

**COVISUS**  
A CHROMOLOGIC COMPANY

# User Guide



## vTag<sup>®</sup> Handheld

Secure, rapid and cost-effective tagless  
quantitative part-level traceability



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## INTRODUCTION

### The vTag® Handheld System

The vTag® Handheld system is a tool for secure, rapid, cost-effective quantitative part-level traceability. The vTag® Handheld uses a two-step process to enable operators at multiple points in the supply chain or within a warehouse to securely transmit information related to the identity and origin of items without the need for direct marking or tagging. The first step is to enroll an item into the vTag® database. Second, the item can be verified at any point thereafter. Additional information and documents can be attached to the vTag® during enrollment or subsequent verifications.

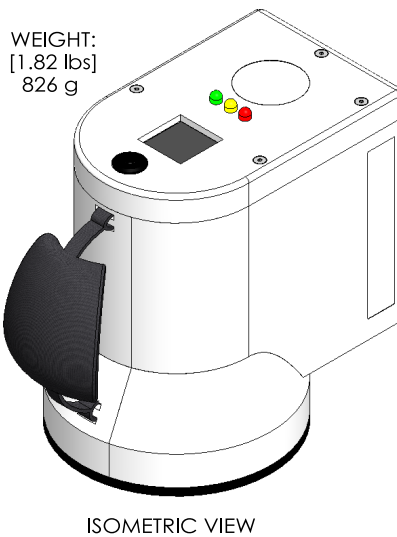
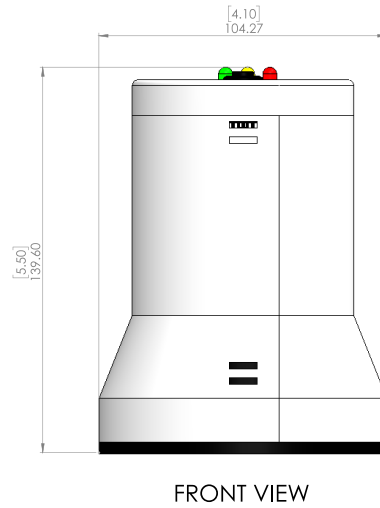
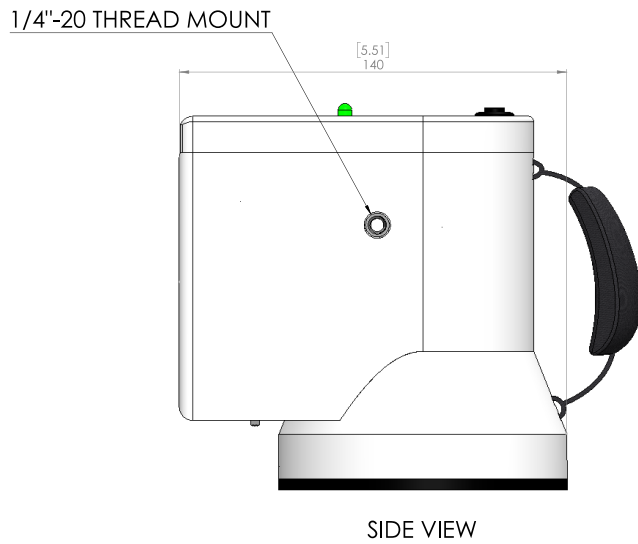
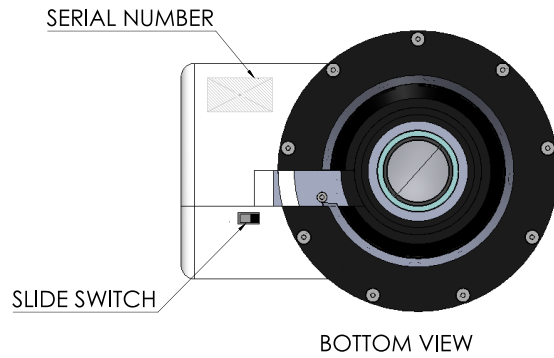
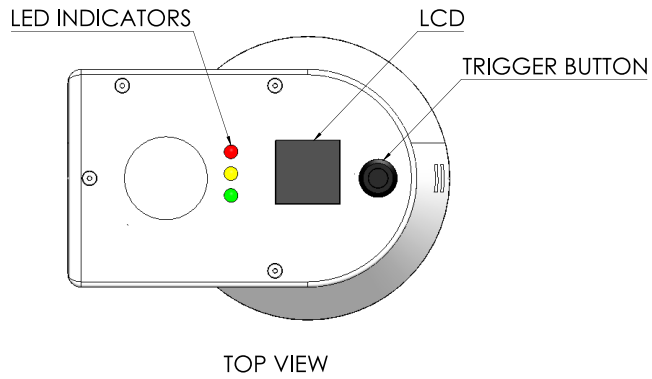
## GETTING STARTED

### vTag® Handheld System Requirements

Electrical	
Power	<p>The vTag® handheld unit will be charged from a standard USB charger which can provide a minimum current of 3 A.</p> <p>A USB charger has been provided which meets the requirements of the vTag® Handheld Unit.</p>
Connectivity	
VPN Access	Technical support available via secure VPN connection.
Hosting	Cloud local hosting is available.
Connection	20 Mbps download and 20 Mbps upload (minimum)



# vTag® Handheld Specifications



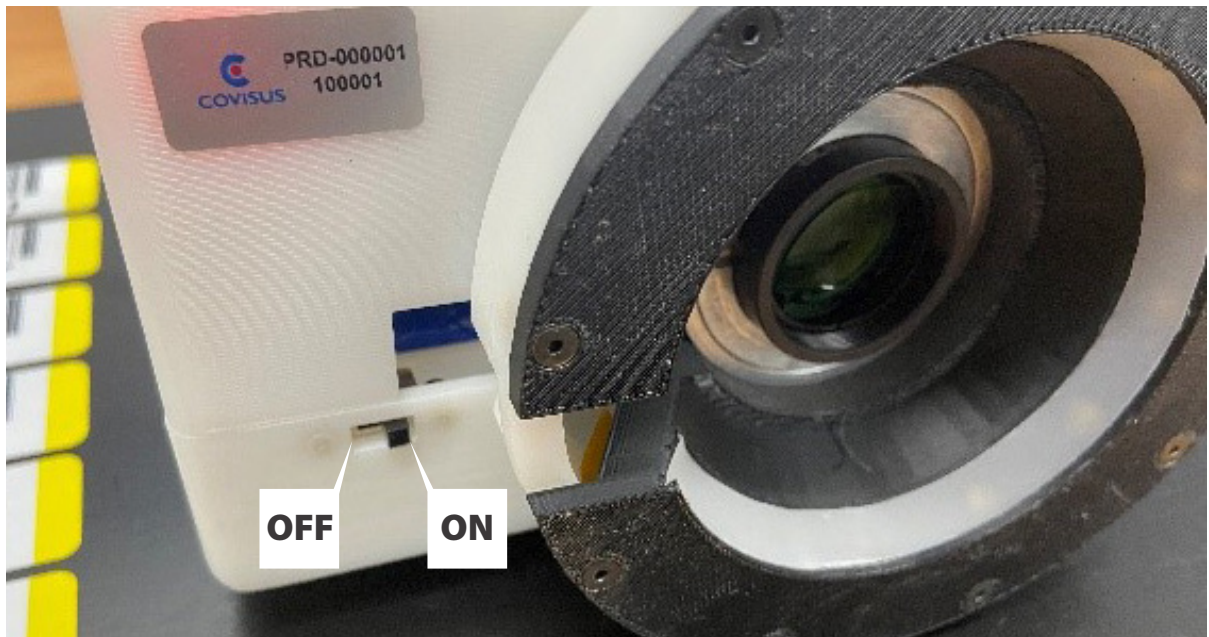


## OPERATION

### 1.0 Turning On & Wi-Fi:

#### Turn Handheld On:

- 1) Push the slide switch towards the handheld camera lens to turn on the device as seen on (figure 1) below.



*Figure 1: Power Slide Switch*



## 1.1 Connecting to Wi-Fi and Device Pairing:

In order for the vTag device to work, we must connect it to the WiFi and pair with a smart mobile device (e.g., tablet, smart phone). We will go over the two-step process in connecting the vTag device to the WiFi and pairing in the steps below.

### Connect vTag® Device to Wi-Fi:

1) Press and hold trigger button for at least 8 seconds or until the three LEDs flash yellow and the LCD prompts “Connect to AP: Covisus-vTag-Config to configure wifi” (figure 2)

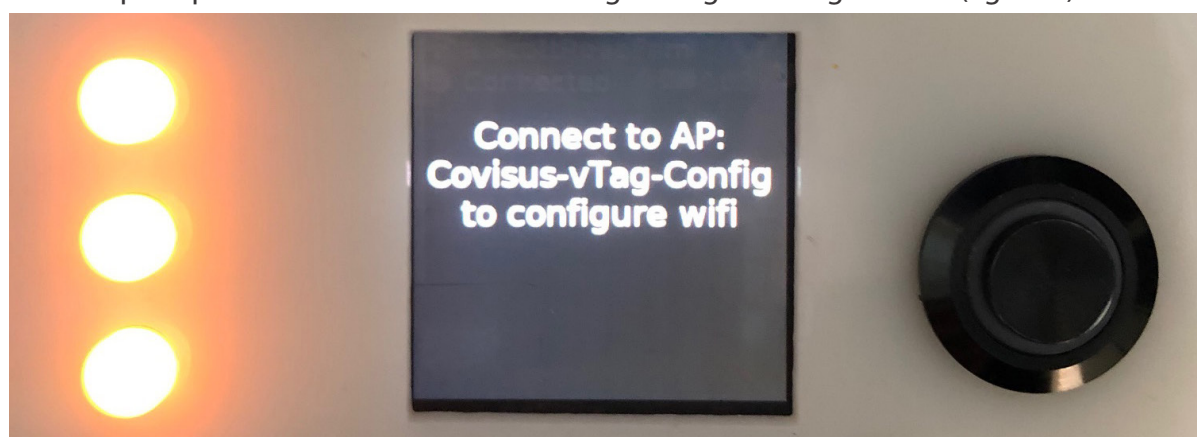


Figure 2: Wi-Fi Configuration LCD Prompt

2) On the iPad, go to Settings > Wi-Fi and select Covisus-vTag-Config in the list of networks (figure 3).

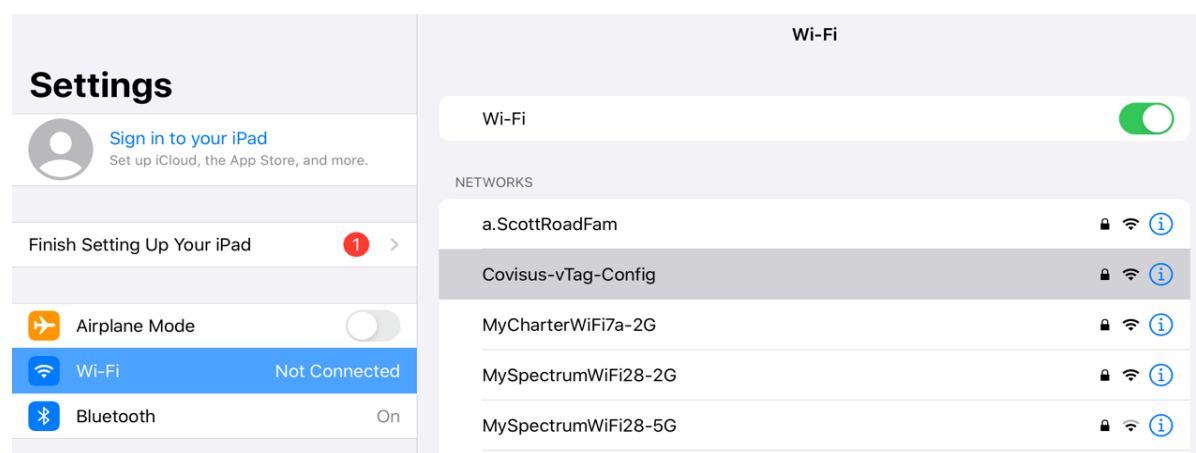
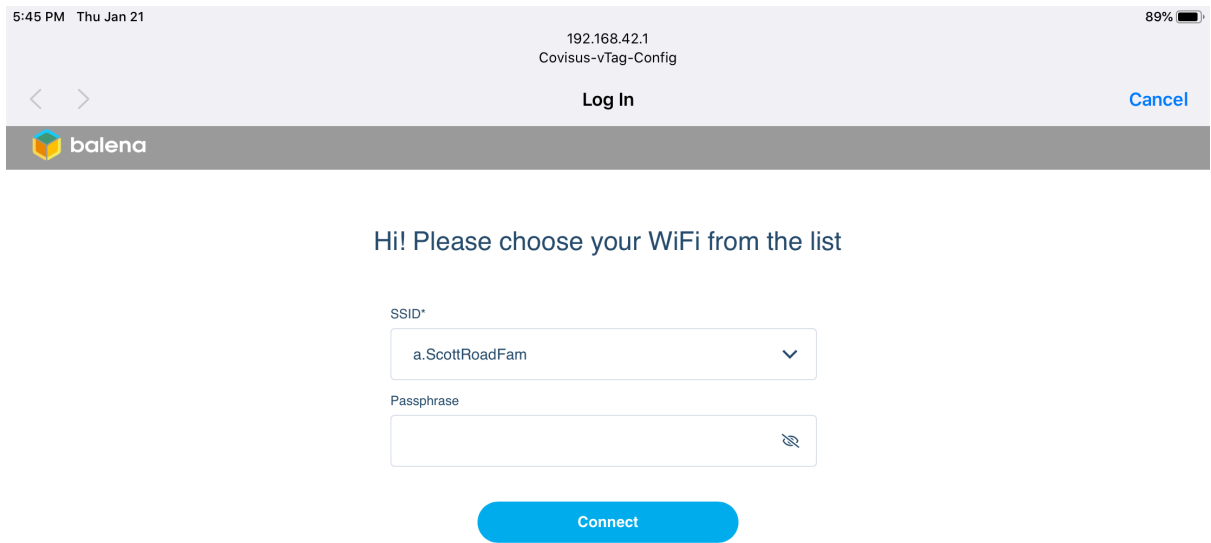


Figure 3: iPad Wi-Fi Settings



- 3) Enter "vtagging" as the password.
- 4) You will then be prompted with the balena interface (figure 4). Here, you may select your company internal Wi-Fi name and password.



**Figure 4: balena interface**

- 5) Look at the LCD of the vTag device (figure 5) and wait for about 30 seconds to a minute for the vTag device to connect to the Wi-Fi. Once connected, you will see a Wi-Fi icon, a globe that states it's "connected", and the battery indicator LED light solid green.



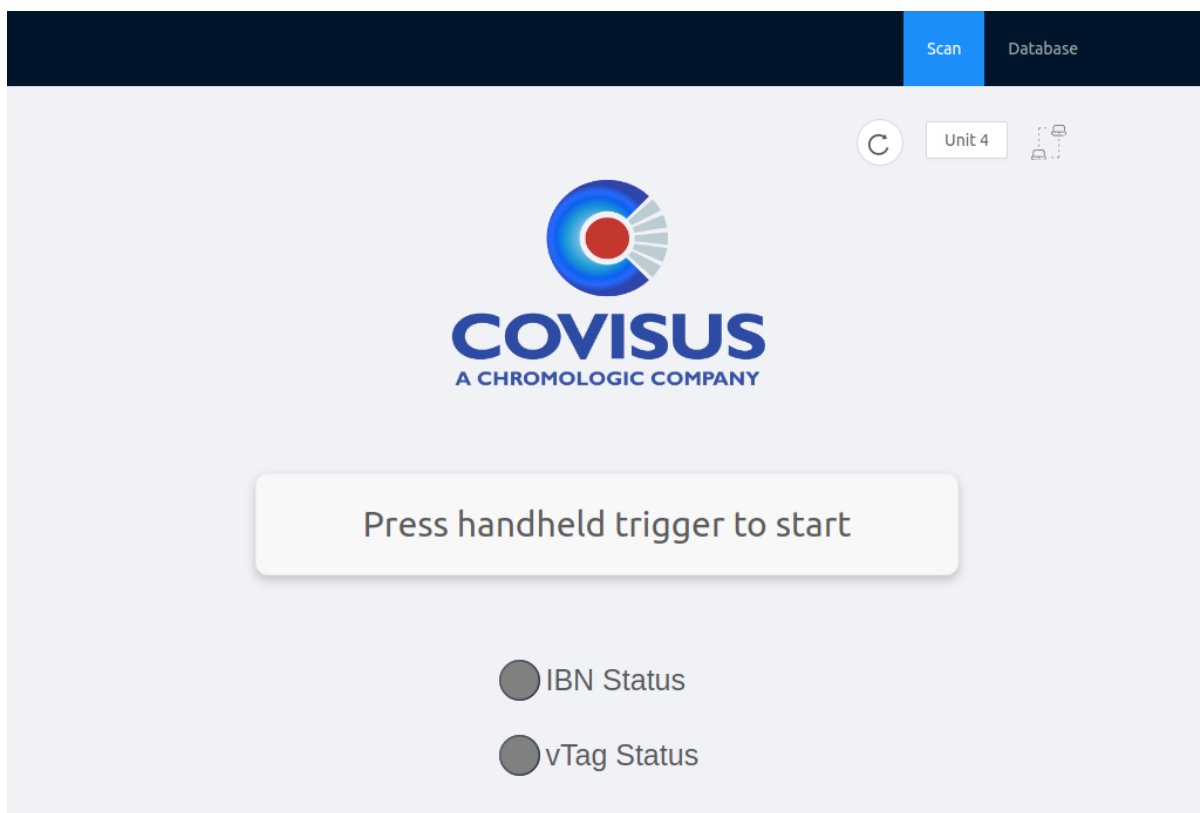
**Figure 5: vTag® Device LCD**





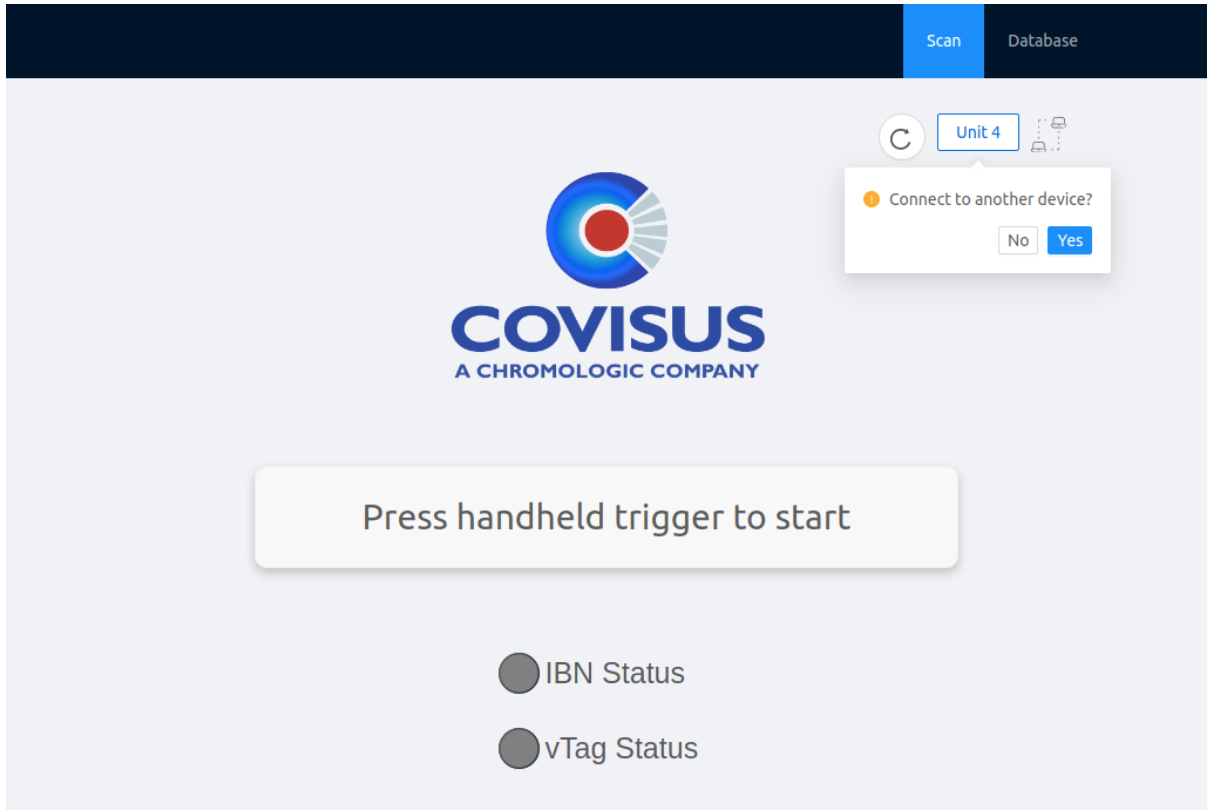
## Pairing iPad with vTag Device:

- 1) Connect the iPad to your company internal network. Go to Settings > Wi-Fi, then select your company Wi-Fi and enter credentials.
- 2) Once connected to the WiFi, open the Covisus app located on the Home page of the iPad.
- 3) When the app opens, you will be presented by either Home Page (figure 6) or Pairing Page (figure 8). Follow the instruction under sub-header to properly pair with a vTag device.



**Figure 6: Home Page - Pairing Indicators**

When presented with the Covisus Home page, ensure that the iPad is connected to the correct vTag Device. Confirm by checking the unit # located on the top right of the vTag home page. If unit number and vTag device # matches, you may start enrolling or verifying IBNs.

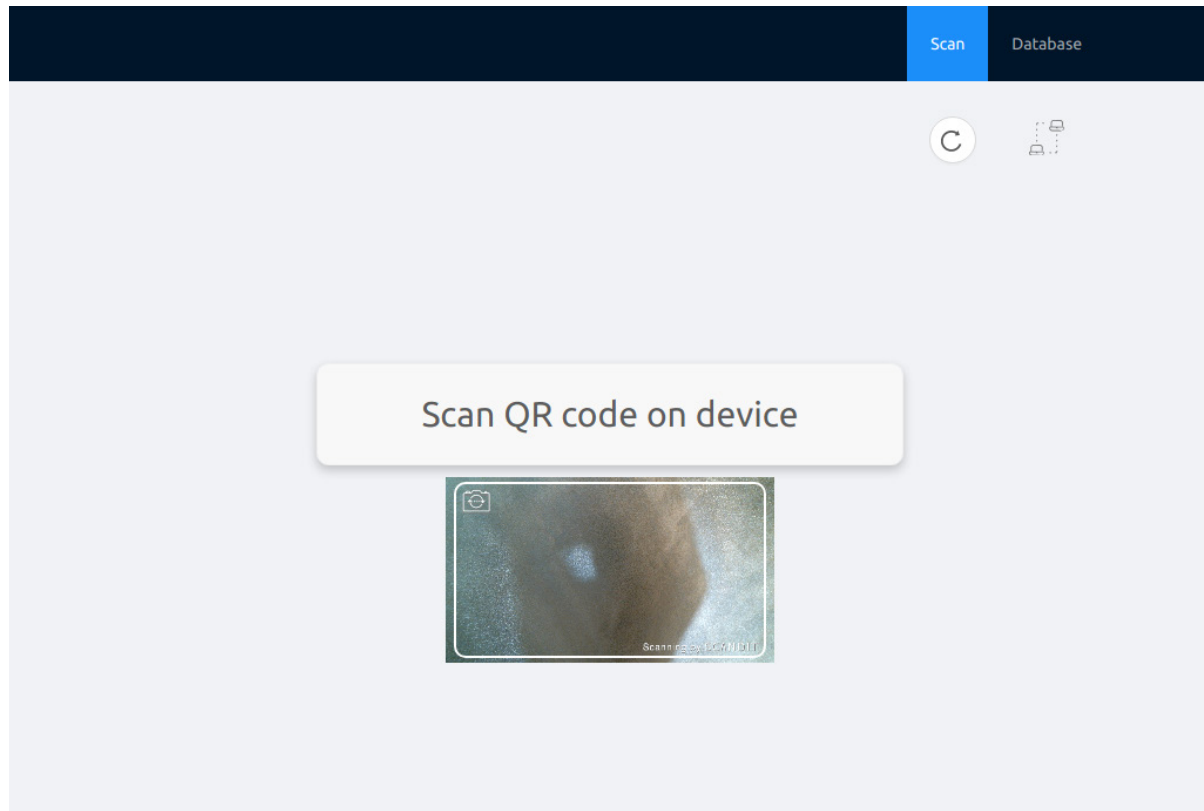


**Figure 7: Home Page - Device Disconnect**

If the iPad app unit # does not match with the vTag device, disconnect by pressing on the "Unit #" on the top right of the app. (figure 7) When prompted, click 'Yes'. You will be redirected to the QR code pairing page. (figure 8)



## vTag Device QR code pairing



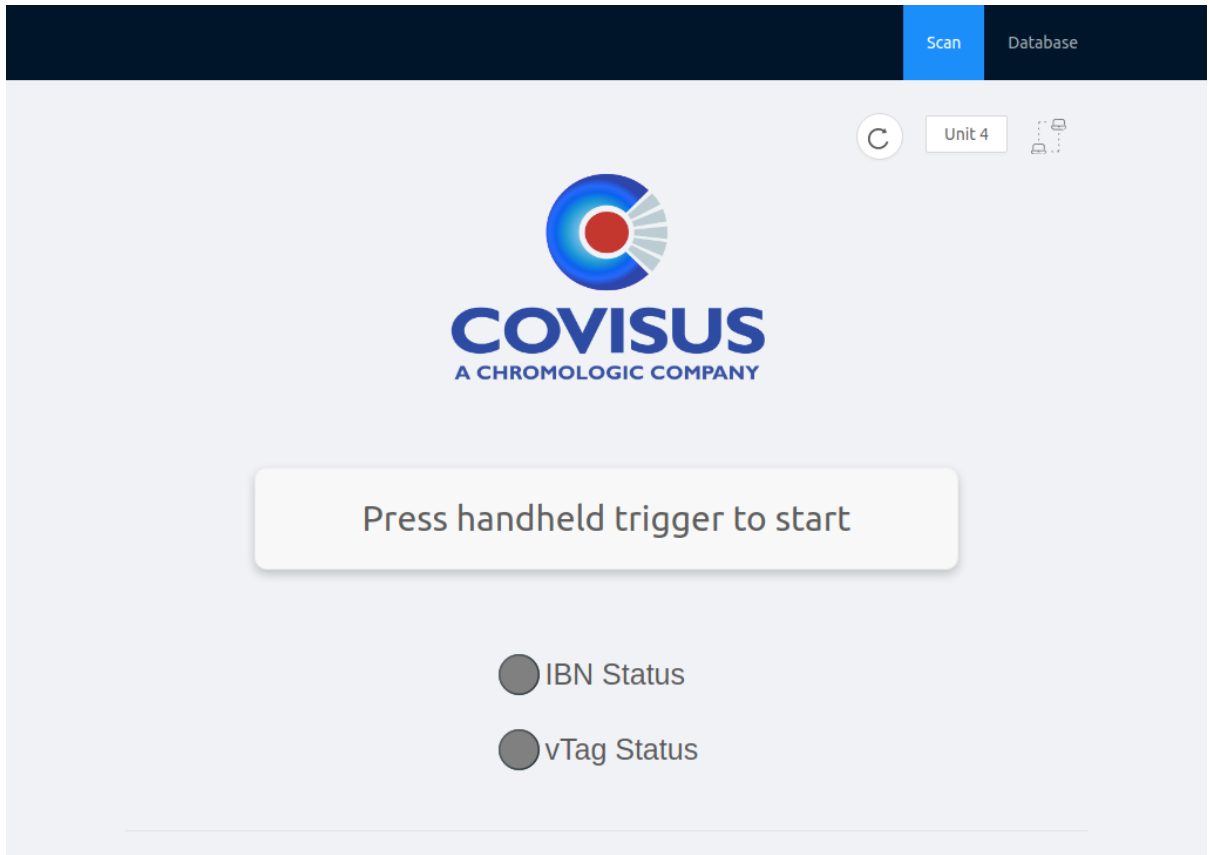
**Figure 8: Pairing Page - QR Code Scanner**

To pair the iPad with a vTag device, place the device QR code within field of view of the app's QR code scanner. A successful pairing will redirect you to the home page and the unit number on the top right will be updated. (See figure 6)



## 2.0 Enrollment:

Enrollment creates a unique vTag for identifying a specific item. For example, if you have 100 packages or reels, each piece is given a unique ID number or vTag during the enrollment process so that the correct lot number is linked to each piece.



*Figure 9: Home Page*



## To enroll an IBN:

1. With the Covisus app on the Home page (figure 9), press the Handheld trigger button once to initialize the LCD display and light ring.
2. Place the handheld device over the IBN.
3. Using the LCD display alignment fiducial, align the handheld's fiducial to the bottom right corner of the IBN (figure 10).



*Figure 10: Alignment of the handheld device to an IBN barcode.*

4. Once properly aligned, press the trigger button again to enroll.
5. The LED indicator lights for the handheld imaging result (see LED indicators, Section 5.0)
6. Turn to the Covisus app home page on the iPad and follow the cases below:
  - If vTag and IBN status are green, go to Section 3.0 Verification.
  - If vTag and IBN status are yellow, continue to 2.1 Enrollment Prompt.

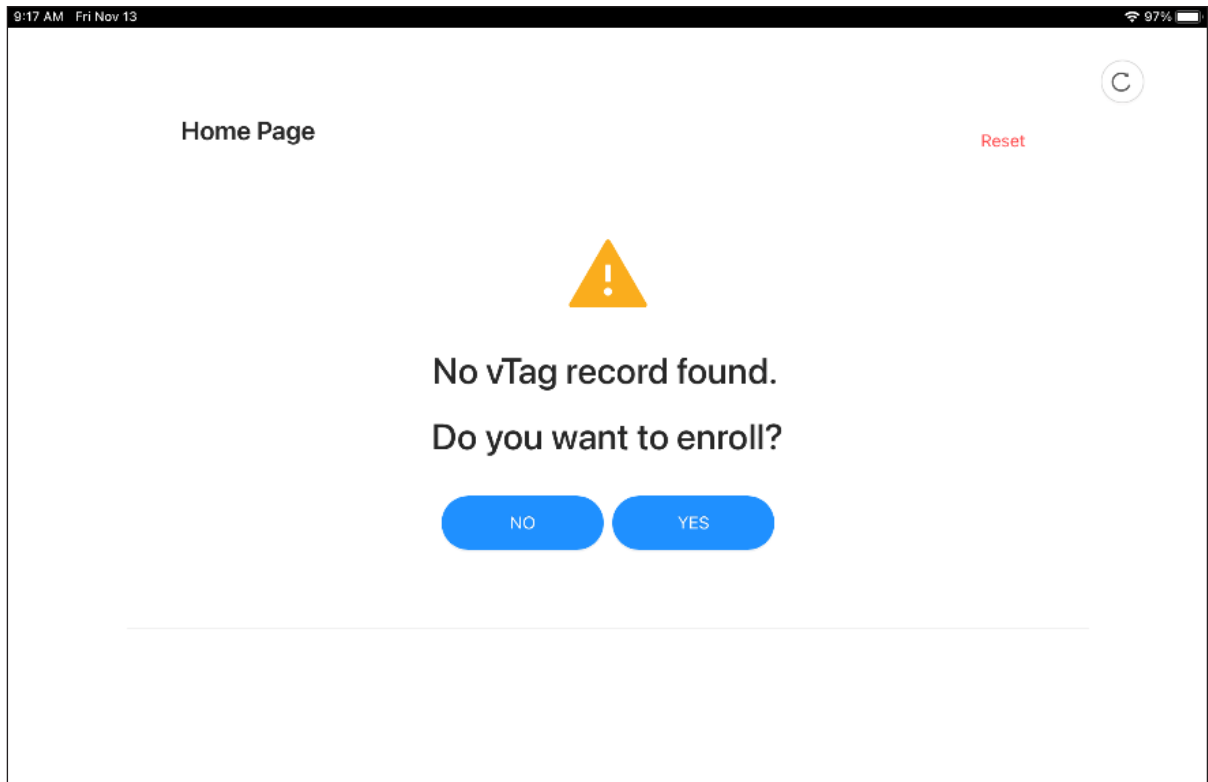


## 2.1 Enrollment Prompt:

If a match from the database is not found, you are prompted whether to proceed with an enrollment (figure 11).

Select "YES" to take you to the vTag Enrollment Page (figure 12).

Select "NO" to take you back to the Home page (figure 9).



*Figure 11: Enrollment Prompt*

## 2.2 vTag Enrollment:

As part of the enrollment process, a user can add data to the IBN (i.e. packing slips, quantity, lot code, data code, etc.).

### Add barcodes data:

1. On the iPad app, press the drop-down arrow key to the right of "SCAN BARCODE". Once pressed, a scanning feature is presented along with data fields.
2. Place barcode(s) within the iPad's field of view and scan by aligning each barcode with the thin green line. (figure 12).



3. If a matching value is found, the respective field on the left will automatically be populated.
4. If barcode is not automatically appended to the correct field: press on the desired field until highlighted blue. Then scan barcode. This will automatically append the selected field. A manual entry is also allowed if auto-fill does not perform on barcode type.

The screenshot displays the 'Item Enrollment' page with a 'SCAN BARCODE' section. The form includes the following fields:

- Package Type: Box
- Customer P/N: GESGP02-30-001E3/54
- Customer P/O: 2169511
- Quantity: 5500
- Ship Date Code: 10D1748
- Country of Origin: CN
- Lot Code: ZT472558.1
- Manufacturer PN: GP02-30-001E3/54
- Package ID: (empty)
- PO Line Number: (empty)

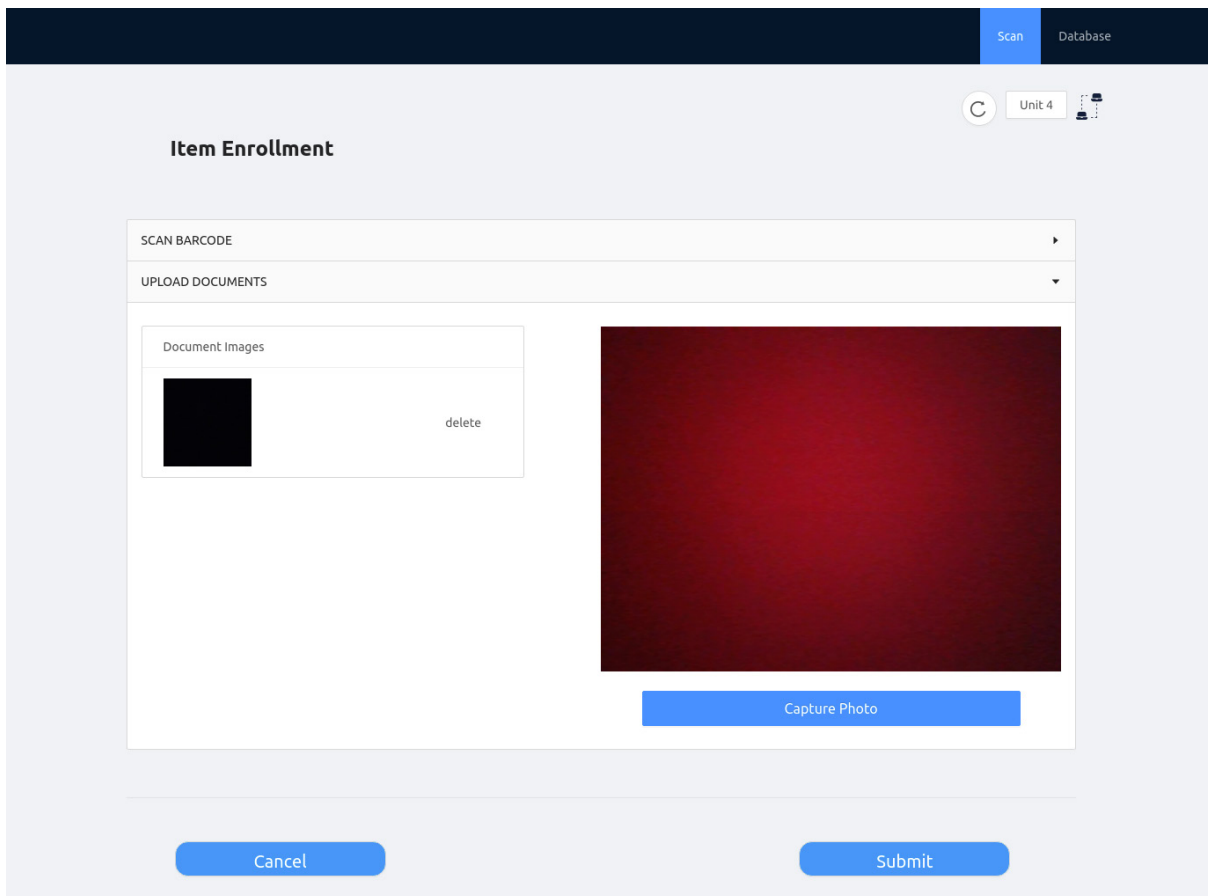
On the right side of the form, there is a red scanning interface with a white horizontal line and the text 'Scanning by SCANDIT'. Below the form is an 'UPLOAD DOCUMENTS' section. At the bottom of the page are 'Cancel' and 'Submit' buttons.

**Figure 12: vTag Enrollment Page - Scan Barcode**



## Packing Document Scan:

1. On the iPad app, press the drop-down arrow key to the right of "UPLOAD DOCUMENTS". Once pressed, the live feed from the iPad camera is displayed.
2. Place the document within the camera field of view (figure 13).
3. Press the "Capture Photo" button.
4. Repeat steps 2 & 3 for consecutive documents/pages, else continue to step 5.
5. Once all barcodes and documents are scanned, press the "Submit" button at the bottom right of the screen.
6. An "Enrolling" cover screen will be displayed until enrollment is finished.



**Figure 13: vTag Enrollment Page - Upload Documents**





## 2.3 Item Information Dashboard:

Once an item is successfully enrolled, the iPad will proceed to the Item Information Dashboard (figure 14), which displays the IBN and its attached data. All the fields, except the images are editable.

### If one or more fields need to be edited:

1. Press the “Edit” button at the top right of the data display.
2. Tap the field(s) that needs to be edited to display a keyboard on the screen.
3. Once the cursor is blinking in the selected field, you may start editing.
4. To save the updated field(s), press the “Update” button at the bottom right of the screen

The screenshot shows the 'Enrollment Dashboard' interface. At the top right, there are 'Scan' and 'Database' buttons. Below them is a circular refresh icon, 'Unit 4', and a printer icon. The main title is 'Enrollment Dashboard'. In the center, 'IBN' is displayed above a text box containing 'ACN07Q'. To the right of this text box are 'Edit' and 'Database' buttons. Below this is a table with the following data:

Package Type	Box
Customer PN	GESP65MB33CAHE3/52
Customer PO	2359881
Quantity	750
Ship Date Code	10D1819
Country of Origin	
Lot Code	MA536611.7
Manufacturer PN	P6SMB33CAHE3/52
Package ID	UPDATED FIELD
PO Line Number	
Packing Slip	

At the bottom of the screen, there are two buttons: 'New Scan' (blue) and 'Update' (white).

Figure 14: Enrollment Dashboard



### 3.0 Verification:

#### To verify an IBN:

1. With the Covisus app on the Home page (figure 9), press the handheld trigger button once to initialize the LCD display and light ring.
2. Place the handheld device over the IBN.
3. Using the LCD display alignment fiducial, align the handheld's fiducial to the bottom right corner of the IBN. (figure 15)



*Figure 15: Alignment of the handheld device to an IBN barcode.*

4. Once properly aligned, press the trigger button again to verify.
5. LED indicator lights update with the status of the vTagging process (see LED indicators, Section 5.0)
6. All three LED indicators on the handheld will turn green and the IBN and vTag status icons on the iPad app turn green upon successful vTagging of the item. The iPad app will display the user to the Item Information Dashboard (figure 16).



Scan Database


Unit 4

### Enrollment Dashboard

## IBN

### ACN07Q

Edit Database

Package Type	Box
Customer PN	GESP6SMB33CAHE3/52
Customer PO	2359881
Quantity	750
Ship Date Code	10D1819
Country of Origin	
Lot Code	MA536611.7
Manufacturer PN	P6SMB33CAHE3/52
Package ID	UPDATED FIELD
PO Line Number	
Packing Slip	

New Scan Update

Figure 16: Item Information Dashboard



## 4.0 Database Query

To search the database for a particular barcode label (e.g. IBN, Customer PN, Lot Code, etc...), perform the following steps:

1. From top navigation bar, press the “Database” tab. You will be redirected to the Database Query page (figure 16).
2. On the Database Query page (figure 17), you can sort and filter the database. The next steps will guide you on how to perform each in their respective order.

#	IBN	Type	CUST PN	CUST PO ↑	QTY
159	ACNO7N	Item			
160	ACNO7U	Item			
161	ACNO7S	Box			
162	ACNO7N	Box			
158	ACNO7Q	Box	GESP65MB33CAHE3/52	2359881	750

*Figure 17: Database Query Page*

### Sorting

Each column can be selected as the base to sort all other items. To perform sorting:

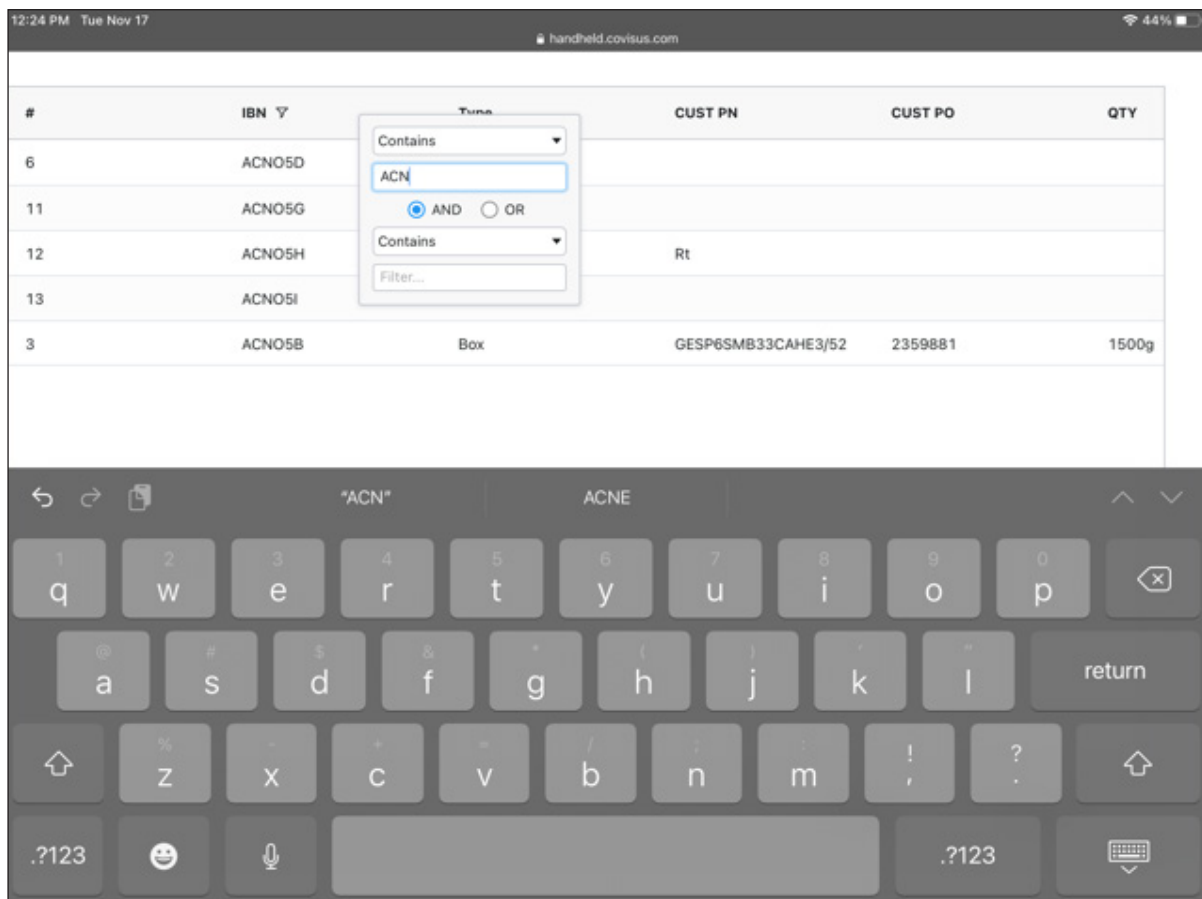
1. Press on the column header of your choice. The first press sorts the column in ascending order.
2. Press on the same column header again. The second press sorts the column in descending order.
3. Press on the same column header a third time; this will revert the column to its original order.



## Filtering

Searching for a specific value in the database can be achieved by our filtering feature. Any header can be used to filter rows; however, in our example, we will be using the IBN header to search for an item. To filter the database by a header:

1. Press and hold on the IBN header for about 2 seconds. A pop-up will be shown (figure 18)
2. In the “Filter” input box, enter an IBN value.
3. Once the desired value is found, you may expand and edit the value by pressing on the row where the desired value is located. For editing, go to Section 2.3.



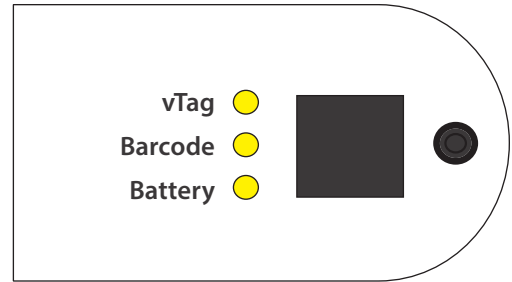
**Figure 18: IBN Filtering**



## 5.0 LED Indicators:

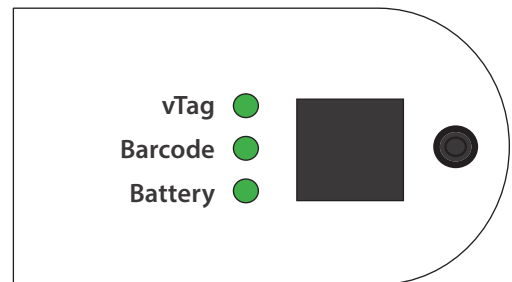
### Ready

All yellow lights indicate that the handheld is ready to scan and image the IBN.



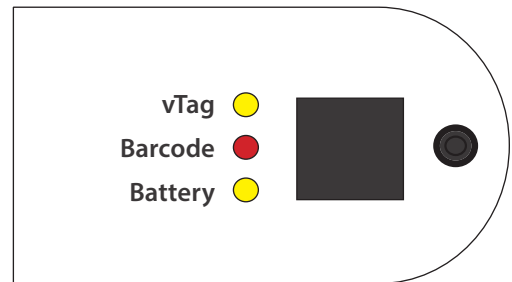
### Success

All green lights indicate that the handheld successfully captured and sent the IBN for processing.



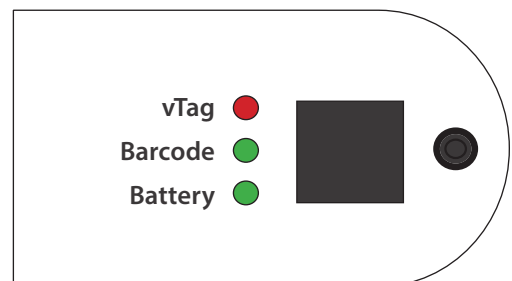
### Barcode Error

A red barcode light indicates a failure to read the IBN barcode. Realign the handheld accordingly and try again.



### Image Error

A red vTag light means the image captured may not be focused. Ensure that the handheld is leveled on top of the IBN.



### Standby

When not in use, the handheld provides a battery life indicator only. Green is fully charged; blinking red is low battery.

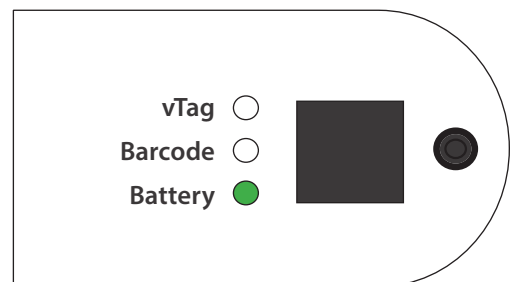


Figure 14: LED indicators on the handheld



## MAINTENANCE

### 1.0 Charging:

The vTag® Handheld device contains a rechargeable lithium ion battery pack.

With normal use, a fully charged vTag® Handheld device should last about 3 hours before needing to be recharged. Future systems will have longer battery life to support use through a full work shift.

You can check the level of your battery by looking at the LCD or LED indicator lights.

To recharge the device, make sure the device is fully shut down by moving the slide switch to the “OFF” position and plugging in the charger. \*\*Note: use only approved charger for charging vTag Handheld Device.

It is recommended to charge overnight, or at least six hours. It is also recommended to keep the device plugged into the charger when not being actively used.



## 2.0 Troubleshooting:

**Restart the device if any issues with the LCD screen or barcode scanner occur.**

To restart, move the slide switch to the “OFF” position, then immediately move the slide switch back to the “ON” position.

**Issue: LCD or barcode scanner malfunctioning.**

Restart the device if any issues with the LCD screen or barcode scanner occur.

To restart, move the slide switch to the “OFF” position, then immediately move the slide switch back to the “ON” position.

**Issue: Verification or Enrollment takes more than 20 seconds.**

If verification or enrollment takes more than 20 seconds, this may be due to poor Wi-Fi connections. Use the SpeedSmart app to determine if Wi-Fi meets the required 20Mbps download and 20 Mbps upload speed.





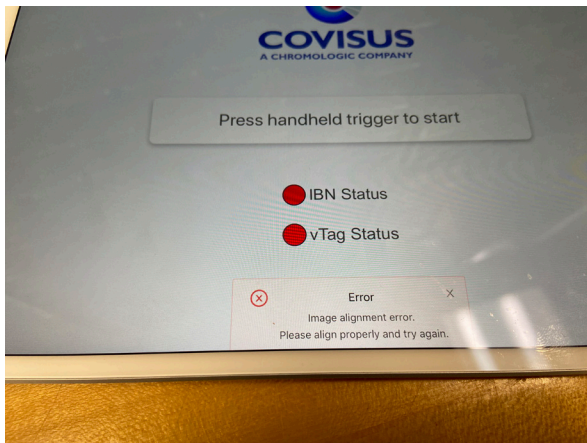
## 2.1 Known Issues:

### Image Error - Item Limitations

The vTag Scanner requires that the bottom of the unit be flush with the barcode being vTagged. Reels that flex during scanning or with raised edges may place the IBN label outside of the allowable vTag scanning volume. During scanning, this error is indicated by the top LED turning red. This is a known issue that is being addressed in the next iteration.

### Alignment Tolerance

The vTag scanner requires that the IBN label be aligned to the red alignment fiducial to within +/- 1.5 mm vertically and horizontally to read the barcode and vTag.



### WiFi Re-Connection

If the unit is taken out of range of the WiFi after it is connected, it may take 3-5 min to fully reconnect to the vTag system. During this time, the Handheld vTag Scanner may indicate on the device that it is connected but be unable to enroll or verify. If the problem persists, please restart the Handheld vTag Scanner.



## COMPONENT PROFILE GUIDE

The vTag® Handheld Device is a portable quantitative optical inspection solution used during the inspection of flat components. It is intended for use as an item traceability and verification tool. The following specifications are currently recommended for optimum system results.

### Products for Use:

Scanned Item Specifications	
Part Size	≥ 2 mm X 2 mm
Camera FOV	12 mm X 9 mm
Minimum vTag ROI Area	Must not be fully contained within the vTag ROI. Must be prominent.
Alignment Fiducial	Cloud local hosting is available.
Part Geometry Precision	Part alignment fiducial and the relative position of the vTag ROIs to the alignment fiducial must be precise to < 0.01mm
Part Finish	Areas that contain vTag ROIs cannot be a mirror [must have surface texture on the order of 1- 20 microns]
Materials	Metals, Ceramics, Composites, Plastics, Wood
Scan Speed	Approximately 8 s per part depending strength and bandwidth of the wireless network.
Process	A template of a part type and tray type must be created before it can be enrolled and verified.



## GLOSSARY

**GUI:** Graphical User Interface.

**Authentic Parts:** Parts that a customer validates as authentic.

**Template:** The template contains part information specific to a particular part number that is used for unique identification of that part number and contains critical information for image registration and ROI positioning during enrollment and verification. Templating is the process of creating a Template using the GUI.

**Enrollment:** The process of enrolling parts with VTag® Handheld. The VTag® Handheld system scans the part, captures critical information about that part, and stores information in the database. In general, this should only be performed on authentic parts or parts from the same lot as authentic parts. Enrolled parts are parts that have been enrolled with VTag® Handheld.

**Verification:** The process of scanning parts with VTag® Handheld to determine if they are Secure or Suspect.

**Secure:** Parts that are identified by VTag® Handheld as being either enrolled or as parts created through the same process as enrolled parts.

**Suspect:** Parts that cannot be identified as enrolled parts or as parts created through the same process as enrolled parts.

**Lot:** Parts in a lot are produced under essentially the same conditions, and are intended to have uniform quality and characteristics within manufacturer specified limits.

**Re-Surfacing:** Parts surfaces may be altered from the original manufacturer through processes such as sanding, sand blasting, painting, coating, and blacktopping.



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## FREQUENTLY ASKED QUESTIONS

### What does it do?

VTag® Handheld captures an optical image of the surface of an item under inspection and computes an unambiguous, unforgeable and untraceable tag (vTag®). vTags® are used to trace items in a supply chain through a secure database.

### How does the system work?

An operator scans an item under inspection with a VTag® Handheld system and is told within seconds if the item has been enrolled within the Covisus database.

### What if the part is not found in the Covisus database?

If the item is not found by VTag® Handheld database, it implies that the item was never enrolled into the Covisus database (>99% confidence). Depending on the item acquisition documentation, the user is advised to follow their internal operational procedures on how to treat an item that is not found in the Covisus database. Typically, it is flagged as a “suspect” item.

### Who can enroll a part into the Covisus database?

Only trained personnel at authorized sites are given permission to enroll new items into the Covisus database. It takes a few seconds to enroll a new item into the database.

### What information do I have to enter in order to check if an item is in the database?

Depending on the item, the user will be automatically prompted for manufacturers' information such as part number, lot/date codes, etc.



## Can I use VTag® Handheld instead of other analytical techniques?

VTag® Handheld is not designed to be a stand-alone counterfeit mitigation tool and should be used as part of a comprehensive quality system. VTag® Handheld is not a quality system. Users should refer to documentation published by ISO, ANSI, SAE International, IDEA, the University of Maryland Center for Lifecycle Engineering (CALCE), and others in addition to federal and customer directives for information on quality systems.

## Can anyone use this?

VTag® Handheld training can be accomplished in under one hour and is operable by non-experts. Results interpretation is best accomplished by individuals with expertise and training in counterfeit screening and quality systems.

## Does it damage the test items?

VTag® Handheld testing is nondestructive and does not damage the item.

## Does VTag® Handheld modify, tag, or change the item surface?

No. VTag® Handheld does not tag or add any marking to the items.

## Does this tell me if the item works?

No. The VTag® Handheld is not a functional testing tool.

## Does a “secure” result mean that an item is authentic?

No. It only means that the item was found in the Covisus database.

## Does a “suspect” result mean that an item is counterfeit?

No. It only means that the item was not found in the Covisus database.

## Is it safe?

VTag® Handheld does not use any harmful chemicals or emit harmful radiation. However, the system emits high-intensity white light (“illumination”). Operators should not disassemble the system or look directly into the illumination banks. Users should follow all instructions in the user safety manual.



## Will scratches, dust, or fingerprints confound the results and cause errors?

VTag® Handheld is designed to be resistant to common confounders such as scratches, dust, and fingerprints. However, reasonable steps should be taken to avoid unnecessary confounders. The system is more susceptible to these confounders when used at higher magnification. Highly damaged, scratched, or dirty surfaces may cause one or more items to fail. Wearing latex gloves or finger cots is not required, but is recommended.

## Can it be used by component manufacturers to protect their brands and products?

Yes, component manufacturers can implement Covisus technology to provide authorized reference samples to customers. This allows supply chains to track individual components with a high degree of confidence throughout its life-cycle without the addition of markings, codes, tags, or any physical changes to the component at the time of initial data capture.

## I turned on the VTag® Handheld tablet and the login screen did not come on. How do I get the VTag® Handheld software to start?

Under certain, very rare circumstances, the tablet will turn on, and the VTag® Handheld software will not initialize. To get the tablet to start in VTag® Handheld mode, press and hold the power button on the right hand side of the tablet until the screen goes black, (about 8 seconds). Power on the tablet by pressing and holding the power button on the right hand side of the tablet for approximately 5 seconds, until tablet screen turns white.



## CONTACT INFORMATION FOR SUPPORT SERVICES

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