



General Specifications Change Notification (GSCN)

WR #	GSCN Name	Ratification Date
23-290	Data carrier choice consistency for transitional use of 2D barcodes	Nov 2023

Associated Work Request (WR) Number:

Background:

Language in several application standard sections (within Section 2) need to have consistent language that points out that 2D barcodes can be used along with the mandatory choices during a transition period. A forward reference to Section 8 is also added and an inconsistency in Section 2.7 must be fixed.

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2.1.2 Fixed measure trade items – open supply chain

Fixed measure trade items are those that are always produced in the same version and composition (e.g., type, size, weight, contents, design). The identification number identifies the item unambiguously. Every trade item that is different from another in any respect is assigned a separate Global Trade Item Number (GTIN).

2.1.3 Fixed measure trade items scanned at retail POS

A fixed measure consumer trade item that is intended to be read at ~~high-volume-retail point-of-sale (POS). The trade item must SHALL~~ be identified with a GTIN-8, GTIN-12, or GTIN-13. It ~~must SHALL~~ carry a barcode from the EAN/UPC ~~symbology-family~~ or the GS1 DataBar® ~~rRetail POS family. During a transition period, 2D barcodes may be applied in addition to the linear barcode. For information on how to manage multiple barcodes see section 4.15. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see section 8.2~~

~~To support new applications additional GS1-approved data carriers (encoding additional data with the GTIN) may be applied. For information on how to manage multiple barcodes see section 4.15.~~

~~For a summary of all conformance requirements for this AIDC application standard, cross-application rules and related technical specifications, see section 8.3.~~

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2.1.3.1 Fixed measure trade items scanned at retail POS using GTIN-12 or GTIN-13

Application description

Figure 2.1.3.1-1. GTIN-12/GTIN-13 data structure

	GS1 Company Prefix					Item reference							Check digit
(GTIN-13)	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂	N ₁₃
	U.P.C. Company Prefix					Item reference							Check digit
(GTIN-12)		N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂

The GS1 Company Prefix is allocated by a GS1 Member Organisation to a system user. It makes the ID number unique worldwide but does not identify the origin of the item. Any valid GS1 Company Prefix, other than ones starting with a zero, may be used to issue a GTIN-13 and any valid U.P.C Company Prefix may be used to issue a GTIN-12. The GS1 Prefixes used for this purpose can be found in section 1.4.

The item reference is assigned by the system user, who must observe the rules in section 4.

The check digit is explained in section 7.9. Its verification, carried out automatically by the barcode reader, ensures that the number is correctly composed.

GS1 key

Required

The allowed key formats for this application are:

- GTIN-12
- GTIN-13

Rules

All the GTIN rules described in section 4.

Attributes**Required**

Not applicable

Optional

For all the GS1 Application Identifiers (AI) that can be used with a GTIN, see section [3](#).

Rules

Not applicable

Data carrier specification**Carrier choices**

The data carriers for this element string are:

- UPC-A barcode (carrying a GTIN-12).
- EAN-13 barcode (carrying a GTIN-13).
- GS1 DataBar Retail POS family (carrying GTIN-12 or GTIN-13 represented in a fixed-length data string of 14 digits by adding leading zeroes).



Note: During a transition period, 2D barcodes may be applied in addition to the linear barcode. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see [section 8.2](#).

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

See section [5.12.3.1](#), *GS1 symbol specification table 1*.

Symbol placement

All the symbol placement guidelines are defined in section [6](#).

Unique application processing requirements

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

2.1.3.2 Fixed measure trade items scanned at retail POS using GTIN-12 carried by a UPC-E barcode**Application description**

Some GTIN-12s beginning with the U.P.C. Prefix 0 may be represented in a small symbol called the UPC-E barcode. The GTIN-12 is condensed into a barcode consisting of six symbol character positions. For application processing, the GTIN-12 must be transformed into its full length by the barcode reader software or by the application software. There is no six-digit UPC-E barcode. See section [7.10](#) for UPC-E barcode options.

GS1 key**Required**

- GTIN-12

Rules

All the GTIN rules described in section [4](#).

Attributes

Not applicable

Data carrier specification

Carrier choices

- UPC-E (carrying a GTIN-12 in six explicitly encoded digits using zero-suppression techniques).



Note: During a transition period, 2D barcodes may be applied in addition to the linear barcode. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see [section 8.2](#).

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

See section [5.12.3.1](#), *GS1 symbol specification table 1*.

Symbol placement

All the symbol placement guidelines defined in section [6](#).

Unique application processing requirements

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

2.1.3.3 Fixed measure trade items scanned at retail POS using GTIN-8

Application description

The GTIN-8 is available for items whose packaging does not include enough available space to permit the use of an EAN-13 symbol. GTIN-8s are individually assigned by GS1 Member Organisations on request. [figure 2.1.3.3-1](#) shows the data structure of a GTIN-8.

Figure 2.1.3.3-1. GTIN-8 data structure

GS1-8 Prefix			Item reference				Check digit
N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈

The GS1-8 Prefix is a unique string of two or more digits issued by GS1 Global Office. See section [1.4.3](#) for the GS1-8 Prefixes used in this element string.

The item reference is assigned by the GS1 Member Organisation. The GS1 Member Organisations provide procedures for obtaining GTIN-8s.

The check digit is explained in section [7.9](#). Its verification, carried out automatically by the barcode reader, ensures that the number is correctly composed.

GS1 key

Required

- GTIN-8

Rules

All the GTIN rules described in section [4](#).

Attributes**Required**

Not applicable

Optional

For all the GS1 Application Identifiers (AI) that can be used with a GTIN, see section 3.

Rules

Not applicable

Data carrier specification**Carrier choices**

- EAN-8 (carrying a GTIN-8).
- GS1 DataBar Retail POS family (carrying a GTIN-8).



Note: During a transition period, 2D barcodes may be applied in addition to the linear barcode. For a summary of all conformance requirements for this AIDC application standard, 2D barcodes, cross-application rules and related technical specifications, see section 8.2.

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

See section 5.12.3.1, GS1 symbol specification table 1.

Symbol placement

All the symbol placement guidelines defined in section 6.

Unique application processing requirements

For a description of processing requirements, see section 7.

2.1.3.4 Hardcover books and paperbacks scanned at retail POS using ISBN, GTIN-13, or GTIN-12**Application description**

When identifying books and paperbacks a company may identify them in the same manner as any other retail trade items (see section 2.1.3). However, the recommended option is to use the International Standard Book Number (ISBN numbering system). The GS1 Prefixes 978 and 979² have been allocated to ISBN (<http://www.isbn-international.org/>), which allocates numbers from these 'Bookland' prefixes.



Note: ISBNs SHALL NOT be allocated to non-book products even if the products are related to a book (e.g., teddy bears, coffee mugs, T-shirts, etc. related to a book launch). Such non-book products SHALL be identified and barcoded in the same manner as any other retail trade item (see section 2.1.3). A trade item grouping of identical book items would normally be identified according to section 2.1.7.2. However, an ISBN may also be used to create a 14-digit GTIN with an indicator to identify a trade item grouping of identical book items (refer to section 2.1.7.2) provided that the publisher that issues the 14-digit GTIN is a member of a

² Within GS1 Prefix 979 a subset 9790 has been allocated to the International ISMN Agency for notated music.



2.7 Summary of applications and operative scanning environments

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 needs to be determined prior to locating the correct symbol specification table (SST) entry. Use the “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 in figure 5.12.2.6-2 to determine the correct symbol specification table.

Figure 2.7-1. Areas of GS1 system application

Application	See section	SST(s)	Carrier choices
Fixed measure trade items scanned at retail POS using:	2.1.3		
▪ GTIN-12 or GTIN-13	2.1.3.1	1	UPC-A, EAN-13, GS1 DataBar-Retail POS family
▪ GTIN-12 carried by a UPC-E barcode	2.1.3.2	1	UPC-E
▪ GTIN-8	2.1.3.3	1	EAN-8, GS1 DataBar-Retail POS-family
▪ Hardcover books and paperbacks scanned at retail POS using ISBN, GTIN-13, or GTIN-12	2.1.3.4	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
▪ Serial publications scanned at retail POS using ISSN, GTIN-13, or GTIN-12	2.1.3.5	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
▪ Fixed measure fresh food trade items scanned at retail POS	2.1.3.6	1	GS1 DataBar-Omnidirectional, GS1 DataBar-Stacked-Omnidirectional, UPC-A, EAN-13, EAN-8
Fixed measure trade items scanned in general distribution and at retail POS	2.1.4	3	EAN/UPC, GS1 DataBar-Retail POS family
Healthcare primary packaging (non-retail trade items)	2.1.5	6	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF-14, Composite Component
Healthcare secondary packaging (regulated healthcare retail consumer trade items)	2.1.6	8 or 10	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF-14, Composite Component
Fixed measure trade items scanned in general distribution	2.1.7	2	EAN/UPC, ITF-14, GS1-128, GS1 DataBar
▪ Regulated healthcare trade items	2.1.7	8	GS1-128, GS1 DataBar, GS1 DataMatrix, EAN/UPC, ITF-14
▪ Manufacturing, maintenance, repair and overhaul trade items	2.1.7	4	GS1-128, GS1 DataMatrix, GS1 QR-Code
Medical devices (non-retail trade items)	2.1.8	7	GS1 DataMatrix
Fixed measure trade items packed in several individual pieces not scanned at retail POS	2.1.9	2, 4	GS1-128, GS1 DataMatrix, GS1 QR-Code
▪ Healthcare trade items	2.1.9	8 or 10	GS1-128
Variable measure trade items scanned in general distribution	2.1.10	2	GS1-128, GS1 DataBar-Expanded, GS1 DataBar-Expanded-Stacked, ITF-14
Fixed measure trade items – restricted distribution applications	2.1.11		
▪ Company internal numbering – RCN-8 Prefix 0 or 2	2.1.11.1	1	EAN-8
▪ Company internal numbering – RCN- 13 GS1 Prefix 04 (RCN-12 U.P.C. Prefix 4)	2.1.11.2	1	EAN-13, UPC-A
▪ Company internal numbering – RCN- 12 U.P.C. Prefix 0 (LAC and RZSC)	2.1.11.3	1	UPC-E



Application	See section	SST(s)	Carrier choices
▪ GS1 Prefixes 02, 20 to 29 - Restricted Circulation	2.1.11.4	1	EAN-13 symbols
Variable measure fresh food trade items scanned at retail point-of-sale using GTIN	2.1.12.1	1	GS1 DataBar Expanded, GS1 DataBar Expanded-Stacked, GS1 DataMatrix, GS1 QR Code
Variable measure trade items scanned at retail point-of-sale using Restricted Circulation Numbers	2.1.12.2	1	EAN-13, UPC-A
GS1 Digital Link URI syntax for extended packaging applications for trade items	2.1.13.1	1 Addendum 2	Data Matrix, QR Code
GS1 element string syntax for extended packaging applications for trade items	2.1.13.2	1 Addendum 1	GS1 DataMatrix, GS1 QR Code
▪ Regulated healthcare trade items	2.1.13.2	6, 7, 8, or 10	GS1 DataMatrix only
Regulated trade item, at unit pack level, per EU 2018/574 for tobacco traceability (GTIN + Third-Party Controlled Serialised Extension of GTIN)	2.1.14	12	GS1 DataMatrix, GS1 QR Code, GS1 DotCode
Regulated trade item, at standard trade grouping level, per EU 2018/574 for tobacco traceability (SGTIN)	2.1.14	12	GS1 DataMatrix, GS1 QR Code, GS1-128
Regulated logistics unit per EU 2018/574 for tobacco traceability (SSCC)	2.1.14	12	GS1 DataMatrix, GS1 QR Code, GS1-128
Logistics units - individual logistic units (SSCC)	2.2.1	5	GS1-128 As additional symbol: GS1 DataMatrix, GS1 QR Code
Logistics units - multiple logistic units (GSIN, GINC)	2.2.2, 2.2.3	5	GS1-128, GS1 DataMatrix, GS1 QR Code
Assets - Global Returnable Asset Identifier (GRAI)	2.3.1	9	GS1-128, GS1 DataMatrix, GS1 QR Code
▪ Direct part marking	2.3.1, 2.6.14	7	GS1 DataMatrix, GS1 QR Code
▪ Durable labelling and marking	2.3.1, 2.6.14	9, 13	GS1-128, GS1 DataMatrix, GS1 QR Code
Assets - Global Individual Asset Identifier (GIAI)	2.3.2	9	GS1-128, GS1 DataMatrix, GS1 QR Code
▪ Direct part marking	2.3.2, 2.6.14	7	GS1 DataMatrix, GS1 QR Code
▪ Durable labelling and marking	2.3.2, 2.6.14	9, 13	GS1-128, GS1 DataMatrix, GS1 QR Code
Identification of a physical location	2.4.2	9	GS1-128, GS1 DataMatrix, GS1 QR Code, EPC/RFID
Service relationships	2.5	11	GS1 DataBar Expanded, GS1 DataBar Expanded-Stacked, 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
Coupon code identification for use in North America (AIs (8110), (8112))	2.6.3.6 2.6.3.7	(*)	GS1 DataBar Expanded, GS1 DataBar Expanded-Stacked or digitally transmitted
Refund receipts	2.6.4	1	EAN-13



Application	See section	SST(s)	Carrier choices
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 Identifier for document control	2.6.9	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Internal applications	2.6.10	N/A	GS1-128, GS1 DataBar Expanded, GS1 DataMatrix, GS1 QR Code
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, EPC/RFID
Global Model Number	2.6.13	4	GS1 DataMatrix, GS1 QR Code, EPC/RFID
Permanently marked items	2.6.14	4, 7, 9, 13	GS1 DataMatrix, GS1 QR Code, EPC/RFID
Encoding transport process information	2.6.15	5	GS1-128, GS1 DataMatrix, GS1 QR Code, EPC/RFID
Digital Signature (DigSig) detailed in ISO/IEC 20248	2.6.16	(**)	(***)-GS1 DataMatrix, GS1 QR Code, DataMatrix (GS1 Digital-Link URI), QR Code (GS1 Digital-Link URI), EPC/RFID
<p>(*) See <i>US Coupon Application Guideline Using GS1 DataBar Expanded Symbols</i> for the appropriate SST. (**) Refer to the application standard of the required GS1 key, for the appropriate SST. (***) Refer to the application standard of the required GS1 key, to determine if one of the listed data carriers for Digital Signature (DigSig) is permitted, or if it is only permitted in addition to another data carrier that is incapable of encoding Digital Signature (DigSig) e.g., EAN/UPC, GS1-128, ITF-14, GS1 DataBar.</p>			

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