



GSMP:

## General Specifications Change Notification (GSCN)

GSCN #	GSCN Name	Effective Date
16-155	Human readable interpretation rules in sections 4 and 5	3 Oct 2016

### Associated Work Request (WR) Number:

WR 16-155

### Background:

Some years ago a new Chapter (4.14.) was introduced, where we collected all information regarding Human Readable Interpretation (HRI).  
Some sections in section 5, for example section 5.2.3 for EAN/UPC Symbology, also contain information on HRI. The proposed changes aim to reduce overlap and enhance consistency between section 4.14 and section 5.

### GS1 General Specification Change:

The recommended changes are highlighted in the attached excerpt from the GS1 General Specifications, v16.

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

See section [5.5.2.7.1](#), GS1 system symbol specification table 1.

**Symbol placement**

All the symbol placement guidelines defined in section [6.4](#).

**Unique application processing requirements**

For a description of processing requirements, see section 7.

**2.1.2.2 Fresh food trade items scanned in general retail at POS****Application description**

Fresh foods includes product categories such as: fruits, vegetables, meat, seafood, bakery and ready-to-serve food such as cheeses, cold cooked or cured meats, and salad, etc.

In this application there are different scenarios:

- Loose produce: Picked as an each – sold as an each.
- Fresh food: Pre-packed with same weight or count.

**Loose produce trade items sold as an each**

Loose produce are fruits and vegetables which are delivered to the store loose, in boxes or cases. Loose produce can then be displayed on the shelf allowing for the consumer to pick the product quantities needed. If loose produce has been defined to be sold by the each then they are treated in the same way as the retailer sells a can of soup or beans.

From a brand owner's perspective, the trade item is a fixed measure trade item identified with a GTIN with no additional attributes necessary to complete transaction.

**Pre-packed fresh food trade items**

When fresh foods trade items, whether loose produce or cut from a bulk item or cut into pieces are pre-packaged as a fixed measure trade item then the trade item is also treated like any other fixed measure trade item identified with a GTIN with no additional attributes necessary to complete transaction.

**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**

All the GTIN Allocation Rules described in section 4

[For human readable interpretation rules see section 4.14. Reference human readable interpretation rules in section 4.14](#)

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**Attributes****Required**

Not applicable

**Optional**

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



### 2.1.7.1 Variable measure fresh food trade items scanned in general retail at POS using GTIN

#### Application description

Like a fixed measure trade item, a variable measure trade item is an entity with pre-defined characteristics, such as the nature of the product or its contents. Unlike a fixed measure trade item, a variable measure trade item has one measure that varies continuously while other characteristics remain the same. In the case of fresh food trade items variable measure may be weight, length, number of items contained, or volume. There are different ways to handle the process for Variable measure fresh food. For example:

- Consumer puts loose produce items into a bag and barcoded label is produced and attached by the consumer.
- Staff attaches a barcode label, produced in store to pre-packed loose produce trade item.
- At the POS, loose produce is weighed and the price is calculated.

It is in the discretion of the retailer how the price is calculated and which process is chosen.

#### Variable measure fresh food

Variable measure loose produce trade items are trade items which may be identified with a GTIN and additional data. The retailer decides how to handle Variable measure fresh food trade items sold at POS. Generally the individual item(s) (i.e. loose produce) are put into a bag by the customer or by staff and are scanned (if a label is generated in store) or weighed at POS to generate the price. The attributes of variable measure trade items are barcoded when the trade item is weighed or measured in store. If the variable measure trade item is weighed at POS when presented to the cashier the price is generated in the register and directly added to the other products to complete the transaction.

#### Variable measure pre-packed fresh food trade items

These are Variable measure fresh foods trade items, either loose produce or cut from a bulk item, that are pre-packaged with differing weight or other variable measure using GTIN and attributes. The label put on the trade item encoding GTIN plus variable measure information and/or price is determined by the retailer.

#### GS1 key

##### Definition

- The GTIN-12 is the 12-digit GS1 identification key composed of a GS1 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

All GTIN Allocation Rules described in section 4.

Reference human readable interpretation rules in section 4.

#### Attributes

##### Required

See section [3.2](#), a variable count or a trade measure (AIs 30, 31nn, 32nn, 35nn, 36nn)

##### Optional

- See section [3.2](#) - GS1 Application Identifiers in numerical order for a complete list of all GS1 Application Identifiers.
- For more details related to Application Identifiers for fresh foods, refer to the Fresh Foods Implementation Guide.

**Rules**

For human readable interpretation rules see section 4.14. ~~Reference human readable interpretation rules in section 4.14~~

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**Data carrier specification****Carrier choices**

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked



**Note:** The GS1 DataBar symbols encode a 14-digit numeric string. When encoding GTIN-12 or GTIN-13 in GS1 DataBar symbols, zero-fill with two or one zeros to the left of the GTIN.

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

See section 5.5.2.7.1, GS1 system symbol specification table 1.

**Symbol placement**

None

**Unique application processing requirements**

None

**2.1.7.2 Variable measure trade items scanned in general retail at POS using Restricted Circulation Numbers****Application description**

Restricted circulation variable measure trade items are those sold in random quantity against a fixed price per unit quantity and intended to cross a point-of-sale (e.g., apples sold at a fixed price per kilogram). These items are either marked in the store by the retailer or are marked at the source by the supplier. National solutions are available for this purpose.

GS1 Member Organisations SHOULD assign one or several of the GS1 Prefixes 02, 20 through 29 for the identification of variable measure trade items in their territory. GS1 Member Organisations SHOULD make part of this capacity available to user companies for company internal applications.

The data fields available after the relevant GS1 Prefix (defined by the GS1 Member Organisation for their territory) can be structured in a variety of ways to represent the product type, net weight, calculated price, or number of units. Equipment is commercially available for automatically weighing items, calculating an item price from the unit price, and printing the information as a barcode label. The scanning equipment and applications can then be programmed to use the prefix as an instruction to decode the ensuing data fields according to the particular structure adopted.

The first row in the figure below shows the structure specified by GS1 US for North America. The same structure is used by many other GS1 Member Organisations. The next two rows do not show predetermined structures. Examples of recommended structures are given in figure 2.1.7.2-2. GS1 Member Organisations choose appropriate structures for use within their geographic area.

If element string		Then mandatory associated element string	Comment
8111	Loyalty points of a coupon	255	Mandatory association with the Global Coupon Number
8200	Extended packaging URL	01	Mandatory association with GTIN

- \* Is (3nnn) where the first three digits are 312, 313, 324, 325, 326, 327, 328, and 329
- \*\* Is (3nnn) where the first three digits are 310, 311, 314, 315, 316, 320, 321, 322, 323, 350, 351, 352, 356, 357, 360, 361, 364, 365, and 366
- \*\*\* Is (3nnn) where the first three digits are 330, 331, 332, 333, 334, 335, 336, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 353, 354, 355, 362, 363, 367, 368, and 369

**Note:** Exception for point-of-sale. See figure 2.7-1. Areas of GS1 system application.

#### 4.14 Human readable interpretation (HRI) rules

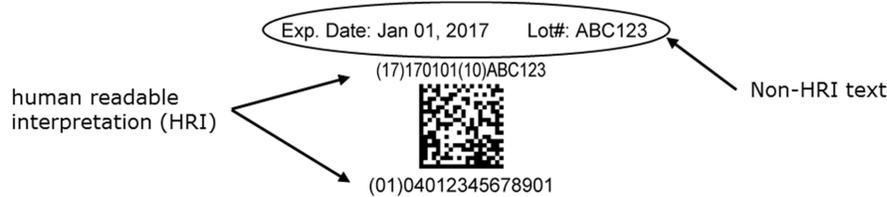
Human readable interpretation rules are provided to standardise ~~printing requirements for brand owners and users to and~~ facilitate ~~common training of staff on how to deal with for operators who encounter~~ GS1 AIDC data carriers that fail to scan or read. There are two categories of rules:

- General rules that apply independent of sector, product category, or region.
- Sector specific rules which must be aligned with the general rules.

For the purposes of interpreting this standard, there are two types of text that appear on a label, package, or item; human readable interpretation (HRI) and non-HRI text.

- Human readable interpretation (HRI) is the information below, beside or above a barcode or tag which is encoded in the barcode or tag and represents the same characters as carried in the barcode or tag (See section 8 Glossary for full definition).
- Non-HRI text is all other text on package, label or item (See section 8 Glossary for full definition).

**Figure 4.14-1.** Example of HRI and non-HRI text



**Note:** The following rules are intended for global use. Exceptions may occur only when local regulatory or legal requirements mandate otherwise.

**Note:** At present, HRI rules are applicable to barcodes as rules for EPC/RFID tags are under development.

**Note:** HRI rules for the EAN/UPC symbology and the add-on symbols are explained in section 5.2.3 Human Readable Interpretation.

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Field Code Changed

**Human readable interpretation rules**

- **Rule 1.** Whether a GS1 AIDC data carrier encodes a GS1 identification key, GS1 key attributes, or a combination of both, the HRI SHOULD be placed below the barcode and grouped together wherever physically possible while maintaining the HRI legibility and minimum barcode height (as specified in the appropriate symbol specification table referenced by the GS1 AIDC application standard).
  - a. In cases where the HRI must be printed above, to the left, or to the right of the symbol due to packaging or space constraints, HRI SHALL always be printed adjacent to (obviously associated with) the GS1 AIDC data carrier while protecting Quiet Zones.
  - b. If the HRI for GS1 identification keys and GS1 key attributes is split (for example GS1 key HRI is below the barcode and GS1 key attributes HRI is above the barcode), the preference for GS1 key HRI placement is always below the barcode.
  - c. When HRI is grouped together (for example, all HRI data is grouped below the barcode or all HRI data is grouped above the barcode), HRI SHALL always follow the encoding sequencing of the GS1 AIDC data carrier.
- **Rule 2.** A single data element SHALL not be broken into two lines of HRI, for example the data for a serial number would appear on one line of HRI.
- **Rule 3.** Parentheses SHALL surround AIs in HRI but are not encoded in the GS1 AIDC data carrier.
- **Rule 4.** A clearly legible font SHALL be used (e.g., OCR-B as defined in *ISO 1073-2*) and the character set as defined in section ~~2.117.11~~. Reasonable alternative type fonts and character sizes are acceptable provided the interpretation is clearly legible.
- **Rule 5.** On GS1 Logistics labels HRI characters SHALL be no less than 3 mm (0.1181 inch) high
- **Rule 6.** HRI SHALL be limited to element strings and will not include GS1 AIDC data carrier overhead such as FNC1 characters.
- **Rule 7.** If the required barcode and associated HRI is marked directly on the part, then both satisfy the requirements for healthcare primary package marking (see section [2.1.2.3](#)) if the barcode can be scanned and the HRI is legible through a panel in the primary packaging.
- **Rule 8.** HRI SHALL appear except in rare circumstances for specific applications where there are extreme space constraints (e.g., direct part marking). If the GS1 AIDC data carrier cannot be read or scanned and the HRI does not appear on the label, package, or item, non-HRI text SHOULD be used as backup information.
 

As a non-HRI text option, the data title (see section 3.2) may be associated with the data instead of using the AI numbers. See figure 4.14-1 which shows expiry date and lot number identified with non-HRI text and in the same figure where the same data is shown using the all-AI format. These presentations can be used with all GS1 AIDC data carriers using application identifier, except GS1-128 Symbology.
- **Rule 9.** For symbols (Composite symbol, GS1 DataMatrix) encoding a large amount of data, it may not be practical to display all the data in human readable interpretation form or, even if there is space to show it in this form, it may not be practical to key enter that much data. In these instances, some of the data may be omitted from the human readable interpretation. However, primary identification data (GS1 system keys) such as the Global Trade Item Number (GTIN) or Global Document Type Identifier (GDTI) must always be shown. Application specifications provide guidance on human readable interpretation.

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**Figure 4.14-2.** HRI with some of the data omitted



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- **Rule 109.** If the barcode is printed in ladder orientation on the product, the HRI SHOULD remain clearly associated with the barcode and may appear below, to the left, or to the right of the symbol respecting Quiet Zones. See figure below.

**Figure 4.14-32.** Locations of HRI for barcode in ladder orientation



- ✓ **Note:** There may be local variants for non-HRI text on the label (e.g., dates, prices) which are formatted based on local practice rather than the way the data is encoded in GS1 AIDC data carriers. In this case, the HRI associated with AIDC SHALL still be expressed as it is encoded in the GS1 AIDC data carrier encodation (per Application Identifier definition).
- **Rule 1140.** When AI (8200) appears on the label, the expression of the URL SHALL not appear in HRI. If it appears in non-HRI text, it SHALL be expressed as <http://brandownerassignedURL.com/GTIN> (where GTIN expressed as 14 digits).

#### 4.14.1 Healthcare human readable interpretation rules

The GS1 system requires printing both the GS1 AIDC data carrier and the HRI that represents all the information encoded within that GS1 AIDC data carrier.

If the GS1 AIDC data carrier cannot be read or scanned, the HRI should be used as back up information. The GS1 preferred format for HRI when applied on healthcare trade items SHALL be as noted in the general HRI rules found in section 4.14.

When considering the practical implementation and application of HRI during the creation of the product packaging, many factors must be taken into account to determine if and how HRI is included with the symbol. These factors may include the type of product being labelled or marked, product use, available space for marking, alternate data availability, regulatory or legal requirements, technical constraints, etc.

However, printing both the GS1 AIDC data carrier and the associated HRI may not be possible due to many factors such as the intended use of the item, available space for marking, etc. Deviation from the HRI format should be minimised and consider impacts to downstream trading partners and users

Typical examples are shown the figure below.



**5.2.3.25.2.4.2 Auxiliary characters in the EAN/UPC symbology family**

**Figure 5.2.4.2-1.** Composition of EAN/UPC auxiliary characters

Auxiliary character	
<b>Normal guard bar pattern (right and left)</b>	
<b>Centre guard bar pattern</b>	
<b>UPC-E Right guard bar pattern</b>	

**5.2.3.35.2.4.3 Logical structure of an EAN-13 and UPC-A barcode excluding Quiet Zones**

**Figure 5.2.4.3-1.** Logical structure of an EAN-13 or UPC-A barcode

Logical structure of an EAN-13 or UPC-A barcode (excluding Quiet Zones)				
Left guard bar pattern	Characters 12 through 7 (left half)	Centre guard bar pattern	Characters 6 through 1 (right half)	Right guard bar pattern
3 modules	42 modules (6x7)	5 modules	42 modules (6x7)	3 modules
Total number of modules = 95				

**Figure 5.2.4.3-2.** Combination of number sets representing the thirteenth character of an EAN-13

Value of the thirteenth character	Character position											
	Number set used for representing characters 12 through 7						Number set used for representing characters 6 through 1					
	12	11	10	9	8	7	6	5	4	3	2	1
0	A	A	A	A	A	A	ALWAYS USE NUMBER SET C					
1	A	A	B	A	B	B						
2	A	A	B	B	A	B						
3	A	A	B	B	B	A						
4	A	B	A	A	B	B						
5	A	B	B	A	A	B						
6	A	B	B	B	A	A						
7	A	B	A	B	A	B						
8	A	B	A	B	B	A						
9	A	B	B	A	B	A						



**5.2.3.4.5.2.4.4 Logical Structure of an EAN-8 Barcode excluding Quiet Zones**

**Figure 5.2.4.4-1.** Logical structure of an EAN-8 barcode

Logical structure of an EAN-8 barcode (excluding Quiet Zones)				
Left guard bar pattern	Characters 8 Through 5 (Left Half)	Centre guard bar pattern	Characters 4 Through 1 (Right Half)	Right guard bar pattern
3 modules	28 modules (4x7)	5 modules	28 modules (4x7)	3 modules
Total number of modules = 67				

**Figure 5.2.4.4-2.** Number sets for EAN-8 barcode characters

Character position							
Number set used for representing characters 8 through 5				Number set used for representing characters 4 through 1			
8	7	6	5	4	3	2	1
ALWAYS USE NUMBER SET A				ALWAYS USE NUMBER SET C			

**5.2.3.5.2.4.5 Logical structure of a UPC-E barcode excluding Quiet Zones**

**Figure 5.2.4.5-1.** Logical structure of a UPC-E barcode

Logical Structure of a UPC-E Barcode (Excluding Quiet Zones)		
Normal guard bar pattern	Six Symbol Characters (Note the use of variable parity)	Special guard bar pattern (UPC-E)
3 modules	42 modules (6x7)	6 modules
Total number of modules = 51		

**Figure 5.2.4.5-2.** Number sets for UPC-E barcode characters

Value of prefix digit	Value of check digit	Number sets used for numbering a UPC-E barcode					
		1	2	3	4	5	6
0	0	B	B	B	A	A	A
0	1	B	B	A	B	A	A
0	2	B	B	A	A	B	A
0	3	B	B	A	A	A	B
0	4	B	A	B	B	A	A
0	5	B	A	A	B	B	A
0	6	B	A	A	A	B	B
0	7	B	A	B	A	B	A
0	8	B	A	B	A	A	B
0	9	B	A	A	B	A	B

**5.2.3.65.2.4.6 Symbol formats at nominal dimensions (not to scale)**

All measurements in the following figures are in millimetres

**Figure 5.2.4.6-1. EAN-13 barcode**



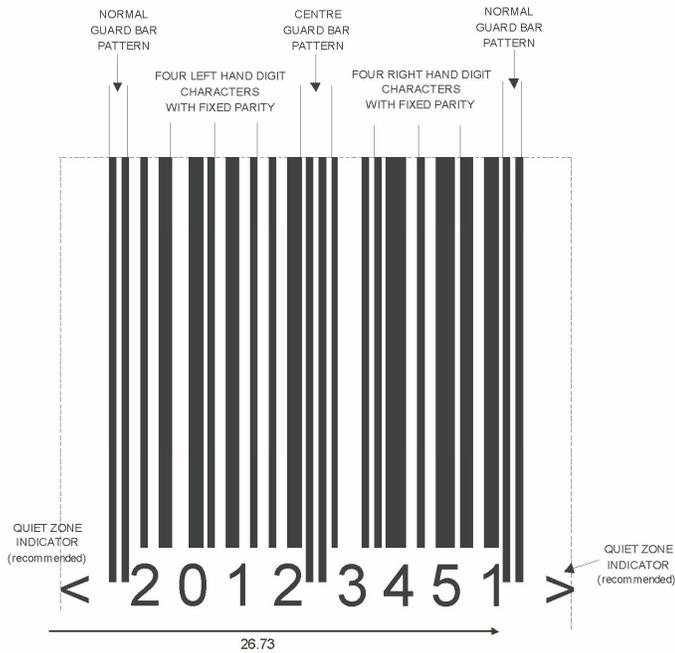
**Figure 5.2.4.6-2. UPC-A barcode**



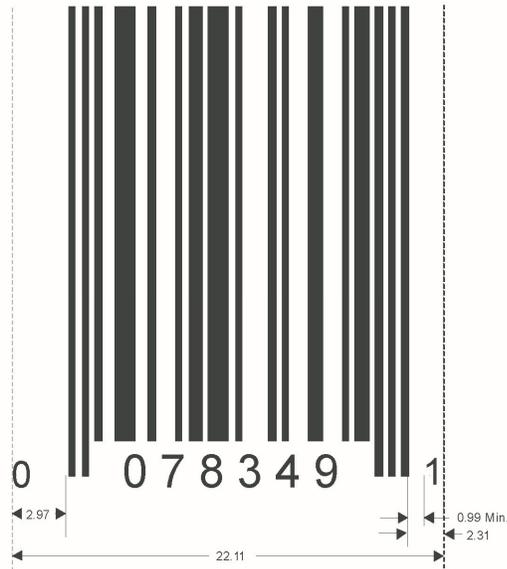
**Figure 5.2.4.6-3. UPC-A barcode**



**Figure 5.2.4.6-4. EAN-8 barcode**



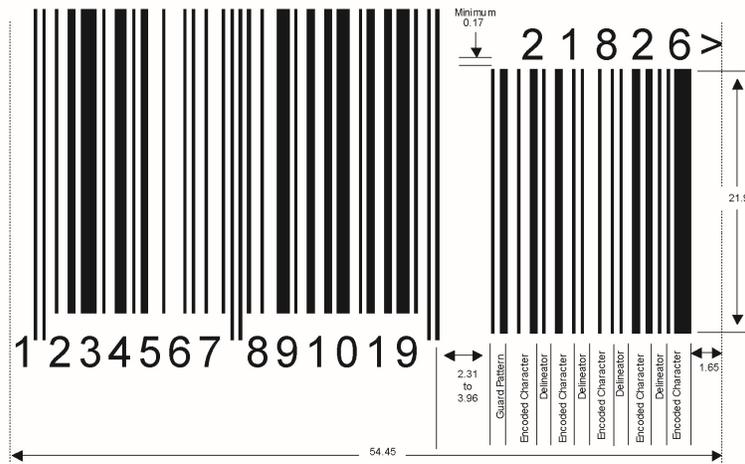
**Figure 5.2.4.6-5. UPC-E barcode**



**Figure 5.2.4.6-6. UPC-A barcode with five-digit add-on symbol**



**Figure 5.2.4.6-7.** EAN-13 barcode with five-digit add-on symbol





Height of GS1 DataBar Expanded Stacked by row [metric units]										
X [mm]		0.203	0.254	0.330	0.381	0.508	0.660	0.762	0.889	0.991
5	182	36.95	46.23	60.06	69.34	92.46	120.12	138.68	161.80	180.36
6	219	44.46	55.63	72.27	83.44	111.25	144.54	166.88	194.69	217.03
7	256	51.97	65.02	84.48	97.54	130.05	168.96	195.07	227.58	253.70
8	293	59.48	74.42	96.69	111.63	148.84	193.38	223.27	260.48	290.36
9	330	66.99	83.82	108.90	125.73	167.64	217.80	251.46	293.37	327.03
10	367	74.50	93.22	121.11	139.83	186.44	242.22	279.65	326.26	363.70
11	404	82.01	102.62	133.32	153.92	205.23	266.64	307.85	359.16	400.36

Height of GS1 DataBar Expanded Stacked by row [imperial units]										
X [inch]	Height (modules)	0.0080	0.0100	0.0130	0.0150	0.0200	0.0260	0.0300	0.0350	0.0390
2	71	0.568	0.710	0.923	1.065	1.420	1.846	2.130	2.485	2.769
3	108	0.864	1.080	1.404	1.620	2.160	2.808	3.240	3.780	4.212
4	145	1.160	1.450	1.885	2.175	2.900	3.770	4.350	5.075	5.655
5	182	1.456	1.820	2.366	2.730	3.640	4.732	5.460	6.370	7.098
6	219	1.752	2.190	2.847	3.285	4.380	5.694	6.570	7.665	8.541
7	256	2.048	2.560	3.328	3.840	5.120	6.656	7.680	8.960	9.984
8	293	2.344	2.930	3.809	4.395	5.860	7.618	8.790	10.255	11.427
9	330	2.640	3.300	4.290	4.950	6.600	8.580	9.900	11.550	12.870
10	367	2.936	3.670	4.771	5.505	7.340	9.542	11.010	12.845	14.313
11	404	3.232	4.040	5.252	6.060	8.080	10.504	12.120	14.140	15.756

Best Performance
Reduced Performance
Not Recommended

#### 5.6.2.4 Human readable interpretation in GS1 DataBar symbols

For human readable interpretation rules see section [4.144.14](#). For HRI rules specific to regulated healthcare retail consumer trade items, see section [4.14.14.14.1](#).

As a non-HRI text option, the data title (see section 3.2) may be associated with the data instead of using the AI numbers.

The figure below shows the weight and price identified with non-HRI text.

Figure 5.6.2.4-1. The human readable interpretation and non-HRI text



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**Note:** This international standard provides for 30 degrees and 90 degrees illumination in addition to the default 45 degrees.

The aperture is normally specified as being 80% of the minimum X-dimension allowed for the application. The printing method must produce the GS1 DataMatrix "L" pattern with gaps between the dots less than 25% of the specified aperture. If symbols with greater than the minimum X dimension are allowed by the application, the same absolute maximum gap dimension must be maintained.

**Examples:**

- 2.8/05/660 would indicate that the average of the grades of the Scan Reflectance Profiles, or of the scan grades, was 2.8 when these were obtained with the use of a 0.125 millimetre aperture (ref. no. 05) and a 660 nanometre light source, incident at 45 degrees.
- 2.8/10/W/30 would indicate the grade of a symbol intended to be read in broadband light, measured with light incident at 30 degrees and using a 0.250 millimetre aperture (ref. no. 10), but would need to be accompanied either by a reference to the application specification defining the reference spectral characteristics used for measurement or a definition of the spectral characteristics themselves.
- 2.8/10/660\* would indicate the grade of a symbol measured using a 0.250 millimetre aperture (ref. no. 10), and a 660 nanometre light source, and indicates the presence of a potentially interfering extreme reflectance value in the surroundings of the symbol.

Recommended symbol grades for GS1 DataMatrix are identified in individual applications in section 5.55.5.

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**5.7.3.6 Advice for selecting the symbology**

Any use of GS1 DataMatrix should comply with GS1 system global application guidelines and be restricted to those applications defined by the GS1 system for GS1 DataMatrix. GS1 DataMatrix 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, or Composite symbols should continue to use them.

When using GS1 DataMatrix symbols to encode the Global Trade Item Number (GTIN), any required additional data SHOULD be included within the same symbol.

**Note:** Scanning systems that need to read GS1 DataMatrix symbols must be 2D imaging scanners and be appropriately programmed to read the GS1 system version of Data Matrix or ECC 200.

**5.7.3.7 Human readable interpretation of GS1 DataMatrix symbols**

For human readable interpretation rules see section 4.14.14. For HRI rules specific to regulated healthcare retail consumer trade items, see section 4.14.14.1.

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~~For GS1 DataMatrix symbols encoding large amounts of data, it may not be practical to display all the data in human readable interpretation form. Even if there is space to show it in this form, it may not be practical to key enter that much data. In these instances, some of the data may be omitted from the human readable interpretation. However, primary identification data (GS1 system keys), such as the GTIN, must always be shown. Application specifications may provide additional guidance on human readable interpretation.~~

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**5.8 Composite barcodes**

**5.8.1 Composite symbology introduction**

The Composite symbology integrates both a GS1 system linear symbol and a 2D Composite Component as a single symbology. There are three types of Composite symbols A, B and C, each

- Production date and lot number: AI (11) production date followed by AI (10) lot number.
- Expiration date and lot number: AI (17) expiration date followed by AI (10) lot number.
- AI (90): AI (90) followed by the element string data starting with an alphabetic character and a digit; AI (90) may be used to encode data identifier data; the AI (90) followed by data in the data identifier format has special compression applied only if it is the start of the first element string.

### 5.8.3 Human readable interpretation of Composite symbols

For human readable interpretation rules see section [4.144.14](#). For HRI rules specific to regulated healthcare retail consumer trade items, see section [4.14.14.14.1](#).

~~As an option, the data title (see section 3.2) may be associated with the data instead of using AIs. The figure below shows the expiration date and lot number identified with text. This can be compared with Figure 5.8.2-1, where the same data is shown using the all-AI format.~~

~~Figure 5.8.3-1. The human readable interpretation and non-HRI text~~



~~For Composite symbols encoding a large amount of data, it may not be practical to display all the data in human-readable interpretation form or, even if there is space to show it in this form, it may not be practical to key-enter that much data. In these instances, some of the data may be omitted from the human-readable interpretation. However, primary identification data such as the Global Trade Item Number (GTIN) and SSCC must always be shown. Application specifications provide guidance on human-readable interpretation.~~

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Commented [CJ42]: WR16-155 removed this text, part of it is now included in section 4.14

### 5.8.4 Data transmission and symbology identifier prefixes

#### 5.8.4.1 Default transmission mode

The GS1 system requires the use of symbology identifiers. Composite symbols are normally transmitted using symbology identifier prefix "je0," with the data from the 2D Composite Component directly appended to that of the linear component. For example, a Composite symbol encoding (01)10012345678902(10)ABC123 produces the data string "je0011001234567890210ABC123" (note that the symbology identifier prefix "je0" is different from the symbology identifier prefix "JE0," which has an uppercase "E" and is used for standard EAN/UPC symbols). However, readers have an option to transmit only the linear component data and ignore the 2D Composite Component.

Data transmission follows the same principles that apply to the concatenation of Application Identifier (AI) element strings from GS1-128 symbols. If the linear component data ends with a variable length AI element string, an ASCII 29 character <GS> is inserted between it and the first character of the data from the 2D Composite Component.

#### 5.8.4.2 GS1-128 Symbol transmission mode

Readers also have an option for GS1-128 symbol emulation mode. This mode emulates the GS1-128 symbology for data transmission. It can be used for applications programmed for GS1-128 symbols but not yet programmed to recognise the symbology identifier prefix "je0." The symbology identifier for GS1-128 symbol emulation mode is "JC1." Composite symbols that exceed 48 data characters are transmitted as two or more messages so as not to exceed the maximum GS1-128 symbol message length. Each of the messages has a symbology identifier prefix of "JC1" and does not exceed 48 data characters. The messages are split at boundaries between element strings. This