



## **General Verification Questions**

### **What is barcode verification?**

Barcode verification checks barcode quality and scan ability by examining the optical characteristics of the code according to industry standards and specifications based upon the ways that actual bar code scanners work. Bar code verification standards are set by international organizations (such as ISO) and industry groups (such as GS1 or HIBCC). Barcode verification is designed to be predictive of scanning success and is the only way to ensure 100% scans ability.

### **Why verify?**

#### **Quality control**

a barcode not scanning correctly can have serious effects ranging from manufacturing errors to production downtime. Verification gives you feedback about your bar code production process that you can use to control the process itself. Successful verification results ensure that a label or direct part marker is working properly and will be readable further on in the supply chain.

#### **Contract and Industry Compliance**

Many government agencies (such as the US FDA and DOD) and large retailers require barcodes that conform to industry standards. The only way to certify compliance to these standards is to demonstrate bar code quality through verification. Some industries require verification to a specific standard (typically an ISO standard).

#### **Customer Satisfaction**

Verification guarantees a first time scan rate. Correctly scanning barcodes will prevent fines from major retailers or production downtime. When barcodes do not scan correctly, the data has to be manually entered, opening up room for human error.

### **Why can't I just use a scanner to verify my barcodes?**

A scanner is designed just to read the barcode. Just because your scanner can read the barcode does not ensure that other scanners will read it. It only means that one area of the barcode is readable by that particular device.

Verifiers are precise instruments that determine the quality of the barcode, through decoding, measuring and checking the format of the code. Unlike scanners, true verifiers measure the characteristics of a barcode to industry standards such as ANSI X3.182, ISO/IEC 15415, ISO/IEC 15416. The best bar code verifiers are accurate to ISO/IEC 15426-1 and 15426-2 standards. Verifiers will analyze how well the barcode will perform in different environments based on international standards. It will indicate where the barcode is deficient so corrective action may take place.

If you are responsible for delivering readable, in-spec barcodes, then the only way to ensure that the barcodes function properly is with true barcode verification.

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### **Why won't my barcode scan?**

There are many things that prevent a barcode from scanning. Even the best printers can produce improperly formatted and/or unreadable barcodes. Ribbon wrinkles, blown printer heads, and incorrect heat settings can cause a thermal printer to malfunction. Laser printers may be using too much or too little toner, leading to bar width growth problems. The barcode may even be formatted incorrectly, independent of printer problems and thus not conform to data format conventions such as those specified by GS1.

A verifier can prevent bad barcodes by recognizing and diagnosing the problem areas before they become a problem further down the distribution channel.

### **Will verifying save my company money?**

Barcode verification can save your company serious money by preventing chargeback's. According to the National Chargeback's Management Group (NCMG), these fees typically reduce a manufacture's overall revenue by 2% to 10%. Major retailers, such as Walmart, are known for issuing costly chargeback's when items delivered do not meet expectations. TESCO is another company with large fees. This retailer fines £40,000 per incident and returns the merchandise back at the manufacturer's expense. Barcode verification will insure that merchandise will not be sent back because of unreadable bar code symbols.

Verifying can also ensure that your mobile barcode campaign is properly implemented. A recent study by GS1 UK and Cranfield School of Management discovered that 91% of mobile barcode scans return incorrect products descriptions. Save your company money from having to re-do marketing campaigns due to improperly printed codes.

### **What are the variables that a verifier will test?**

The parameters that are measured depend upon the symbology. Verifiers for 1D linear bar codes should test 9 quality parameters according to ISO/ANSI specification. These are:

- 1) Edge Determination
- 2) Minimum Reflectance
- 3) Symbol Contrast
- 4) Minimum Edge Contrast
- 5) Modulation
- 6) Defects
- 7) Decode
- 8) Decodability
- 9) Quiet Zone

For multi-row stacked bar codes, the process is similar and the parameters are the same, except that these parameters will be measured on each row of the symbol. Furthermore, if the stacked symbol contains error correction (for example PDF 417 but not GS1 Data Bar) then Unused Error Correction will be included.

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For 2D matrix symbols, several parameters are different. These are:

- 1) Unused Error Correction
- 2) Fixed (finder) Pattern Damage
- 3) Grid Non-uniformity
- 4) Axial Non-uniformity

The parameters for symbol contrast and modulation are similar to the same parameters for 1D linear codes, except that the computation of the grade for Modulation is different in that it takes into account the availability of error correction in the 2D symbol.

### **What is the difference between scan grade and overall symbol grade?**

The scan grade is the result of a single scan along one point of the barcode. The overall symbol grade is the average of each scan grade. According to ISO/ANSI standards, barcode verification requires 10 scans spaced evenly throughout the code.

### **What should I do if my symbols are receiving failing grades?**

When verification software reports that the symbol failed, the user can view a full detailed report. Each of the 10 individual scans results will be displayed and graded on each parameter.

From here you can analyze on which parameters the barcode failed, and how to fix the problem in for subsequent print runs.

Based on the particular parameter that caused the failure, you can adjust your production process to improve that characteristic of the barcode.

### **Why would a barcode fail a verifier test but still scan?**

Bar code scanners are extremely aggressive at reading poorly printed bar codes. However, a poorly printed barcode may scan on one type of scanner but not on others. Barcode verifiers measure the code quality against a set of standards. If a barcode passes a verifier test, the barcode will be able to be read on any scanner, regardless of when it was manufactured. However, there are cases where a failed barcode may still scan. The barcode scanner may be the most cutting-edge one available and can still scan despite barcode quality issues. This still remains a quality issue further down the supply chain. With different scanners, lighting, and human operators, the barcode that failed the verifier test may not scan in the future.

### **I have a low cost verifier and a barcode passes my verifier tests, but a customer says that the barcode fails his verifier tests. What is happening?**

A low cost verifier may have been low cost because it is out of date with current standards. Your customer is probably using an ANSI standard verifier, while your low cost verifier might be utilizing traditional standards.

It may be time to purchase a newer verifier that is up-to-date with all the latest industry and international standards.



**What is the difference between verification and validation?**

Verification and validation are two distinct processes. Validation merely checks that the barcode will scan on one specific barcode reader, at one particular angle and at one particular time. It also will check if the decoded numbers are correct. Just because the barcode scans properly with one scanner does not guarantee that it will work with other scanners down the supply chain. Human readability may also be checked during barcode validation.

Verification differs in the fact that it examines the optical characteristics of the barcode compared to international and industry standards. The barcode is then given a pass or fail grade based on these parameters. Diagnostic information lets the operator know what defects may exist in the barcode, which can help to correct the printing process. Barcode verification is required for many industries and will ensure 100% scan ability.

**What is a Scan Reflectance Profile (SRP)?**

A Scan Reflectance Profile illustrates the analog signal of a single line across the entire width of the code. It is recorded by the verifier in a reflectance graph and analyzed by specific parameters (Symbol Contrast, Defects, Modulation, Edge Contrast, Maximum and Minimum Reflection, Bar Width Gain/Loss, and Decodability). Each of these parameters will either receive a pass, fail, or letter grade as per the requirements in the ANSI document.