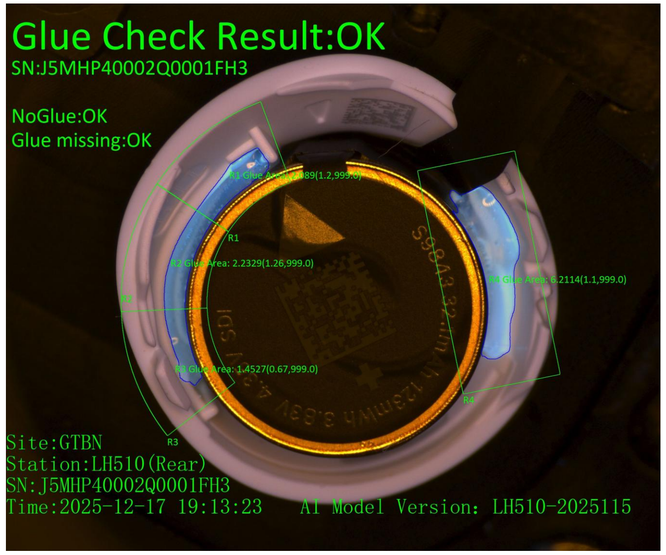
H510 Vision Flow

H510 | Glue path AOI Vision flow change list

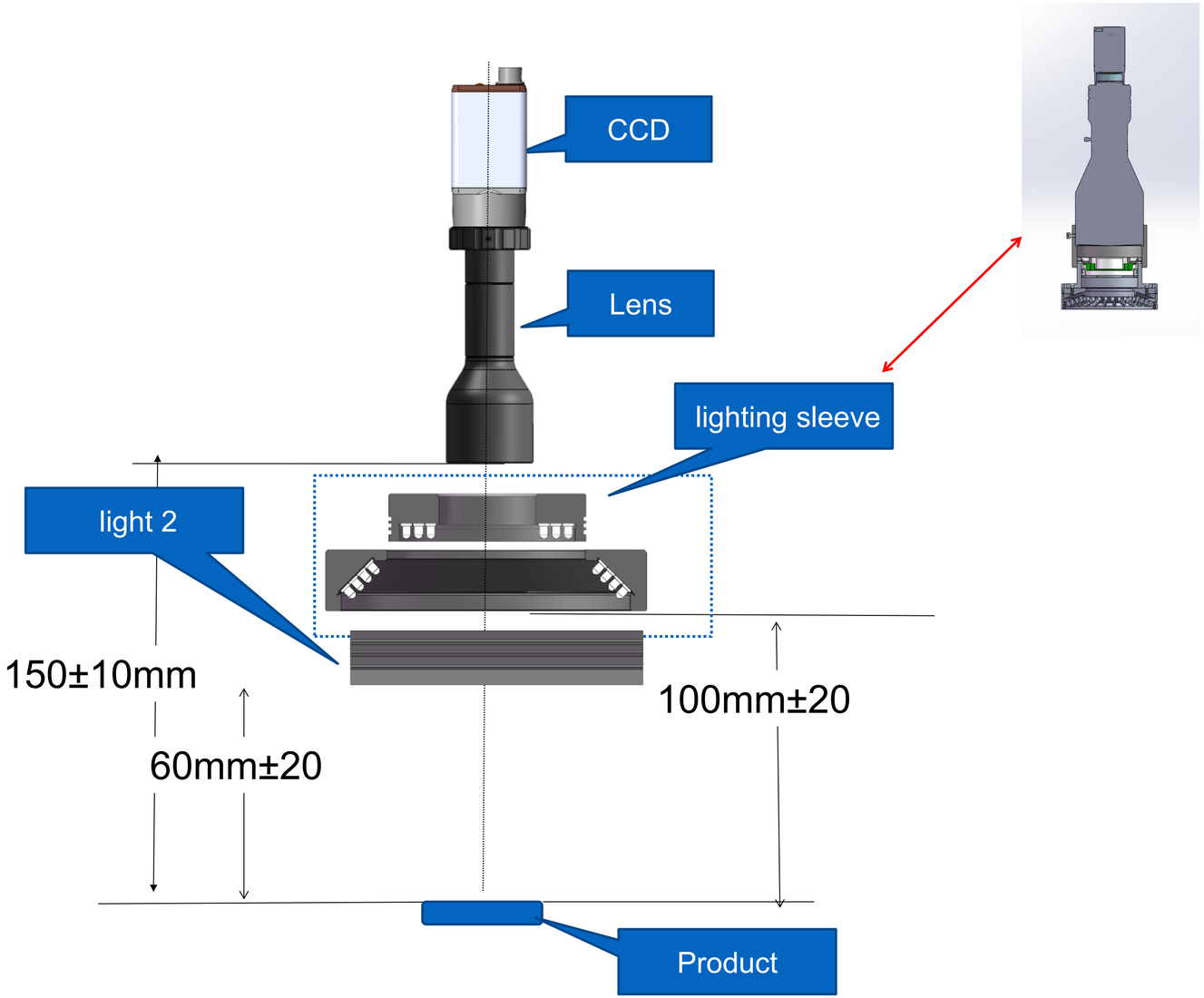
Station ID	Station Description	Vendor	Process Type		MIL
H510		Cowain	Dispense		


OK
Station:LH510
SN:TEST085146
Time:2025-12-14 08:51:55
Channel12
Pos X:400.854 Y:425.201
Angle:0.000(-0.000)
kX:0.000mm,kY:0.000mm
CT:922.177
对位成功
Site:GTBN
X: 400.85 [399.85,402.85]
▲-0.49
Y: 425.20 [423.72,426.72]
▲-0.02
R: 0.00 [-5.00,5.00]
▲0.00


Glue Check Result:OK
SN:J5MHP40002Q0001FH3
NoGlue:OK
Glue missing:OK
R1
R2
R3
Site:GTBN
Station:LH510(Rear)
SN:J5MHP40002Q0001FH3
Time:2025-12-17 19:13:23
AI Model Version：LH510-2025115

Glue Dispense Vision Guidance

The algorithm and work flow to guide the machine to dispense the glue.



Vision System Diagram

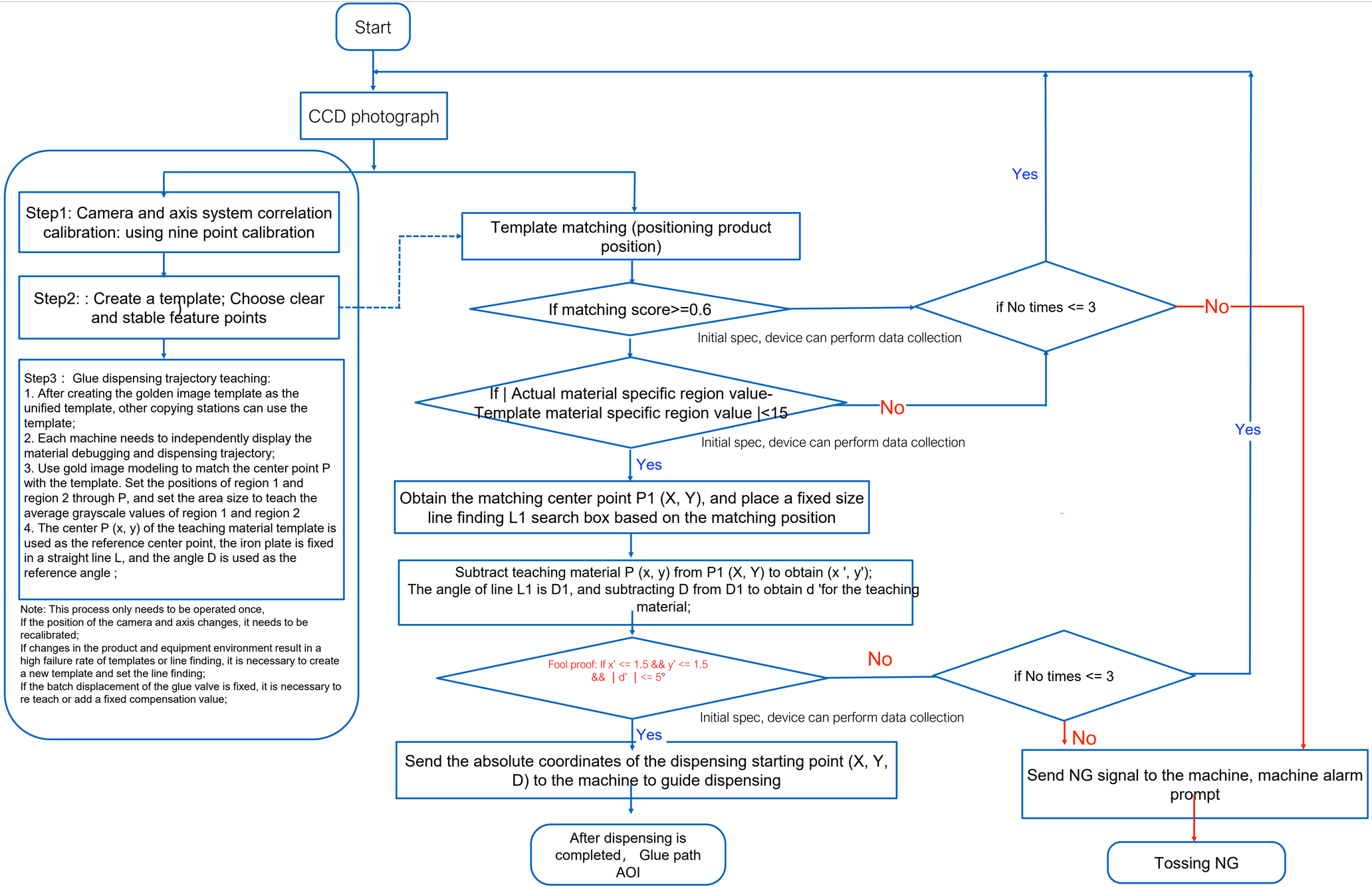
Parameter			
Pixels	FOV	Resolution	DOF
2448*2048	21*17.5mm	0.008mm/pixel	2.5mm

BOM(for Dual_station)				
Item	Type	Description	Brand	Quantity
Camera	LY-H500C	5MP Color camera	Luster	1
Lens	EGXD-RDTD-150-04	Telecentric lens	Luster	1
Sleeve Module	LY-CLS-RS-25-X2-M-D28	Sleeve Module	Luster	1
Light 2	RBM-HBL10228-W	Bar light	Luster	1
License	VW-VA-SW-GLUE10	/	Luster	1

Recheck posture:
Golden image
A=-150° ±0.5°
R=-15° ±0.5°

Detailed parameters of golden image1	
Pixel dimension	0.0086mm
CCD resolution	2448*2048
Lens resolution	500W, 1’
FOV	21*17.5mm
DOF	2.6mm
Lightning Brightness	200
Exposure time	80ms

Audio | H510 Vision Flow | Glue path – Workflow



Pose 1 Vision Workflow

Step	Description	Page	Remark
1	Creating coarse finder templates Pose1	9	
2	Pattern Matching in Pose1	10	
3	Finding lines	11	
4	Create dynamic dispense glue path	15	
6	Glue path AOI Product Glue Path Edge	19	
7	Glue path AOI Glue Area Region	20	

Select Golden image

↓

Select clear and stable features and draw ‘contour feature area’ according to set fixed parameters

↓

Set up the parameters for modeling (see training parameters attached)

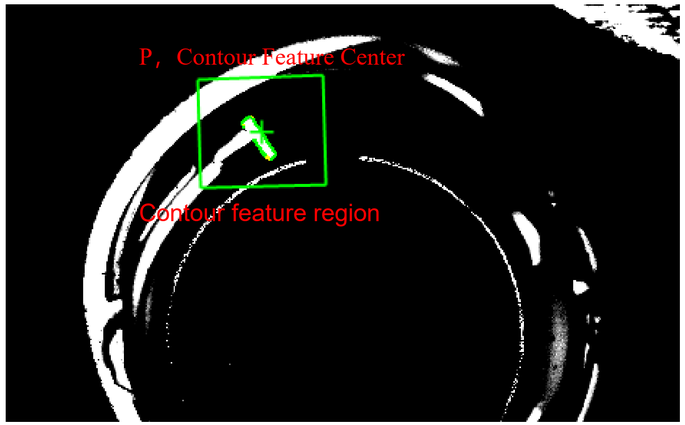
↓

Masking out other unstable and unwanted features in the ‘contour feature area’

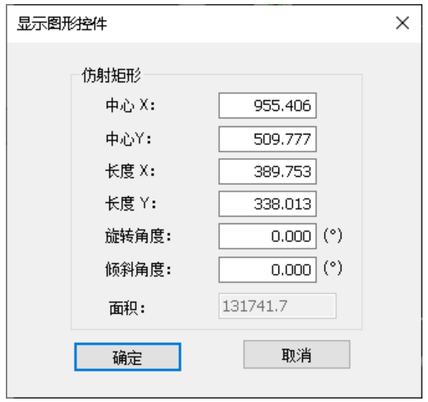
↓

Click on the template training to get the template

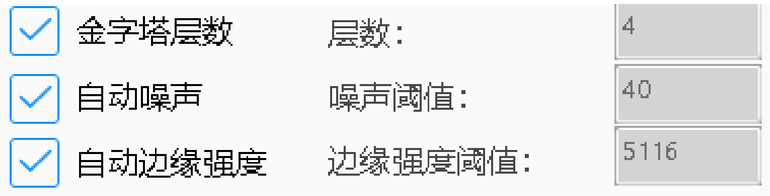
Modeling Process



Template



Contour feature area parameter



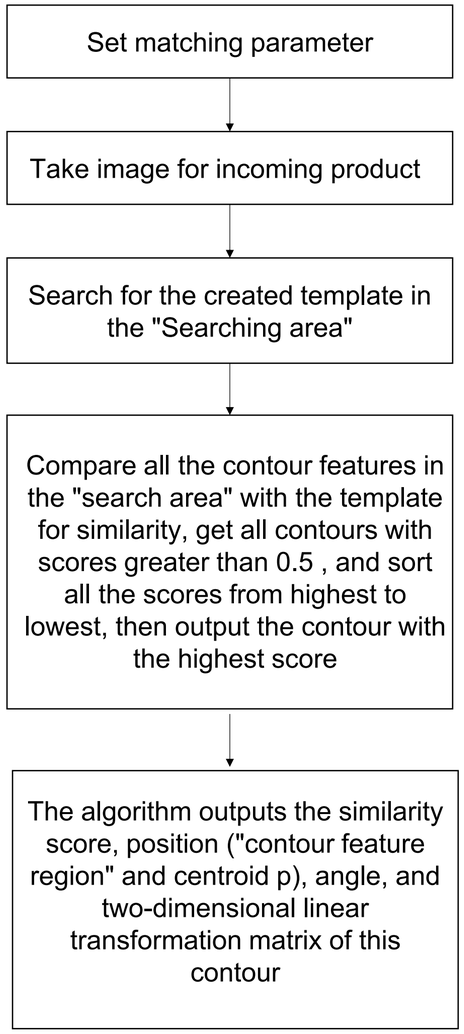
Training parameters

Modeling feature requirements:
1. Stable and clear outline edge, no dirty
2. Do not have multi-layer, complex contours
3. Search area, do not have a close shape of the edge of the contour

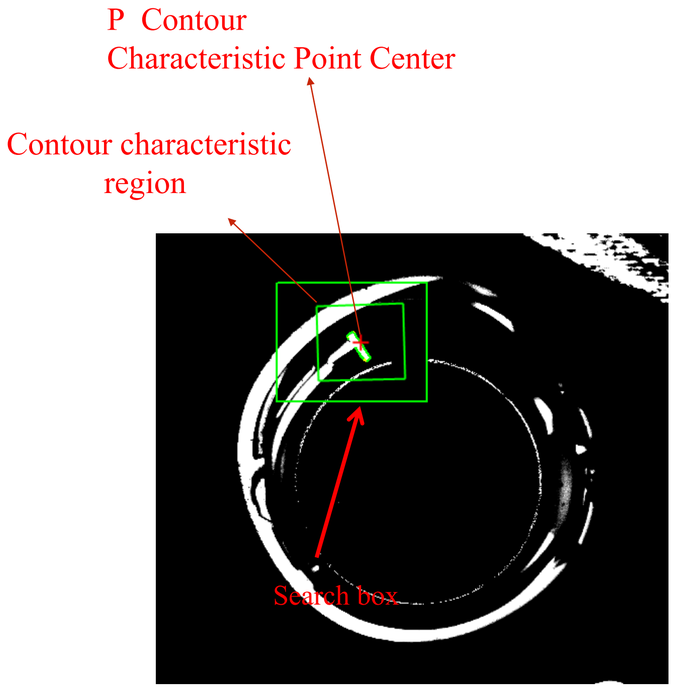
When modeling, make good use of the masking function to mask out the unwanted edge contour features. Leaving only stable and clear contour features

After the modeling is completed, need offline test with all the previous material images to confirm the compatibility of this template for all incoming materials.

Subsequent parameter changes need to be synchronized and updated to all other machines in this station.



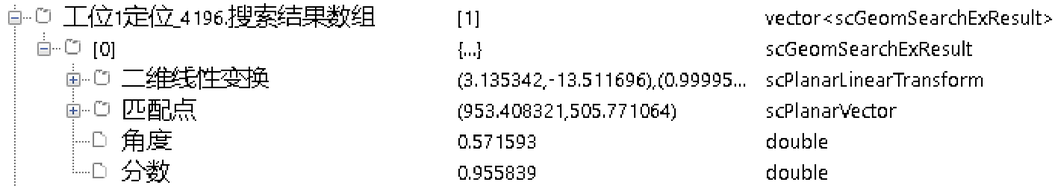
Matching process



Actual Materials

ParameterList	
接受阈值	0.600000
对比度阈值	10.000000
重叠比例阈值	0.800000
贪婪度	0.900000
搜索个数	1
是否开启全图	否
搜索区域	619.753109,
是否外部输入	否
搜索模式	快速
开启支持边界	否
任意极性	否
自动金字塔搜	否
搜索最低金字	1
搜索最高金字	3
搜索最低角度	-7.000000
搜索最高角度	7.000000
搜索最低缩放	0.980000
搜索最高缩放	1.020000

Matching parameter



Matching result

Take image for incoming product

↓

Get the "template matching" result P as the reference coordinate system

↓

Place the line finding caliper tool at a fixed position according to the reference coordinate system

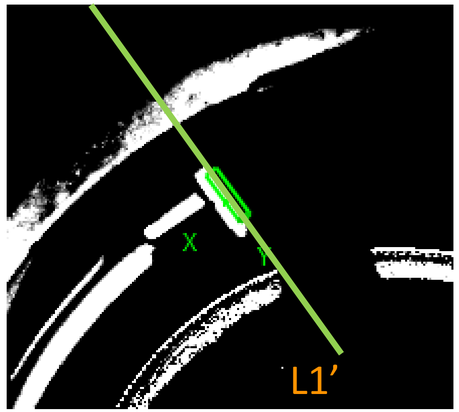
↓

Set the line finding ruler parameters

↓

Find the correct line

Line finding process

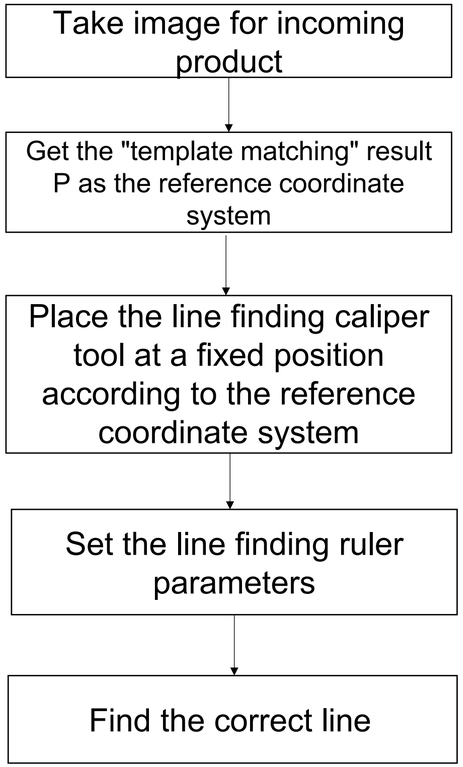


Detailed parameters of L1'

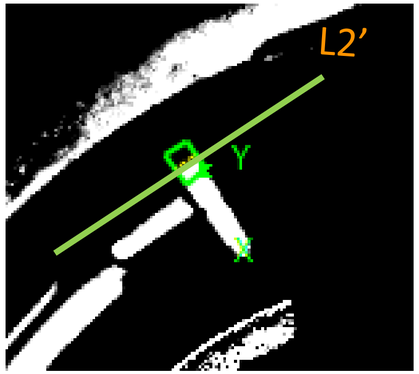
L1 Caliper parameters

Search direction: Up to down, light to dark
Capture features:
1. The contour edges are stable and clear, without any dirt or stains
2. Do not have multiple layers or complex contours
3. Within the search area, there should be no edge contours with similar shapes

Note: If the parameters are modified in the future, all other machines in this station need to be updated



Line finding process

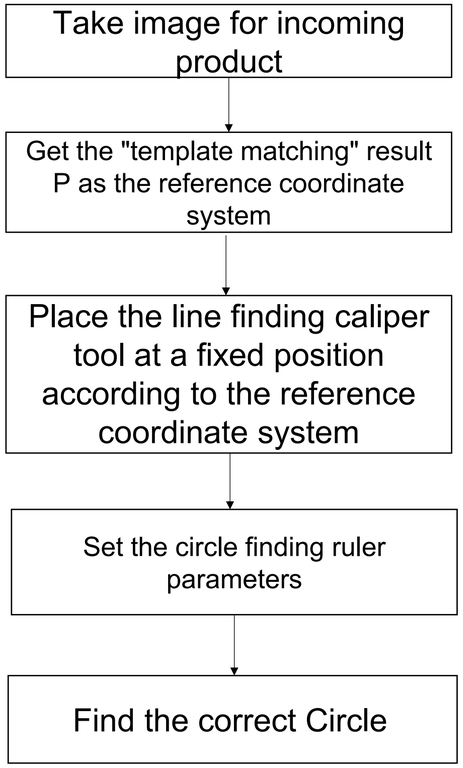


Detailed parameters of L2'

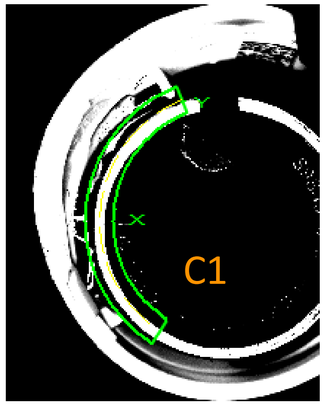
L2 Caliper parameters

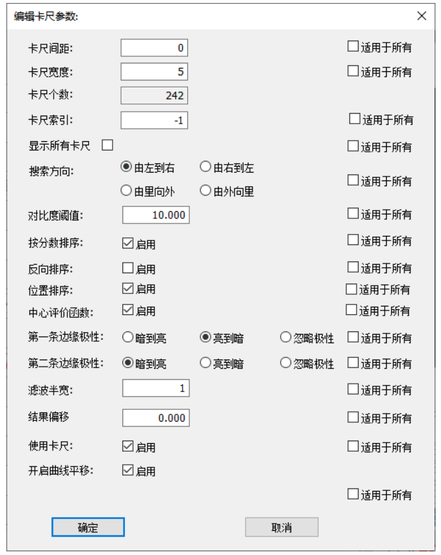
Search direction: down to up, light to dark
Capture features:
1. The contour edges are stable and clear, without any dirt or stains
2. Do not have multiple layers or complex contours
3. Within the search area, there should be no edge contours with similar shapes

Note: If the parameters are modified in the future, all other machines in this station need to be updated



Line finding process





Detailed parameters of C1

Search direction: bottom to top, light to dark

Capture features:
1. The contour edges are stable and clear, without any dirt or stains
2. Do not have multiple layers or complex contours
3. Within the search area, there should be no edge contours with similar shapes

Note: If the parameters are modified in the future, all other machines in this station need to be updated

Take image for incoming product

↓

Get the "template matching" result P as the reference coordinate system

↓

Place the line finding caliper tool at a fixed position according to the reference coordinate system

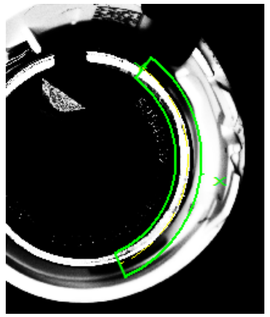
↓

Set the circle finding ruler parameters

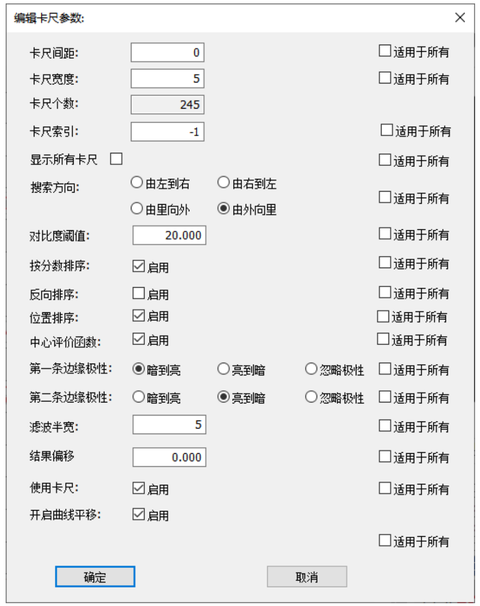
↓

Find the correct Circle

Line finding process



C2



Detailed parameters of C2

Search direction: bottom to top, light to dark

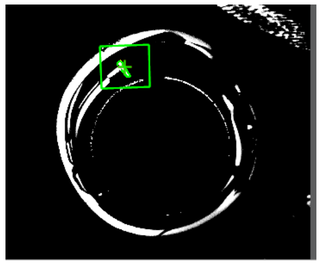
Capture features:

1. The contour edges are stable and clear, without any dirt or stains
2. Do not have multiple layers or complex contours
3. Within the search area, there should be no edge contours with similar shapes

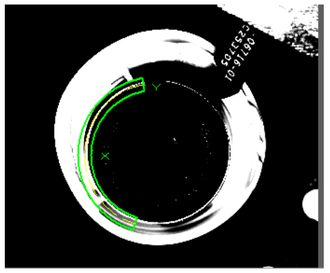
Note: If the parameters are modified in the future, all other machines in this station need to be updated

1. Get the image

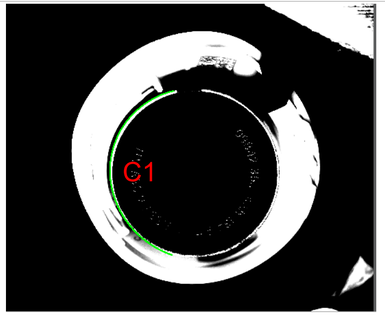
2. Transfer the color image to black and white



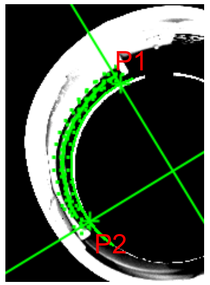
3. Do the pattern matching according the black and white image



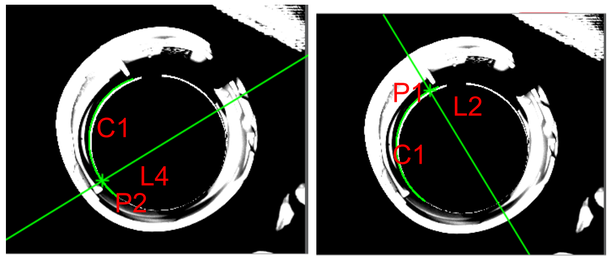
4. Set the edge capture caliper based on the patten position



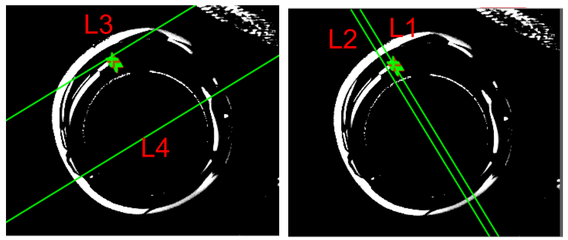
5. Generate the curve C1 based on the caliper



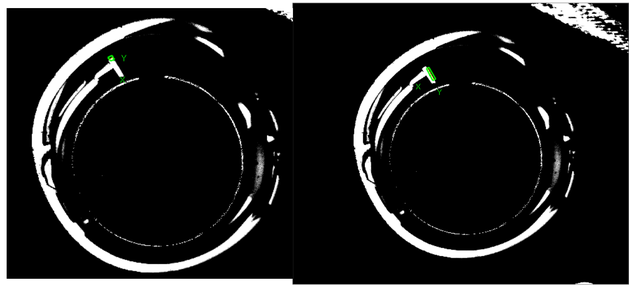
9. From P1 and P2 in C1, average generate 15 points.



8. P1 is the intersection between L2 and C1, P2 is the itersection between L4 and C1



7. Generate the line L1 based on the caliper, L1 shift left 70 pixel and get the line L2. Generate the line L3 based on caliper, L3 shift 770 pixel and get the line L4

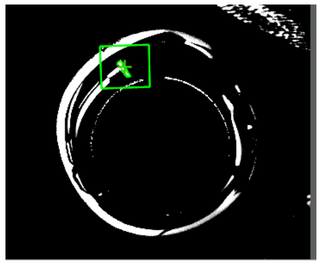


6. Set the edge line caputer caliper based on the patten

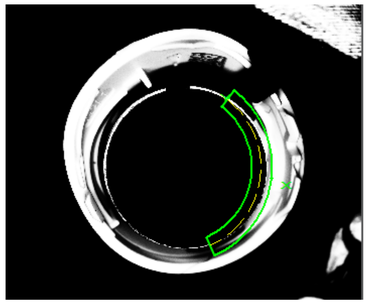
1. Get the image
2. Transfer the color image to black and white
3. Do the pattern matching according the black and white image
4. Set the edge capture caliper based on the patten position
5. Generate the curve C1 based on the caliper
6. Set the edge line caputer caliper based on the patten
7. Generate the line L1 based on the caliper, L1 shift left 70 pixel and get the line L2. Generate the line L3 based on caliper, L3 shift 770 pixel and get the line L4
8. P1 is the intersection between L2 and C1, P2 is the itersection between L4 and C1
9. From P1 and P2 in C1, average generate 15 points.

1. Get the image

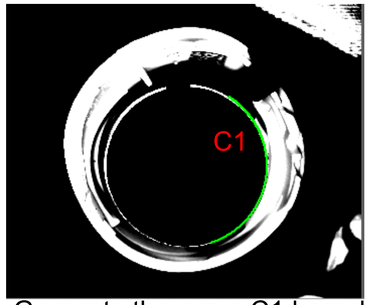
2. Transfer the color image to black and white



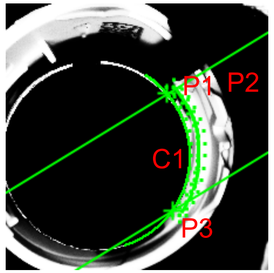
3. Do the pattern matching according the black and white image



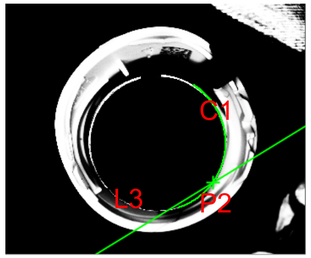
4. Set the edge capture caliper based on the patten position

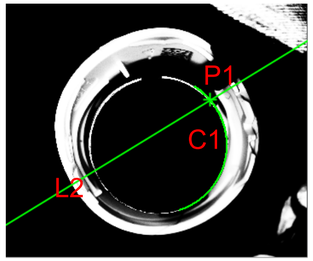


5. Generate the curve C1 based on the caliper

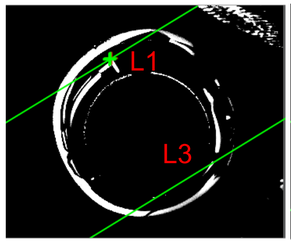


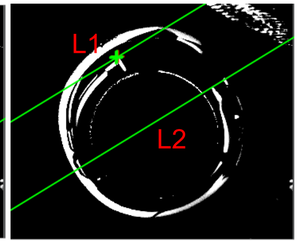
9. From P2 and P3 in C1, average generate 12 points.



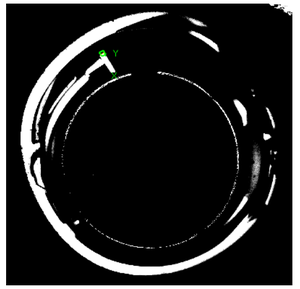


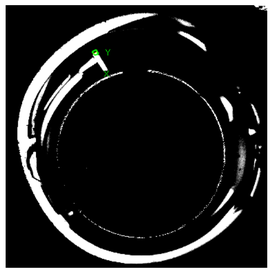
8. P1 is the intersection between L2 and C1. P2 is the intersection between L3 and C1





7. Generate the line L1 based on the caliper, L1 shift left 650 pixel and get the line L2. L1 shift left 1255 pixels and get the line L3





6. Set the edge line caputer caliper based on the patten

1. Get the image
2. Transfer the color image to black and white
3. Do the pattern matching according the black and white image
4. Set the edge capture caliper based on the patten position
5. Generate the curve C1 based on the caliper
6. Set the edge line caputer caliper based on the patten
7. Generate the line L1 based on the caliper, L1 shift left 650 pixel and get the line L2. L1 shift left 870 pixels and get the line L3
8. P1 is the intersection between L2 and C1. P2 is the intersection between L3 and C1
9. P1和P2是同一个点，From P2 and P3 in C1, average generate 12 points.

Glue Path AOI MSOP

The algorithm, inspection definition and spec of the glue path AOI.

H510 | Glue path AOI Product Glue Path Edge

No Glue

The areas of the glue > 0mm²

Glue Coverage-Shift

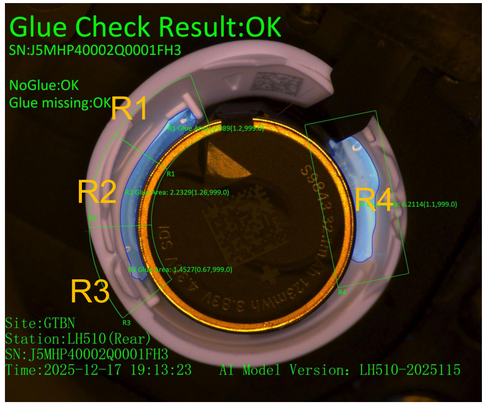
Glue Missing

Glue Broken

The gap of glue breakage ≤ 0 mm

Pre-dispense image

Post-dispense image



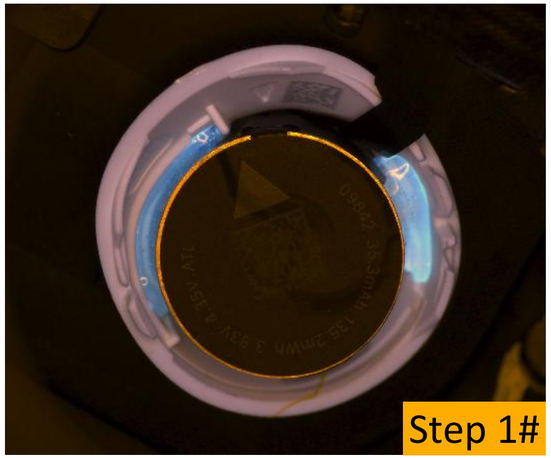
Legend:

- Glue Path Edge
- Glue Coverage Line
- Glue Area Region
- Keep out zone

Pix accuracy:0.0086mm/pix

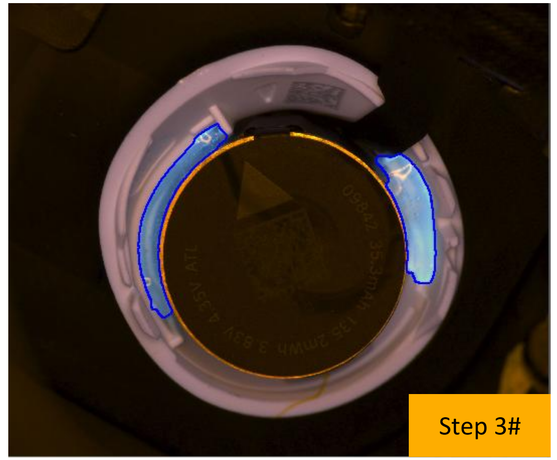
Region	No Glue	Glue Coverage-Shift	Glue Missing-Area	Glue Broken
R1	Glue area > 0mm²	\	Glue area > 1.33mm²	\
R2	Glue area > 0mm²		Glue area > 1.35mm²	\
R3	Glue area > 0mm²		Glue area > 0.86mm²	\
R4	Glue area > 0mm²	\	Glue area > 3.52mm²	\

Audio | Glue path AOI Product Glue Path Edge



Source image (post-dispense)

extract glue color



extract result

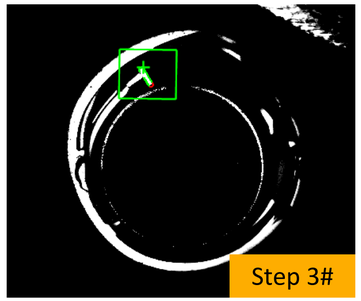
missing
Step 2#

The purpose of this process is used to extract the Glue path
Step 1# Capture pose1 source image
Step 2# Extract the color of glue path
Step 3# Inspect the glue path

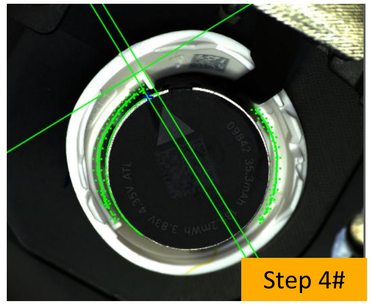
Audio | Glue path AOI Glue Area Region

RGB to gray

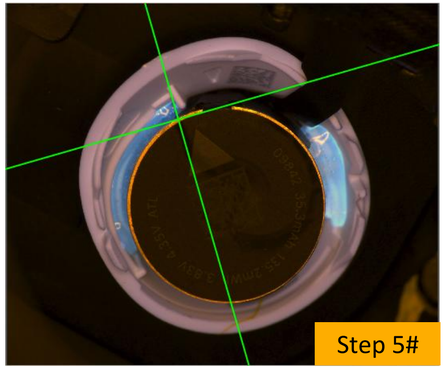
pattern match

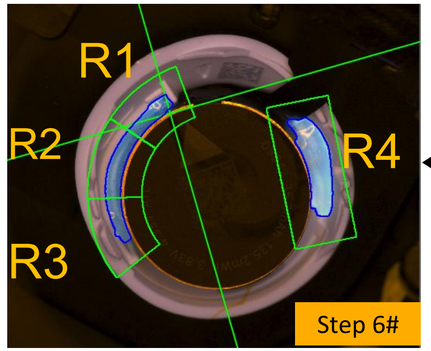


find line/circle



Create
coordinate system





R1
R2
R3

Index	CenterX	CenterY	StartAngle	Angle	R	Width	Length
1	1.500	4.744	265.612	-36.000	4.165	2.788	3.493
2	1.500	4.744	229.612	-36.000	4.165	2.788	3.493
3	1.500	4.744	193.612	-36.000	4.165	2.788	3.493

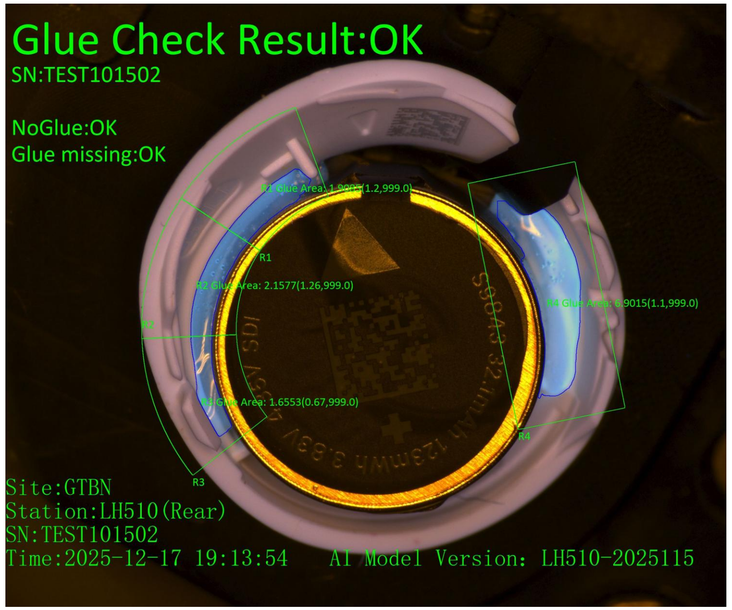
R4

Index	CenterX	CenterY	StartAngle	Angle	R	Width	Length
1	8.028	1.396	--	94.447	--	3.206	7.389

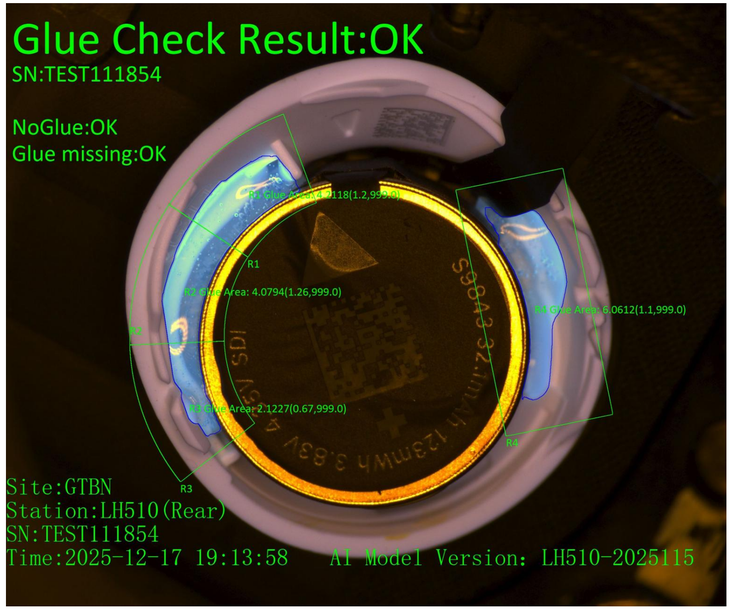
The purpose of this process is used to find the position for dispense and region for coverage inspection:
Step 1# Capture pos1 source image
Step 2# RGB image to gray image
Step 3# Pattern match to get the place of the product
Step 4# Grab the product characteristics of line/circle to obtain L2&C1, P2 is intersection point of L2&C1
Step 5# Establish a product coordinate system by using P2 and L3
Step 6# Place the glue inspection region according to product coordinate system

Audio | Glue path AOI Glue Coverage Region

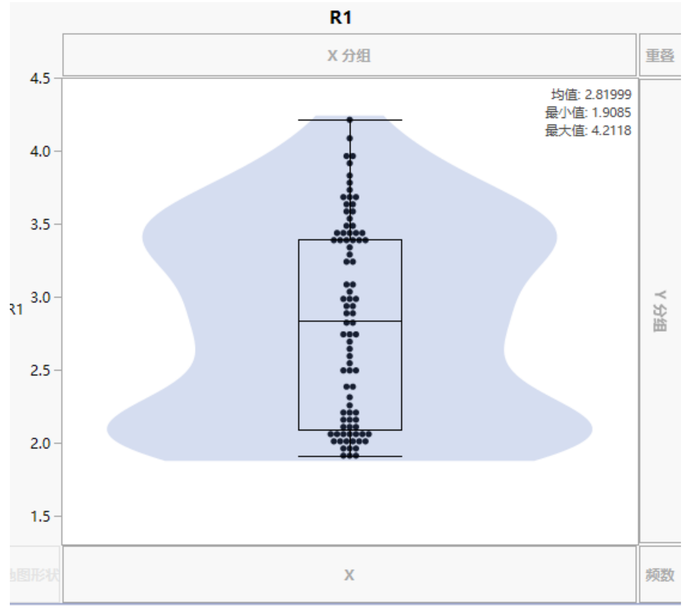
Pose1_Missing_R1 MIN: 1.9085



Pose1_Missing_R1 MAX:4.218



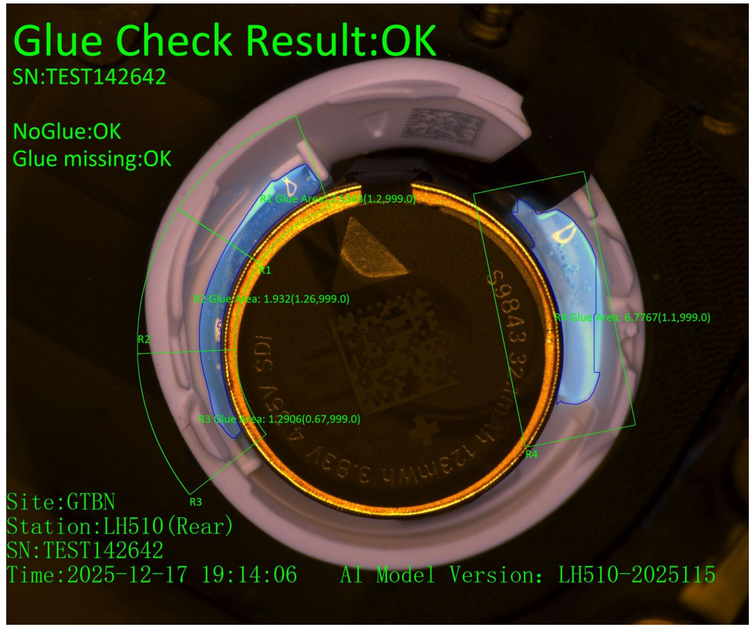
Pose1_Missing_R1 Data



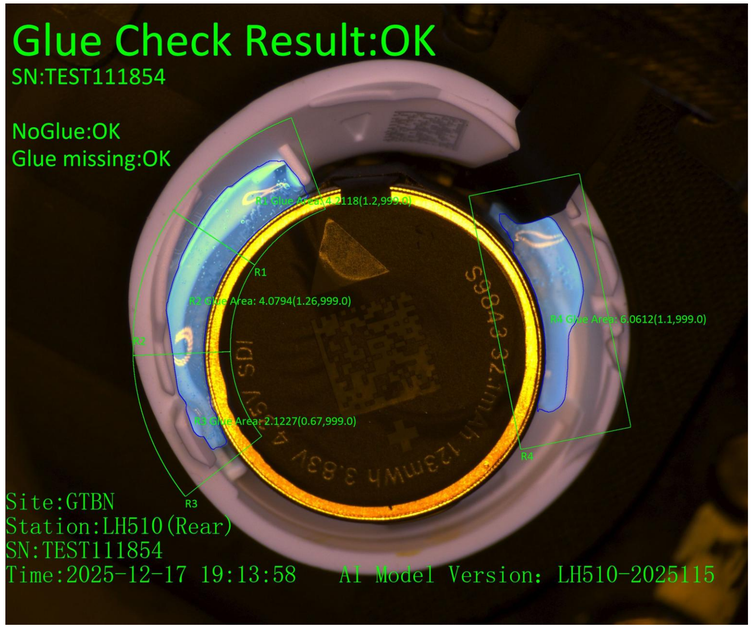
R1 Missing spec= Pose1_Missing_R1 MIN*0.7=1.9085*0.7=1.33

Audio | Glue path AOI Glue Coverage Region

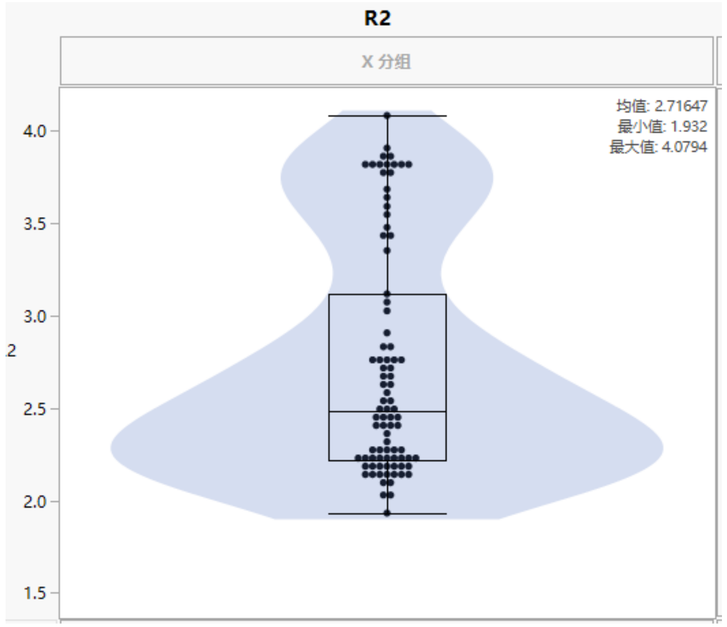
Pose1_Missing_R2 MIN: 1.932



Pose1_Missing_R2 MAX: 4.07



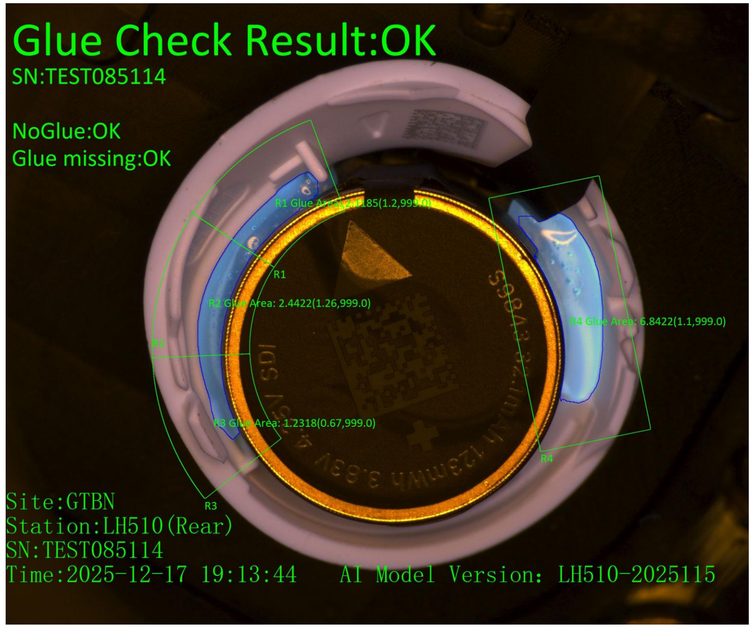
Pose1_Missing_R2 Data



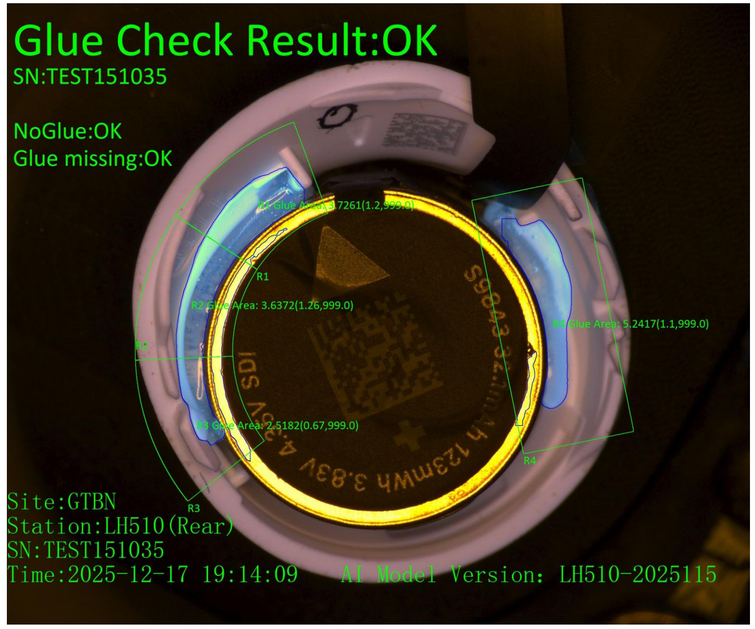
R2 Missing spec= Pose1_Missing_R2 MIN*0.7=1.932*0.7=1.35

Audio | Glue path AOI Glue Coverage Region

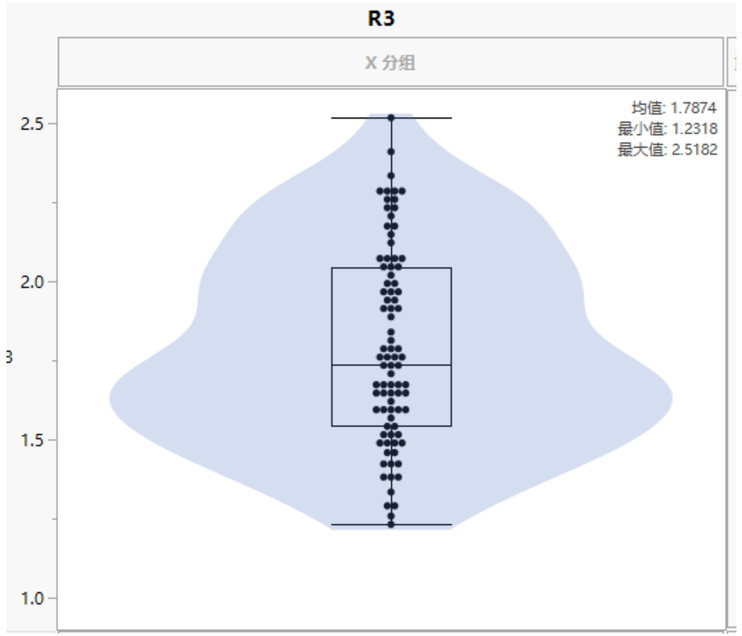
Pose1_Missing_R3 MIN: 1.2318



Pose1_Missing_R3 MAX: 2.5182



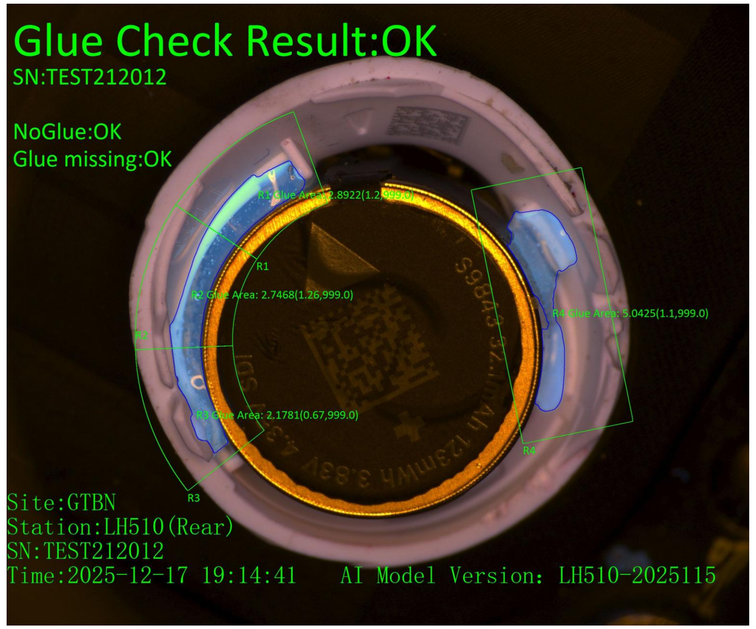
Pose1_Missing_R3 Data



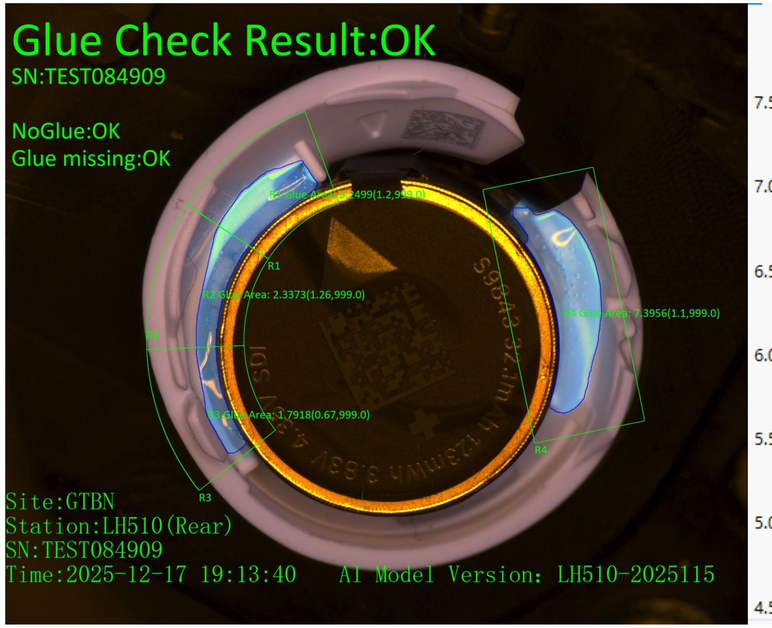
R3 Missing spec= Pose1_Missing_R3 MIN*0.7=1.2318*0.7=0.86

Audio | Glue path AOI Glue Coverage Region

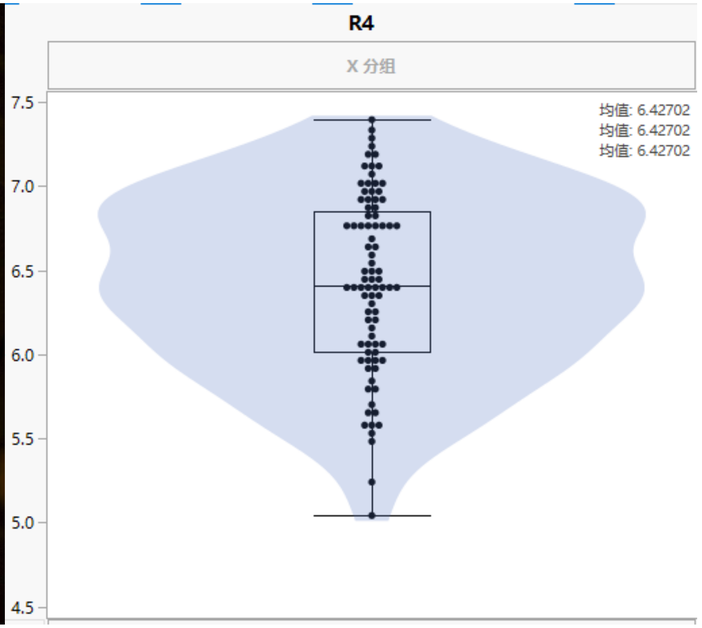
Pose1_Missing_R4 MIN: 5.0425



Pose1_Missing_R4 MAX: 7.3956



Pose1_Missing_R4 Data



R4 Missing spec= Pose1_Missing_R4 MIN*0.7=5.0425*0.7=3.52