



WHITE PAPER

## Online Data Verification (ODV-2D) – Barcode Validation and Verification Technology

When a pack of Wrigley's gum was scanned in the summer of 1974, it became the first commercial item checked out using a barcode. Barcodes have subsequently been used to speed up retail checkout, optimize shipping and logistics, and are the basis for current track and trace requirements on pharmaceuticals and food.

Barcodes are now an essential element mandated by worldwide manufacturers and regulatory agencies. The use of barcodes has become so pervasive that ISO standards provide detailed criteria for "grading" a barcode's readability. Suppliers face significant fines, audits, return of goods, or hefty chargeback penalties for failing to produce barcodes above the minimum requirements established by the customer or regulatory agency. Checking the barcode quality before shipment is prudent as it can prevent penalties, fines, returned goods, impact to reputation, audits, and chargebacks. Barcode verification can yield attractive returns for the investment made.

### I. Label Trends

Barcodes have proven such a successful conveyor of information that corporations, retailers, health care organizations, military organizations, and government regulatory agencies continue to increase the amount of information transmitted on the label. A label might contain lot number, serial number, the manufacturer's ID, sell-by date, manufacturing location, ship date, and myriad of additional information. A separate barcode for each of these data fields would occupy too much space. Consequently, the GS1 global standards organization has developed barcodes with multiple fields contained within the same barcode.

The demand for additional information is insatiable. When the existing linear barcodes could not meet the need for additional data fields, GS1 pioneered a 2D barcode, enabling more data to be stored in a smaller physical footprint. The explosion of the internet added incentive to link suppliers and consumers together with a web address barcode, called QR code. Not surprisingly, the requirement to add both data fields and a web address barcode led GS1 to launch Digital Link in 2019, providing both web and data field contents in a single barcode.



## *The Printronix Auto ID ODV-2D barcode verification tools can validate, verify, and pass the captured data back for each barcode via XML or .csv to the calling application.*

Meanwhile, the desire to minimize packaging materials, cost, and waste has led to demands for smaller packages and smaller labels, putting even more pressure on barcodes to continue to convey more information in a smaller space.

As the information density increases, a barcode failure has significant downstream impacts, potentially severing the tie back to the suppliers, along with the vital information necessary in the event of a recall needing to trace back a contaminated item all the way through each touch point to the original manufacturer. The vital information carried in the barcode continues to push regulatory bodies and corporations to demand fines and audits in the event of a non-compliant barcode label.



## II. Okay, I'll check the barcode before shipment, but how?

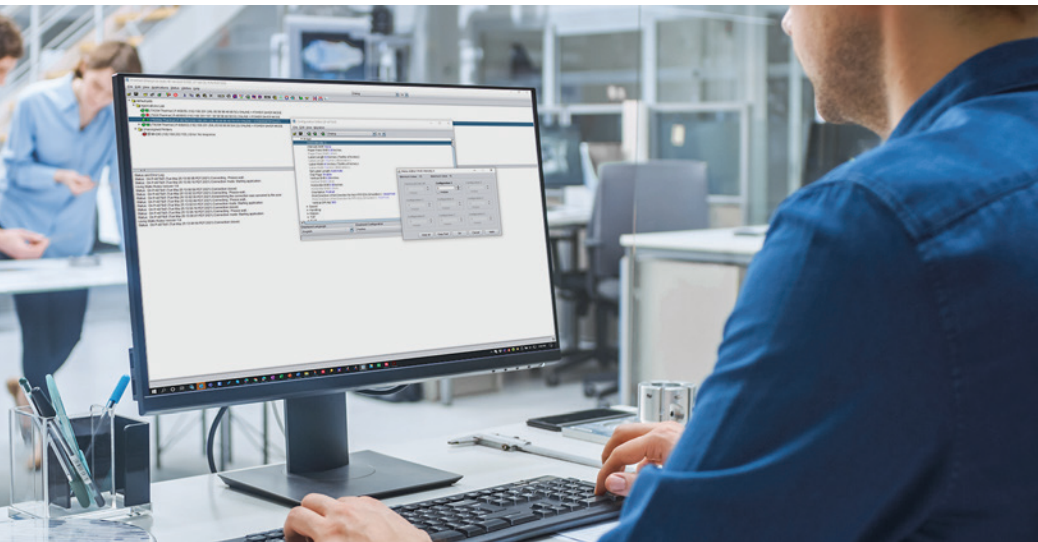
Reading barcodes after print with a barcode scanner can check that the barcode was read by that scanner. This can be done manually using a handheld scanner, or a fixed scanner and workstation. This approach has the advantage of simplicity, but has several considerations, including the potential for missing one or more barcodes in a print job, the inability to check the barcode contents, and the inability to grade the labels and retain any report from the scan to provide proof that the label scanned successfully at the source. Additionally, barcode scanners may vary in scan results. Items that scan on your scanner may not do so as successfully with the recipient's scanner.

ISO standards were set up to provide an objective means of grading barcodes to eliminate the debate about readability across different scanners. All scanners with verification (the ability to grade the barcode according to the ISO standards) will grade the same label the same way. Many international corporations and regulatory agencies specify a minimum grade for barcodes.



To ensure compliance with these requirements, suppliers should not only check readability, but check verification as well. It is a good idea also to validate and read the contents of the barcode to ensure that the data printed as intended. A successfully printed label with the wrong data is not helpful.

If a label does not meet the specifications, it must be dealt with to ensure it does not inadvertently get used. Stopping the printer and notifying an operator requires both manual intervention and impacts output until the operator can take the necessary steps. A better approach is to integrate the barcode scanner with the printer so the printer can retract the label, overstrike the failed label, and reprint the label again.



### III. Data Retention

Some international corporations are mandating their suppliers not only verify the labels but retain a report showing the verification status of each barcode for a specified period. Many suppliers also wish to retain a report in the event of a dispute over chargebacks or fines for generating unacceptable labels.

A supplier should, therefore, both validate and verify the barcode as well as retain a report for each barcode. While this may seem an impossibly complex task, the Printronix Auto ID ODV-2D barcode verification tools can validate, verify, and pass the captured data back for each barcode via XML or .csv to the calling application. Software label vendors such as TEKLYNX have already integrated this capability into their offerings providing a closed-loop process from label design to label print to capturing and retaining the verification information.

### IV. Summary

Barcodes are an increasingly vital part of supply chains, medical safety processes, and food regulations. Ensuring a compliant label is vital for a supplier. Label failure has serious consequences up and down the chain. The requirements for compliance continue to get more complex, making it necessary for the use of tools to help ensure adherence to these requirements. Label software also continues to evolve adding checks to ensure adherence to regulations. But software alone cannot ensure a compliant label is generated. The collaboration between label software vendors and TSC Printronix Auto ID to provide validation, verification, and reporting can provide the necessary information and assurances that major corporations, health care, and regulatory institutions are seeking to ensure safety and speed in delivering mission-critical supplies.



T8000 ODV-2D

T6000e ODV-2D