u>
trade item	Any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain.
trade item grouping	A predefined composition of trade item(s) that is not intended for point-of-sale scanning. It is identified with a GTIN-14, GTIN-13, or GTIN-12.
trade measures	Net measures of variable measure trade items as used for invoicing (billing) the trade item.
truncation	Printing a symbol shorter than the symbology specification's minimum height recommendations. Truncation can make the symbol difficult for an operator to scan.
U.P.C. Company Prefix	A GS1 Company Prefix starting with a zero ('0') becomes a U.P.C. Company Prefix by removing the leading zero. A U.P.C. Company Prefix is used to issue GTIN-12.
U.P.C. Prefix	A GS1 Prefix starting with a zero ('0') becomes a U.P.C. Prefix by removing the leading zero. A U.P.C. Prefix is used to issue U.P.C. Company Prefixes or allocated to other specific areas.

Term	Definition
unit load	One or more transport packages or other items contained on a platform making them suitable for transport, stacking, and storage as a unit.
unit of use	Refers to an individual unit package that is used to make up the patient-specific prescription that is prescribed for administering to a patient.
unrestricted distribution	Signifies that such system data may be applied on goods to be processed anywhere in the world without restraint as to such things as country, company, and industry.
UPC-A barcode	A barcode of the EAN/UPC symbology that encodes GTIN-12, Coupon-12, RCN-12, and VMN-12.
UPC-E barcode	A barcode of the EAN/UPC symbology representing a GTIN-12 in six explicitly encoded digits using zero-suppression techniques.
variable measure number (VMN)	A Restricted Circulation Number used to identify variable measure products for scanning at point-of-sale. It is defined per GS1 Member Organisation rules in their country (see VMN-12 and VMN-13).
variable measure trade item	A trade item which may be traded without a pre-defined measure, such as its weight or length.
<u>Verification</u>	<u>The process of ensuring a given identifier (code) has been properly constructed and can be successfully understood by supply chain trading partners.</u>
VMN-12	The 12-digit Restricted Circulation Number encoded in UPC-A symbols to allow scanning of variable measure products at point-of-sale. It is defined per target market specific rules that are associated with U.P.C. Prefix 2.
VMN-13	The 13-digit Restricted Circulation Number encoded in EAN-13 symbols to allow scanning of variable measure products at point-of-sale. It is defined per target market specific rules that are associated with GS1 Prefixes 20 through 29.
weight check digit	See measure verifier digit.
wide-to-narrow ratio	The ratio between the wide elements and the narrow elements in a barcode symbology such as ITF-14 that has two different element widths.
X-dimension	The specified width of the narrowest element of a barcode.

8.2 GS1 abbreviations

Abbreviation	Term
ADC	Automatic Data Capture
AI	Application Identifier
AIDC	Automatic Identification and Data Capture
DPM	Direct Part Marking
EAN	EAN International, now called GS1
EDI	Electronic Data Interchange
EPC	Electronic Product Code
FNC1	Function 1 Symbol Character
GCN	Global Coupon Number
GDD	Global Data Dictionary
GDSN	Global Data Synchronisation Network
GDTI	Global Document Type Identifier
GEPIR	Global Electronic Party Information Registry
GIAI	Global Individual Asset Identifier
GINC	Global Identification Number for Consignment
GLN	Global Location Number

Abbreviation	Term
GPC	Global Product Classification
GRAI	Global Returnable Asset Identifier
GRCTI	General Retail Consumer Trade Item
GS1 key	GS1 identification key
GSIN	Global Shipment Identification Number
GSMP	Global Standards Management Process
GSRN	Global Service Relation Number
GTIN	Global Trade Item Number
HRI	Human Readable Interpretation
ISBN	International Standard Book Number
ISO	International Organization for Standardization
ISSN	International Standard Serial Number
LAC	Local Assigned Code
NHRN	National Healthcare Reimbursement Number
NTIN	National Trade Item Number
RCN	Restricted Circulation Number
RFID	Radio Frequency Identification
RHRCTI	Regulated healthcare retail consumer trade item
RHTI	Regulated healthcare trade item
RSS	Reduced Space Symbology
RZSC	Retailer Zero-Suppression Code.
SKU	Stock Keeping Unit
SGTIN	GTIN and a Serial Number.
SRIN	Service Relation Instance Number
VMN	Variable measure number