Is Bar Code Quality the Weak Link in Your Supply Chain?

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There is an industry joke that a bar code that can't scan is just bad artwork. Behind that humor is a real issue for supply chain executives who are responsible for their company's bar coding activities. An unscannable bar code can cause a costly break in a company's supply chain, adding unnecessary expense and delays to critical business processes. Inefficient supply chain practices also spill over and impact your trading partners. It has a rippling effect on the entire supply chain and becomes more costly to correct as it moves forward.

While the Uniform Code Council is synonymous with bar codes because of its pioneering development of the Universal Product Code (U.P.C.), promoting bar code quality is an important focus of the UCC. As more and more companies and industries embrace the standards of the EAN.UCC System to mark and identify trade items, assets, and logistics units, bar code quality is critical to ensure these bar codes scan and work under "real world" supply chain applications.

One of the most important tools used to measure bar code quality are verifiers. The higher the quality grade, the better the bar code will scan at various points in the supply chain. However, when comparing verifier results, users may get different readings from different brands of verifiers.

For example, a manufacturer may mark their product with a U.P.C. bar code and comply with UCC guidelines and specifications. Using brand X verifier, their readings state that the bar code looks good. When the product is shipped to their trading partner (a retailer), a different brand of verifier states different results.

The perceived difference in bar code quality between the manufacturer and the retailer creates a real supply chain issue. Both companies believe they have the correct readings. This creates a costly supply chain bottleneck as these companies must bring their trading to a standstill as they clash over the significance of the results.

Like all good scientific procedure, results must be consistent and reproducible by many if an instrument is to be used for meaningful measurement. Businesses need to have the confidence that their testing equipment will produce accurate measurements.

As industries have become more global in nature, the importance of bar code quality becomes even more critical. A product, asset, or logistics unit marked with an EAN.UCC System bar code can literally travel across the globe from manufacturer to final consumer. A problem with bar code quality is no longer a "local issue" when your trading partner is half a world away.

The UCC and EAN International launched a global project to promote the importance of accurate verification of bar codes. Participating in the project were many members of the EAN.UCC Global Symbology Committee, a group composed of 20 senior technical staff members from several prominent AIDC companies.

The project solicited six leading verifier manufacturers to participate in the test. All participating vendors noted their adherence to standards such as ANSI and ISO specifications. Of particular user interest was the tolerance specified for vendors that were documented in ISO/EIC 15426-1, "Automatic identification and data capture techniques- bar code verifier conformance specification- Part 1: Linear Symbols."The goal of the project was to determine what was causing the rumored differences in measurement, such as operator training or poor conformance to the specifications. Two separate testing sites were established, one in England and the other at the UCC's AIDC testing lab near Princeton, New Jersey.

Engineering symbols and their values were calibrated with the same instrument used to measure bar code symbols on many of the calibration targets sold. The instrument, called the "judge" in the industry is NIST traceability and is owned by the UCC. Test symbols for the UPC-A, UCC/EAN-128, and ITF were measured at different apertures (6, 10, and 20 mils).

The project produced a number of interesting findings. All verifiers could meet the requirements of the ISO specifications. The tolerances as specified in ISO/EIC 15426-1 need to be tightened. The current ISO specification allows one verifier to differ as much as a full letter grade and still meet ISO/IEC specified tolerances. An amendment has been filed and is currently in progress. In addition, data collected on each specific verifier was shared with each vendor. This information will be used by the vendors to improve their products, if necessary.

Users need to be trained on the use of Calibrated Conformance Standard Test Cards. Results measured from these engineered cards can be compared to the tolerance published by the manufacturer of your verifier. If the results are unfavorable, it could indicate that your technique could be bad or your verifier needs to be repaired. The UCC will be releasing new updated Calibrated Conformance Standard Test Cards for UPC-A, EAN-13, UCC/EAN-128, and Interleaved Two if Five (ITF) in the first quarter of 2003. A users guideline on how to best use a verifier consistently has also been produced.

Identification is the heart of any supply chain. Bar coding must enable fast, complete, and accurate identification of your trade items, assets, supplies, and logistics units. If you are not using the correct tools to ensure high-quality bar codes, you run the risk of making your supply chain weak and brittle. And a bar code that cannot stand is not just bad artwork, but expensive artwork, too.

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