



## Conformance and Certification for GS1 Bar Codes and eCom



**Miodrag Mitic**  
GS1 Solutions

For 30 years, GS1 has been committed to designing standards that improve visibility and efficiency in the supply chain. Hundreds of thousands of companies around the world rely on GS1 standards to conduct business and meet consumers' expectations – and well beyond the world of consumer packaged goods and supermarkets. GS1 Solutions are widely used in a myriad of industries, as for example in healthcare and life sciences, where they play a significant role in ensuring patient safety. That means that if a bar code cannot be properly decoded or an electronic business message goes astray, it's more than just time at the cash register or the warehouse that is lost.

Today, 100% reliable GS1 Bar Codes and GS1 eCom messages are an absolutely vital part of the supply chain. As a result, GS1 has a responsibility to do all it can to help ensure that its standards are being used in a systematic and consistent way across the globe. We have been pleased to see that a large number of GS1 Member Organisations have already created and implemented various forms of certification and accreditation programmes in their local markets. These excellent programmes demonstrate both the need for quality and reliability, and the measurable value and numerous benefits they bring to companies who take advantage of them.

The success of these local initiatives has created a new challenge for us: Today, we must ensure that GS1 users and solution providers are certified on the basis of a single set of global conformance clauses and that the certificates issued by one GS1 MO are accepted by all of them.

### "GS1 Certified" has global significance: Certified once and accepted everywhere!

#### Conformance:

Minimum requirements that must be met to declare a Bar Code or eCom message in conformance with GS1 specifications

#### Conformance to GS1 Standards:

- We adhere to a single set of global, uniformly applied GS1 conformance clauses and assessment methodologies
- An assessment for conformance performed by one GS1 MO is recognised and accepted by all of them

#### Certification:

A formal process of testing that Bar Codes or eCom messages conform to GS1 specifications

#### Certification of conformance to GS1 Standards:

- GS1 MOs and/or third parties provide this service on a voluntary basis
- GS1 Conformance & Certification allows for self-assessment by the brand owner, customer assessment by the buyer or by a designated 3rd party (GS1 MO or other)



# GS1 Bar Codes Conformance and Certification in a nutshell

A single global conformance assessment and certification programme will benefit all actors in the supply and demand chain, by helping to ensure **faster adoption, improved service** and **operational efficiency**.

- **Conformance Criteria:** The programme defines a succinct list of **uniform minimum requirements** that must be met to declare an item in conformance with GS1 standards. These criteria have been made very clear and easy to understand, to eliminate any risk of confusion or misinterpretation.
- A **methodology** has been developed to explain **what** must be done, **by whom** and with **what equipment**.
- **Implementation guidelines** have been elaborated to explain **how** the process should be enacted, **step by step**.

The task of identification of conformance clauses and general requirements for conformity assessment of linear bar codes was undertaken the Conformance and Certification Work Group, who built on the work done previously by the Bar Codes Verification Work Group. The C&C work group will pursue their efforts in close collaboration with the GSMP Identification and Bar Codes Business Requirements Group (BRG) and Technical Development Team (TDT).

## Benefits

Bar Codes that conform to GS1 Standards benefit everyone involved in the supply and demand chain, from end to end – including consumers.

### Benefits for Users and Solution Providers:

- Ensure integrity and equivalency of various GS1 Bar Codes certification and accreditation programs worldwide
- Have confidence that products purchased are tested and certified for conformance to GS1 Standards.
- Demonstrate to customers that products and services conform to GS1 Standards.
- Train employees using GS1-certified education courses, trainers and publications

### Benefits for GS1 Member Organisations:

- Plug into a voluntary “turn-key” solution
- Provide new added-value services to users and solution providers
- Facilitate correct implementation of GS1 Standards in your market
- Participate in managing and developing the GS1 conformance and certification framework
- Benefit from global recognition and network

Studies have shown that an EAN/UPC bar code that is in conformance with GS1 standards scans **26% faster**.

*GS1 Brazil Bar Code Certification Business Case  
December 2006*

Studies in France show that **2% of 31 billion annual POS item transactions had reading errors, requiring 23 seconds on average to resolve each. That means 20% of super/hypermarket shoppers had a poor experience due to non-conform barcodes.**

*GS1 France & IRI Study, June 2006*



# GS1 Bar Code Conformance Clauses

Determining conformance has been made extremely clear and easy to understand.

A document has been created that states all the requirements that must be satisfied in order to claim conformance. These "conformance clauses," as they are called, are detailed for GS1 BarCodes. A similar document for GS1 eCom messages is underway.

Each conformance clause has its specific **pass criteria**, which delimit the requirements necessary for qualification as being in conformance. Conformance clauses are identified as class-M, Mandatory, or class-R, Recommended. Each also cites the specific standard from which it is drawn, allowing companies to go directly to that section of the GS1 General Specifications or ISO standards, if further information is wanted or needed.

For example, symbol contrast is one of the class-M mandatory conformance clauses for EAN/UPC barcodes. Pass criteria for this clause is symbol contrast greater than or equal to 40%. Any level symbol contrast less than 40% is not in conformance. The clause cites ISO/IEC standard 15416 – item 6.1.2 as its source. Every single conformance clause is this simple and clear. They serve as a checklist of criteria to analyze during any conformance assessment.

Conformance Clauses for EAN/UPC Bar Codes				
Conformance Clause	Class	Pass Criteria	Standard Reference	
<b>1. ISO Parameters of Quality</b>				
1.1	Overall ISO Grade	M	$\geq 1.5/06/670 \pm 10\text{nm}$	GS1 General Specifications section 5.4.2.8, 5.4.3.3.10.2 and ISO/IEC 15416 – item 6.2
1.2	Decode	M	= 4	ISO/IEC 15416 – item 6.1.1
1.3	Symbol Contrast	M	$\geq 40\%$	ISO/IEC 15416 – item 6.1.2
1.4	Minimum Reflectance	M	= 4	
1.5	Edge Contrast	M	$\geq 15\%$	
1.6	Modulation	M	$\geq 50\%$	
1.7	Defects	M	$\leq 25\%$	ISO/IEC 15416 – item 6.1.3
1.8	Decodability	M	$\geq 37\%$	
<b>2. Symbol Structure</b>				
2.1	<b>X-dimension</b> (exception for characters 1, 2, 7, and 8 with has tolerance of $\pm 0.025\text{mm}$ )			
2.1.1	for <b>EAN/UPC Bar Code</b> to be scanned in <b>Retail</b> and <b>not</b> scanned in General Distribution Environment	M	$\geq 0.264\text{mm}$ (0,0104") and $\leq 0.68\text{mm}$ (0,026")	GS1 General Specifications Figures 5.4.2.7.1-2 and 5.4.2.8-2
2.1.2	for <b>EAN/UPC Bar Code</b> to be scanned in <b>Retail</b> and in General Distribution Environment	M	$\geq 0.495\text{mm}$ (0,0195") and $\leq 0.68\text{mm}$ (0,026")	GS1 General Specifications Figures 5.4.2.7.1-2 and 5.4.2.8-4
2.1.3	for <b>EAN/UPC Bar Code</b> to <b>not</b> be scanned in <b>Retail</b> but to be scanned in General Distribution Environment	M	$\geq 0.495\text{mm}$ (0,0195") and $\leq 0.68\text{mm}$ (0,026")	GS1 General Specifications Figures 5.4.2.7.1-2 and 5.4.2.8-3
2.1.3	for <b>Very Small Healthcare Item</b> Identification	M	$\geq 0.264\text{mm}$ (0,0104") and $\leq 0.68\text{mm}$ (0,026")	GS1 General Specifications Figures 5.4.2.7.1-2 and 5.4.2.8-5

*Excerpt from the GS1 BarCodes Conformance Clauses document.*

*Columns show pass criteria and refer to the standard of reference.*

## Methodology and Guidelines

In addition to identifying the criteria for conformance, we have also elaborated a recommended basic methodology to enable users (*suppliers and buyers*), solution providers and GS1 MOs to perform conformity assessments. The methodology is intended to be applicable to all organisations, regardless of type, size or product provided. It identifies the people needed, the skills these people must possess, and the equipment that must be available. It also sketches out the minimum basic process workflow. In more simple terms, the methodology defines **WHAT** needs to be done and **WHO** should do it.



Finally, we have also developed a set of implementation guidelines drawn from best practices, which elaborate on the basic process workflow in order to truly explain, step by step, what must be undertaken to assess and determine conformance. In more simple terms, these guidelines define **HOW** to do it.



"Global conformance and certification – one single list of criteria, one single testing procedure, one reporting format, one branded certificate or seal, and perhaps most importantly, globally recognised conformance certificates that eliminate the costly and time-consuming need for re-certification – is vital to our users, and our organisation as a whole."

*Andrew Osborne  
Chief Technology Officer  
GS1 UK*

## Next steps

- Publish Bar Codes Conformance Clauses and General Requirements for Conformity Assessment
- Convene a Steering Group to assist with implementation and benchmarking
- Initiate a program to assist MOs to migrate to the new clauses and general requirements
- Appoint Regional Coordinators to help with migration or adoption
- Begin work on eCom conformance and certification clauses, requirements, methodology & guidelines

## For more information or to join us



**Adriano  
Bronzatto**

For more information on the GS1 Conformance and Certification programme, visit our section of the GS1 website at [www.gs1.org/certification](http://www.gs1.org/certification), or send a mail to [certification@gs1.org](mailto:certification@gs1.org). Adriano Bronzatto is currently GS1 Conformance and Certification Project Manager. He can be reached by e-mail at [adriano.bronzatto@gs1.org](mailto:adriano.bronzatto@gs1.org)

If you are involved with quality assurance and certification in your company, you can join the C&C work group to contribute to the certification framework development and share your experience. Please visit [www.gs1.org/certification](http://www.gs1.org/certification) for more information or send an e-mail to [certification@gs1.org](mailto:certification@gs1.org)