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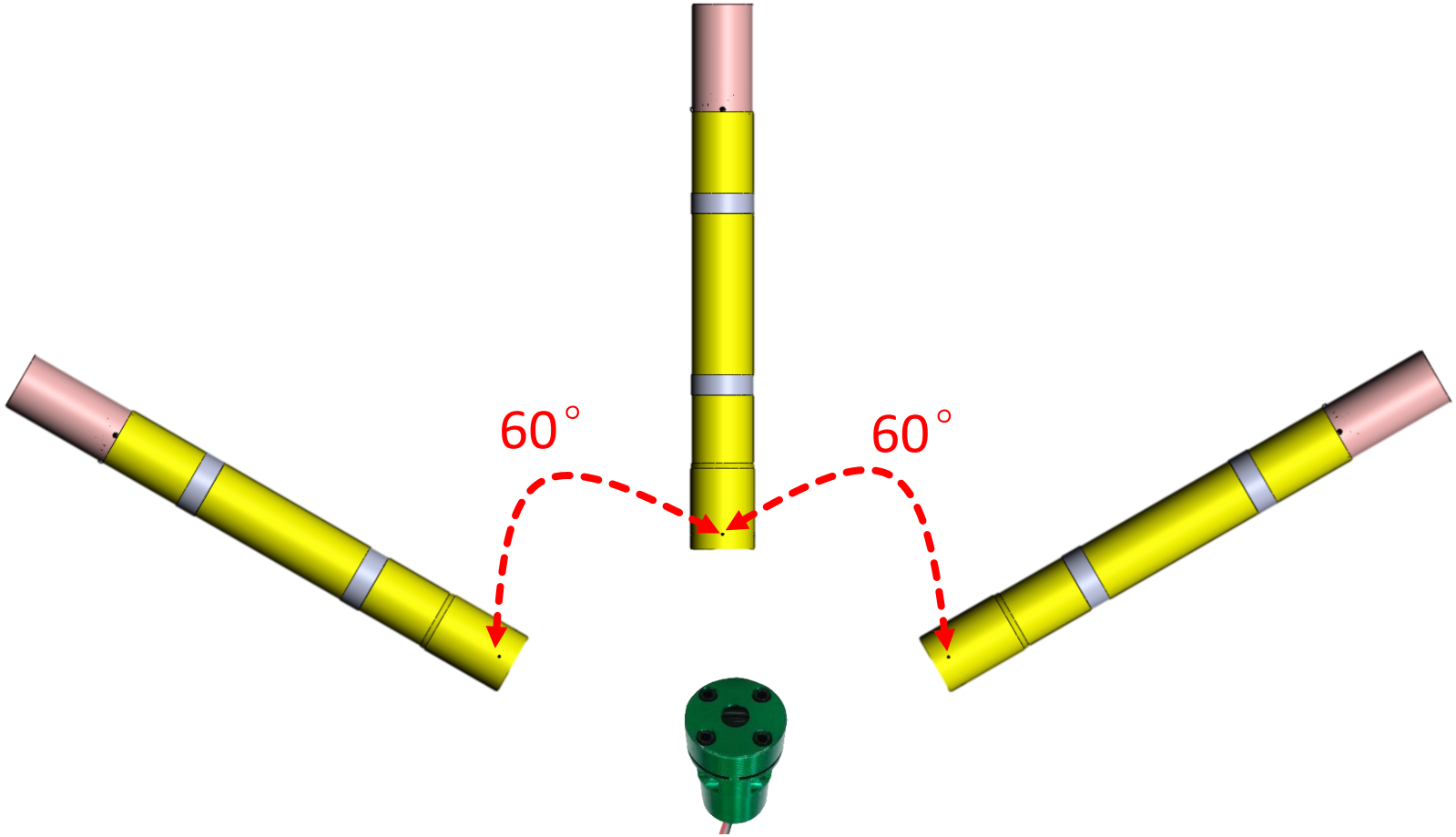
3x Digital Collimators to Align The straightness of Line Laser Module



Product Introduction

Purpose,

Adjusting or inspecting the straightness of laser line to make sure the precision of Line Laser Module before integrated to final product such as Laser level.

Theorem,

When Line Laser Module is projecting the Laser Line in 3 different degree （－60°，0°，＋60°）but same distance, the 3 base point will be on the same line.

EX, Not Straight

（The 3 base point is unable to be alignment）

EX, Straight

（The 3 base point is able to be alignment）

Product Features - 1

C T T N Product	Item	Others business Product
Using 3 of 550mm focal length digital collimator with high distinct camera.	Equipment	3 camera with scale target paper or 3 of focal length digital collimator with normal camera.
High speed for adjustment. The Line Laser is unnecessary in the same spot, it only need to be watched in the monitor.	Line Laser Adjustment	Low speed for adjustment. The Line Laser must be changed to the same spot.
Automatic calculation of Laser curvature. Digital display without visual inspection, no visual error.	Curvature Analysis	Visual inspection of personnel will definitely cause visual errors.
Software shows the instructions for curvature adjustment. The experienced skilled personnel is unnecessary.	Curvature Adjustment	The experienced skilled personnel is necessary.
4 times faster than normal product because no need to adjust the Line Laser in the horizontal position at first step.	Curvature Detection	Its slow because the Line Laser must be adjusted in the horizontal position at first step.

Product Features - 2

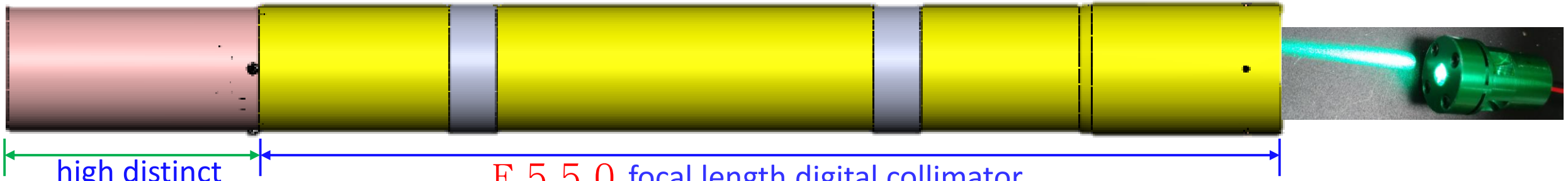
C T T N Product	Item	Others business Product
5 times better precision.	Precision	Normal precision.
Don't need Theodolite and Level. Doing software calibration only for 1 min.	Target Calibration	Need Theodolite and Level. Taking long time to do calibration.
90% less space than traditional 5m target station.	Using Space	5 meters actual distance or use a collimator to short the distance and reduce the space used by 80%.
Using digital scale reticle to make the image more bigger and clear.	Scale Reticle	Using fixed scale reticle. If the picture becomes bigger, the image is not clear.
Unique Laser Alignment software. Including multiple application software.	Application Function	N/A

Product Application

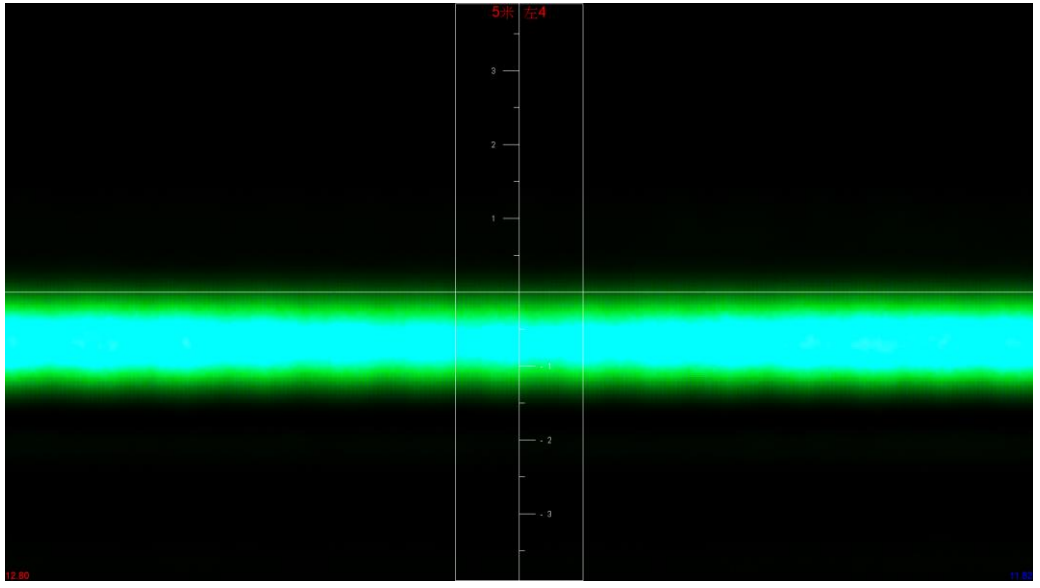
- To practice Laser curvature adjustment only need 30secs
- Doing Laser curvature calibration only need few second, it’s easy to operate and save the work time
- Calibrate Line Laser module samples in 1 minute and keep them staying good in all time
- Display the brightness value and width value of the laser to determine the laser beam quality
- Computer storage data, providing research and production analysis
- Setting different acceptable quality level for each Line Laser Module or customer request

3 of 550mm focal length digital collimator with high distinct camera.

Using 3 of 550mm focal length digital collimator with high distinct camera to make the Laser Line more brightness and clear.



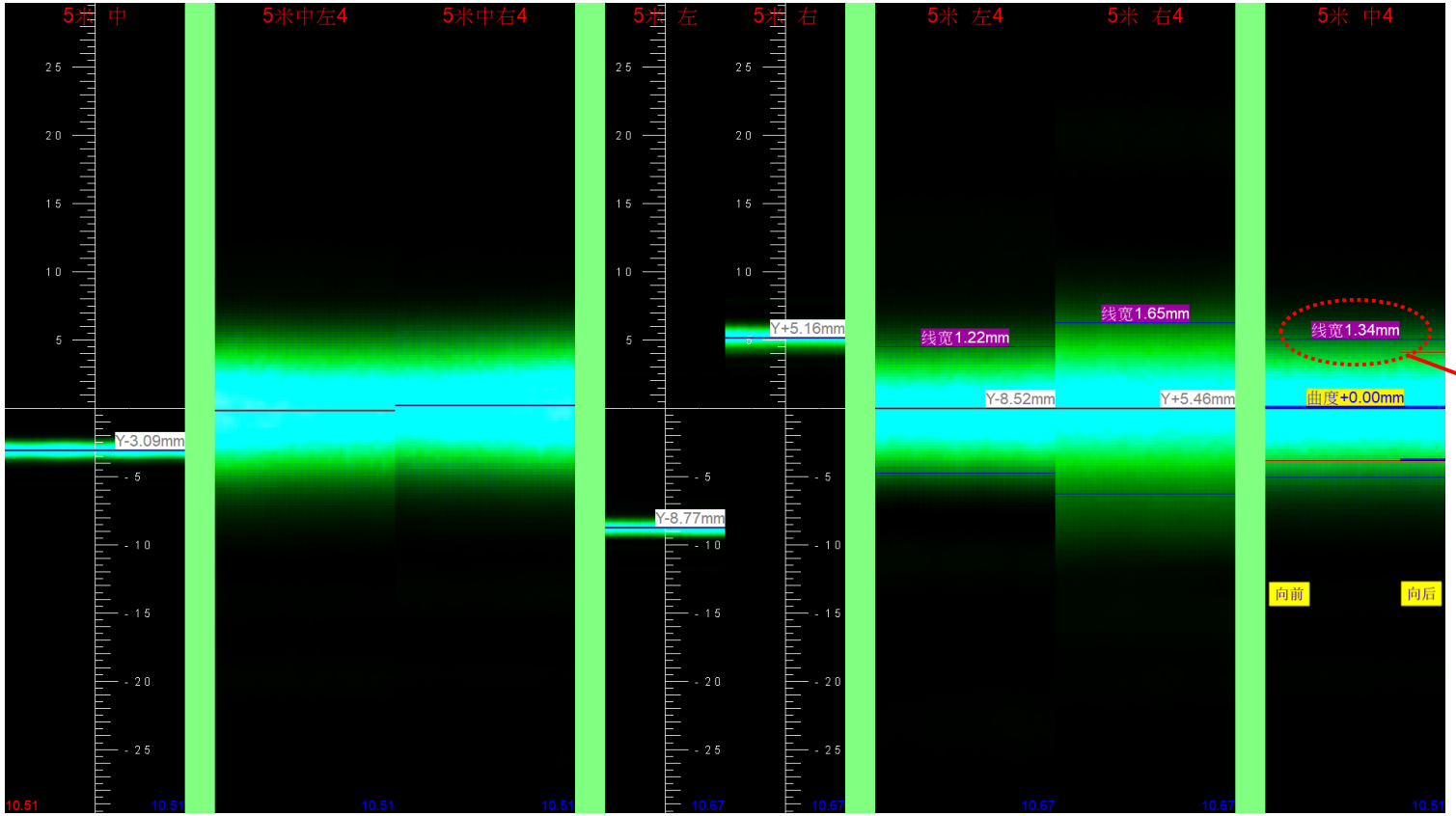
while the Laser Line go into digital collimator



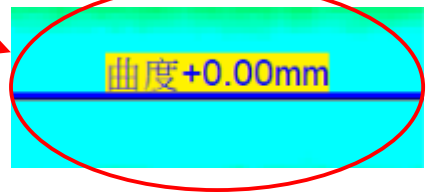
Line Laser Module inspection and calibration

Automatic calculation of Laser curvature. The curvature will be showed by number.

Digital display without visual inspection, no visual error.



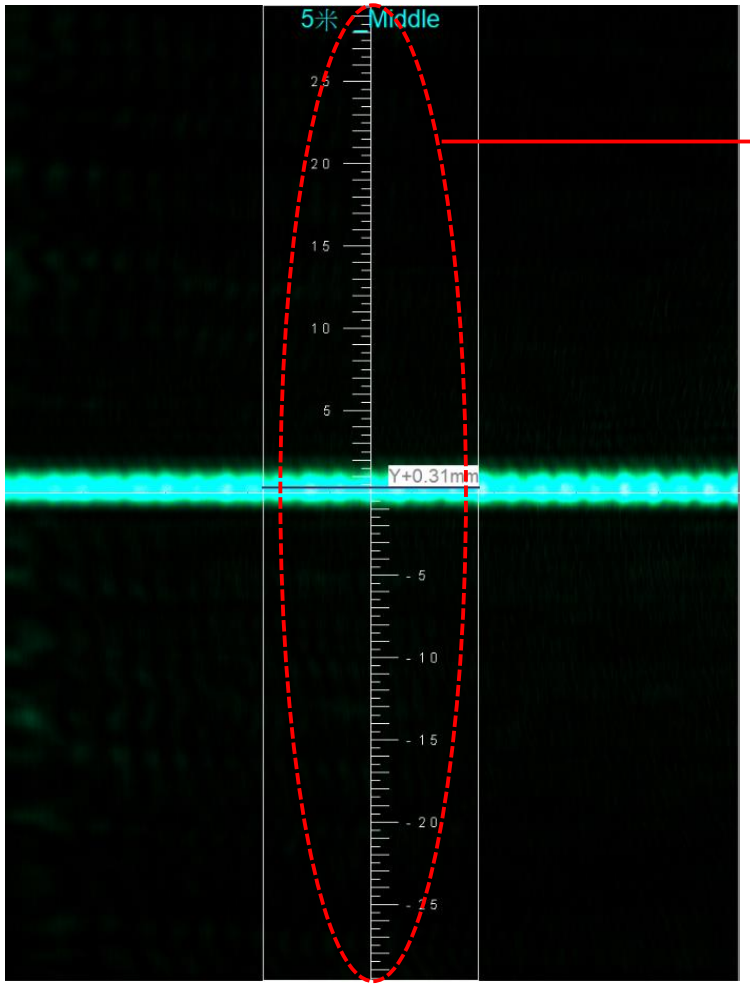
Example for Laser curvature



Using digital scale reticle to make the image bigger and clear

Withdraw traditional scale reticle, using digital scale reticle to make the image bigger and clear

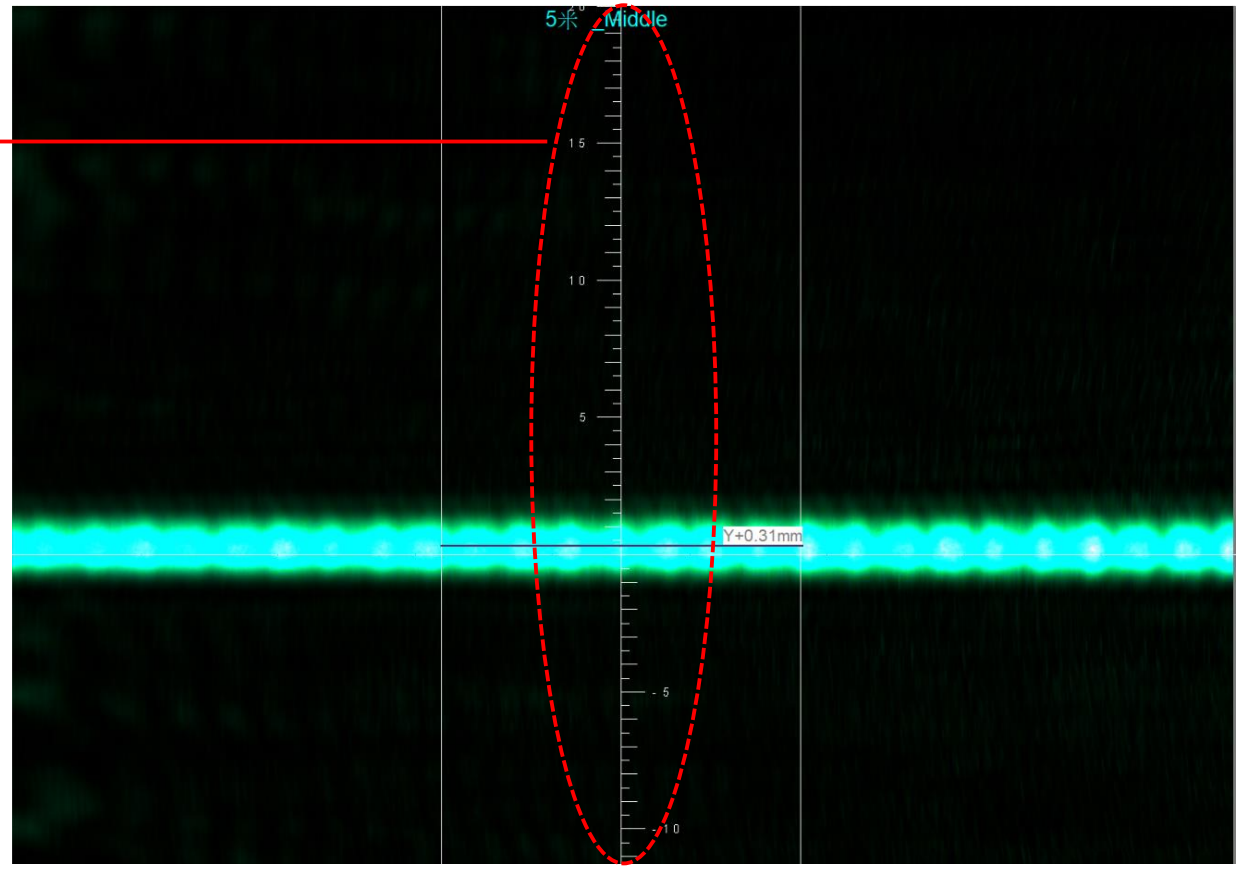
original image



digital scale reticle

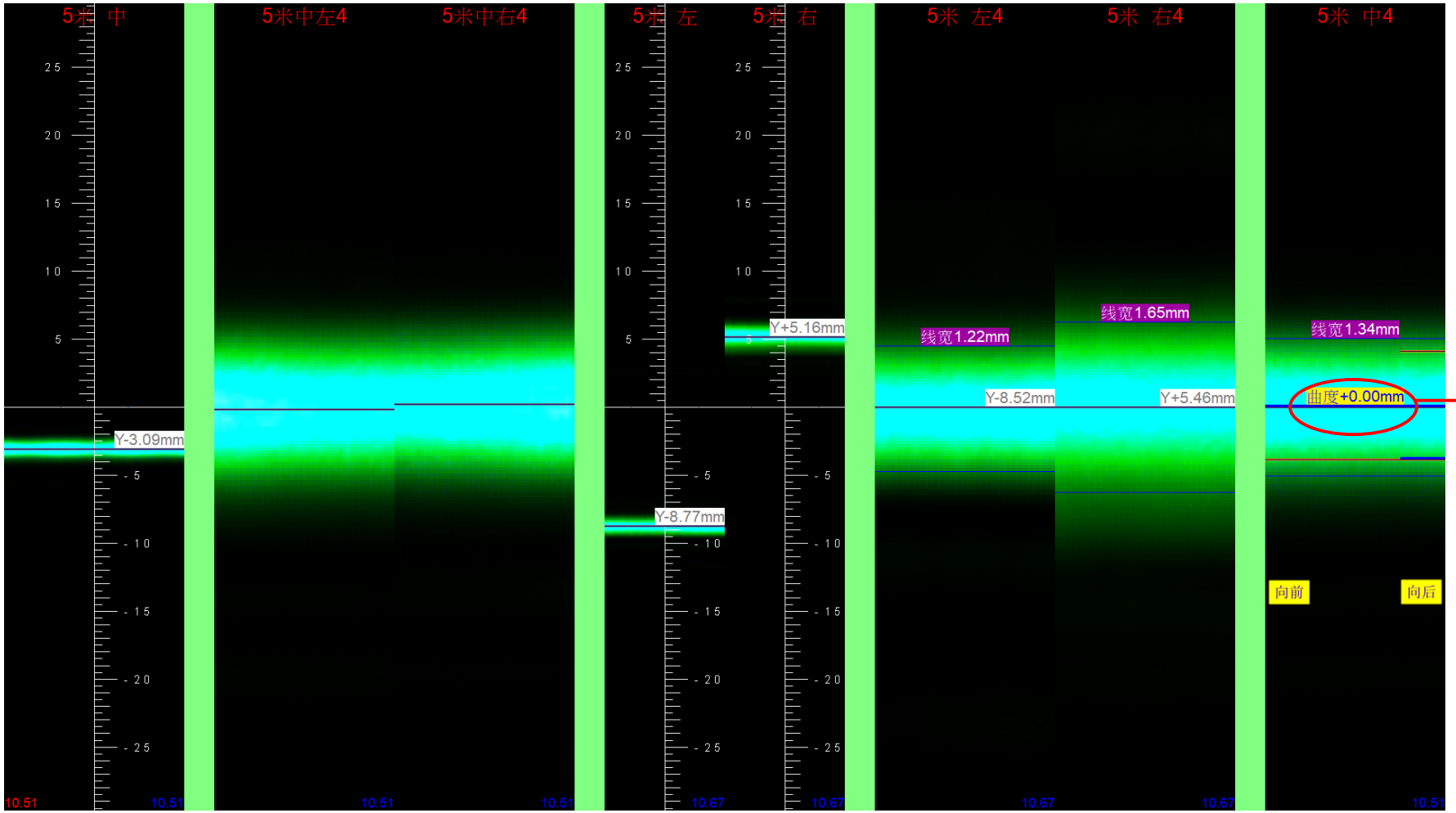
to enlarge

digital scale reticle, the image more big and clear



Precision raise up 5 times

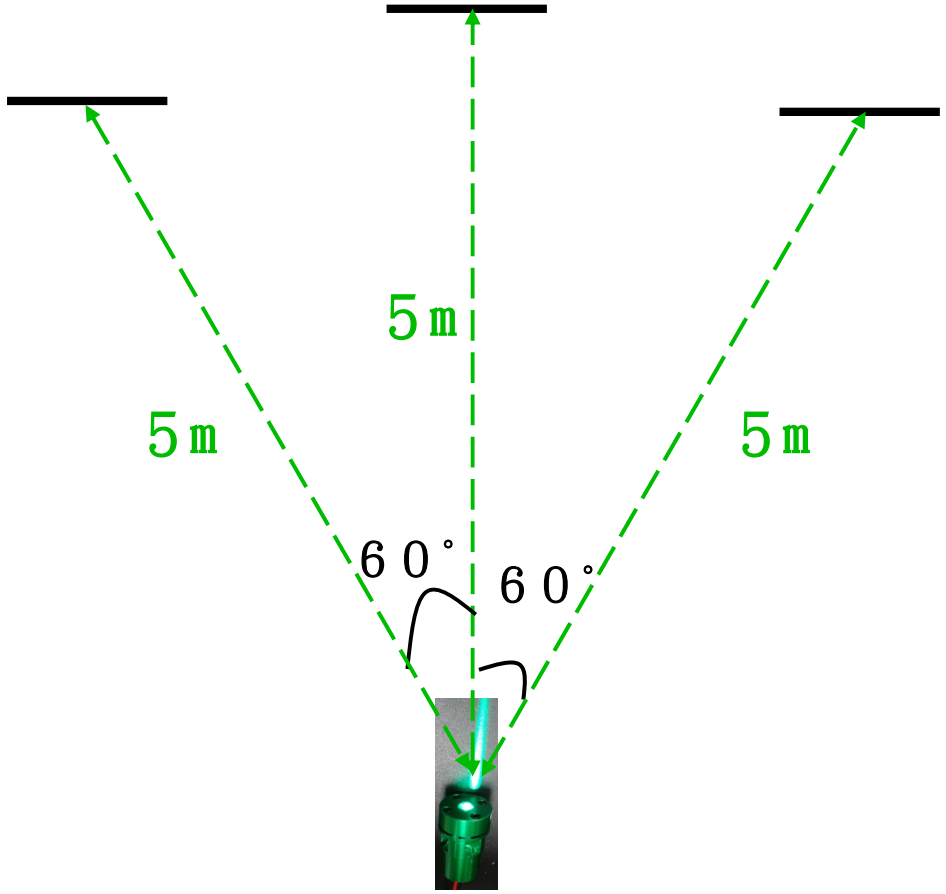
Digital scale reticle provide high precision, effectively improve the quality of the product.



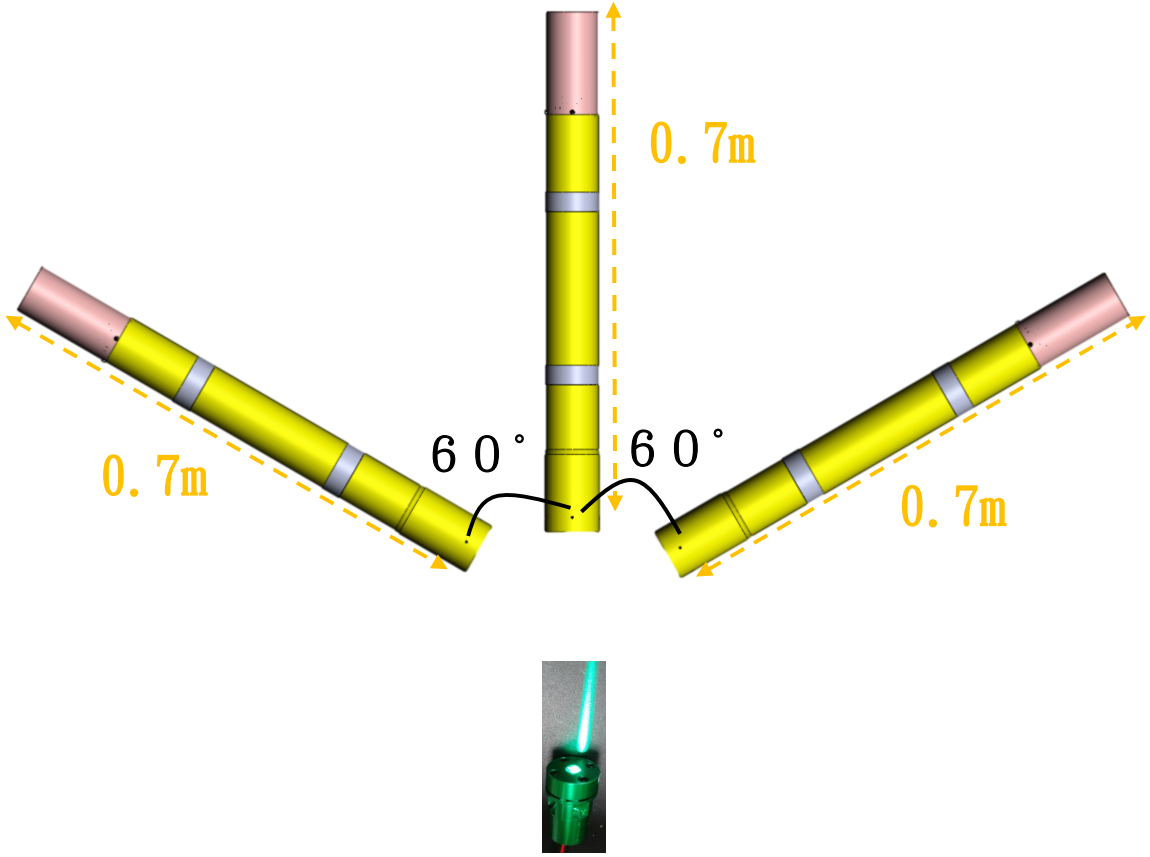
90% less space than traditional 5m target station

The space is reduced 90% by using digital collimator.

traditional 5m target station



Digital collimator target station can reduce 90% space using



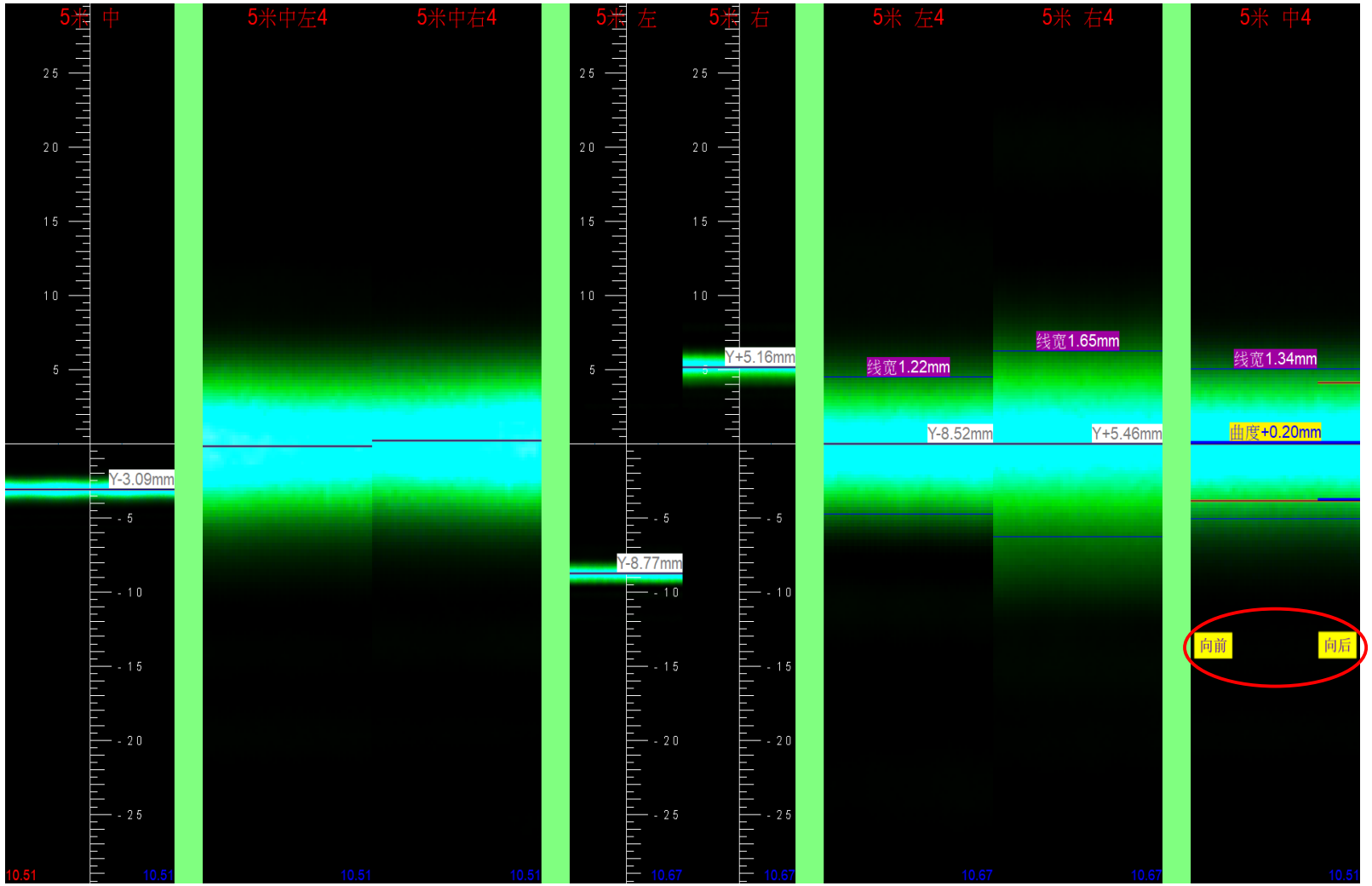
Unique Laser Alignment software Including multiple application software

The Laser Alignment software

- Software shows the instructions for Line Laser curvature adjustment
- High speed for Line Laser curvature inspection
- Using software to calibrate Line Laser Module
- Showing Line Laser Module brightness and width
- Computer storage data
- Setting different acceptable quality level for each Line Laser Module or customer request
- Others multiple function

Unique Laser Alignment software - 1

1. Software shows the instructions for Line Laser curvature adjustment

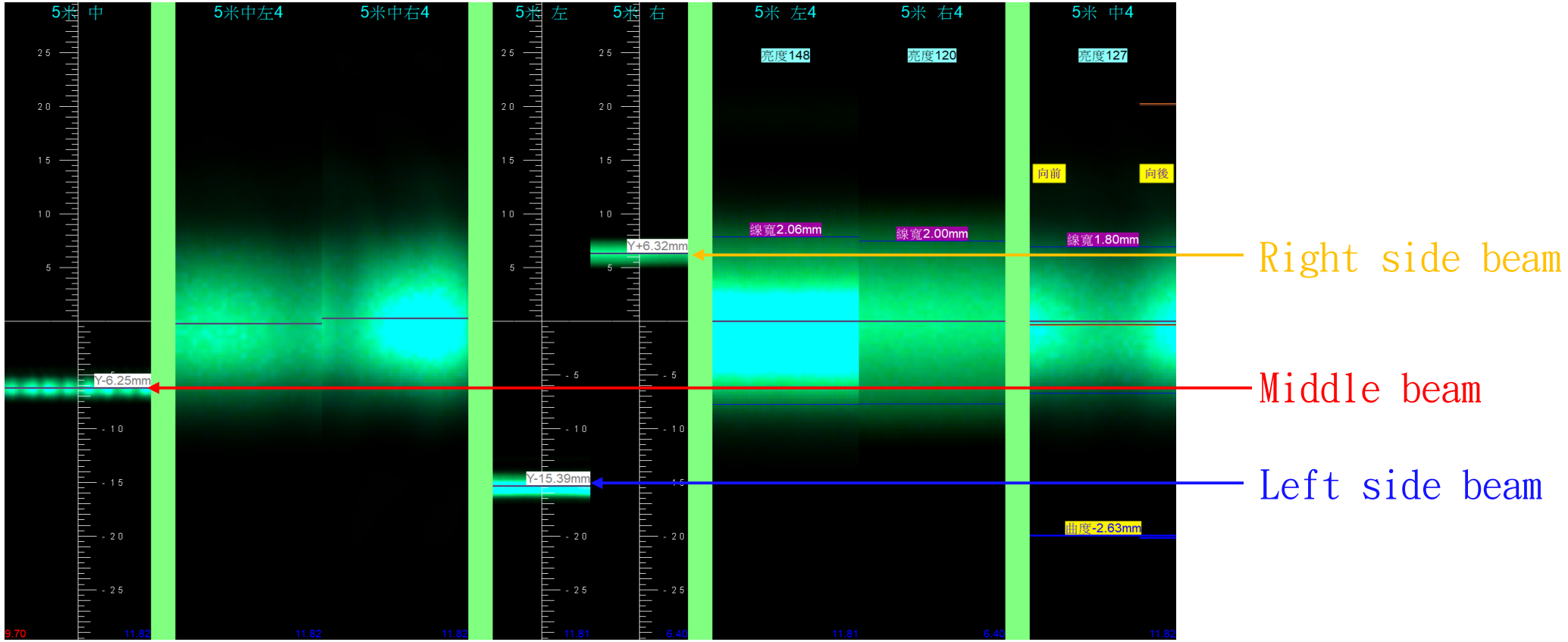


instruction for Line Laser curvature adjustment
（EX：the 2 screw under the Line Laser Module）

Unique Laser Alignment software - 2

2. High speed for Line Laser curvature inspection.

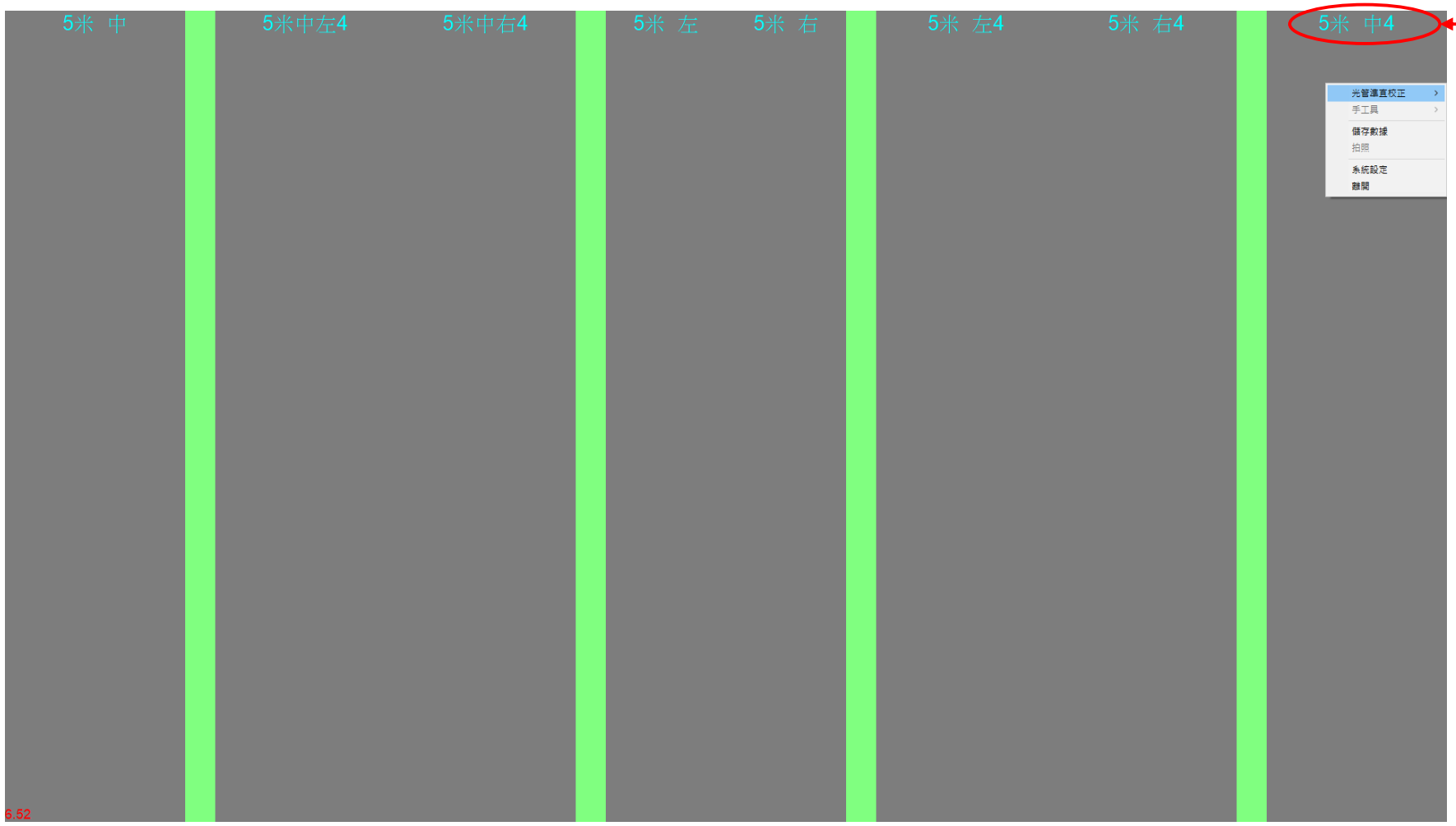
If the Line Laser of right side , left side and the middle one are in the monitor, it can be calibration. Don’t need to be alignment, the time for inspection reduce a lot.



Unique Laser Alignment software - 3

3. Using software to calibrate Line Laser Module.

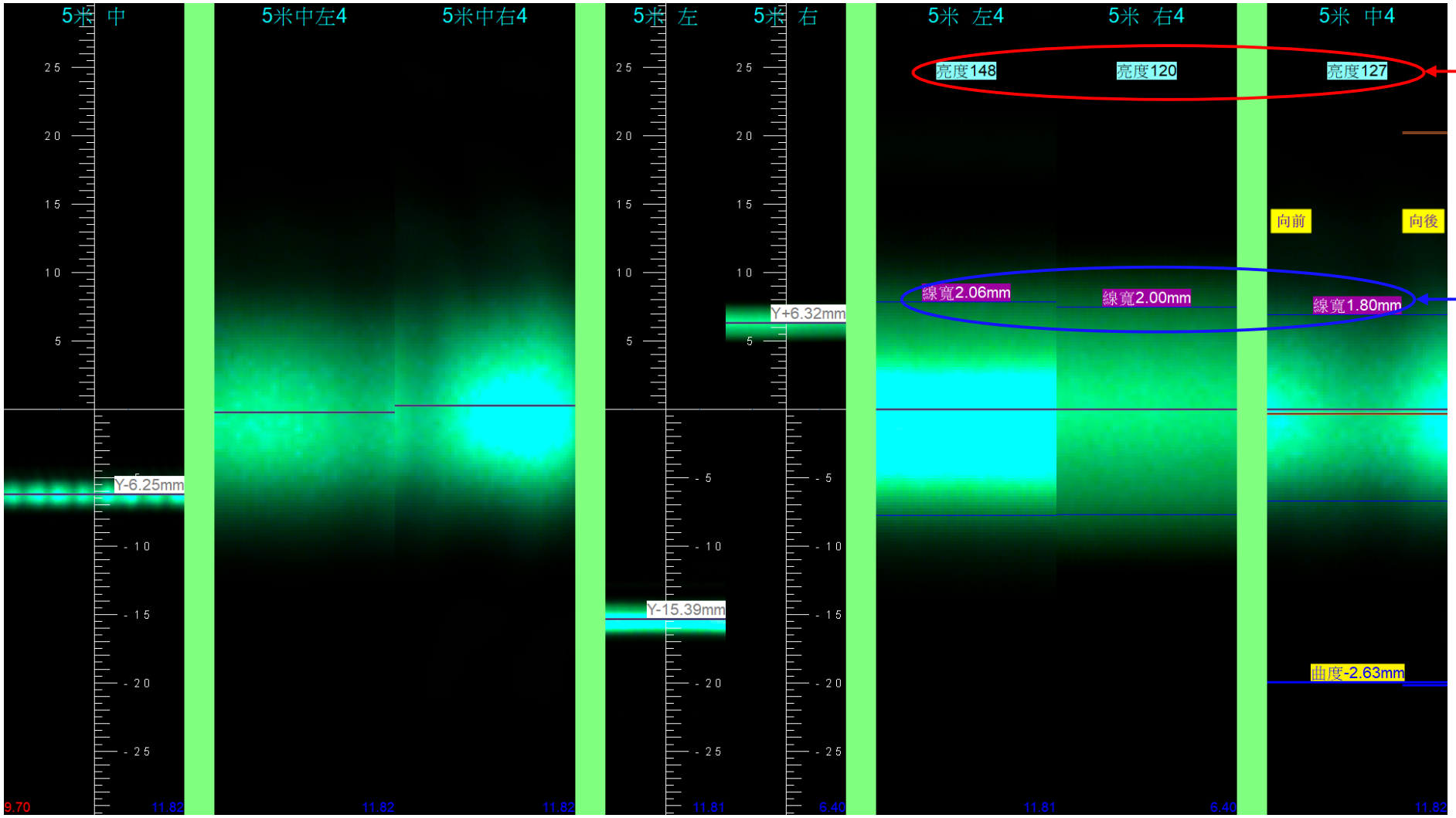
The software including algorithm to calibrate Line Laser Module for keep it in the best condition.



software including algorithm

Unique Laser Alignment software - 4

4. Showing Line Laser Module brightness and width for getting Laser Line quality.



Different angle （-60°，0°，+60°） digital collimator brightness

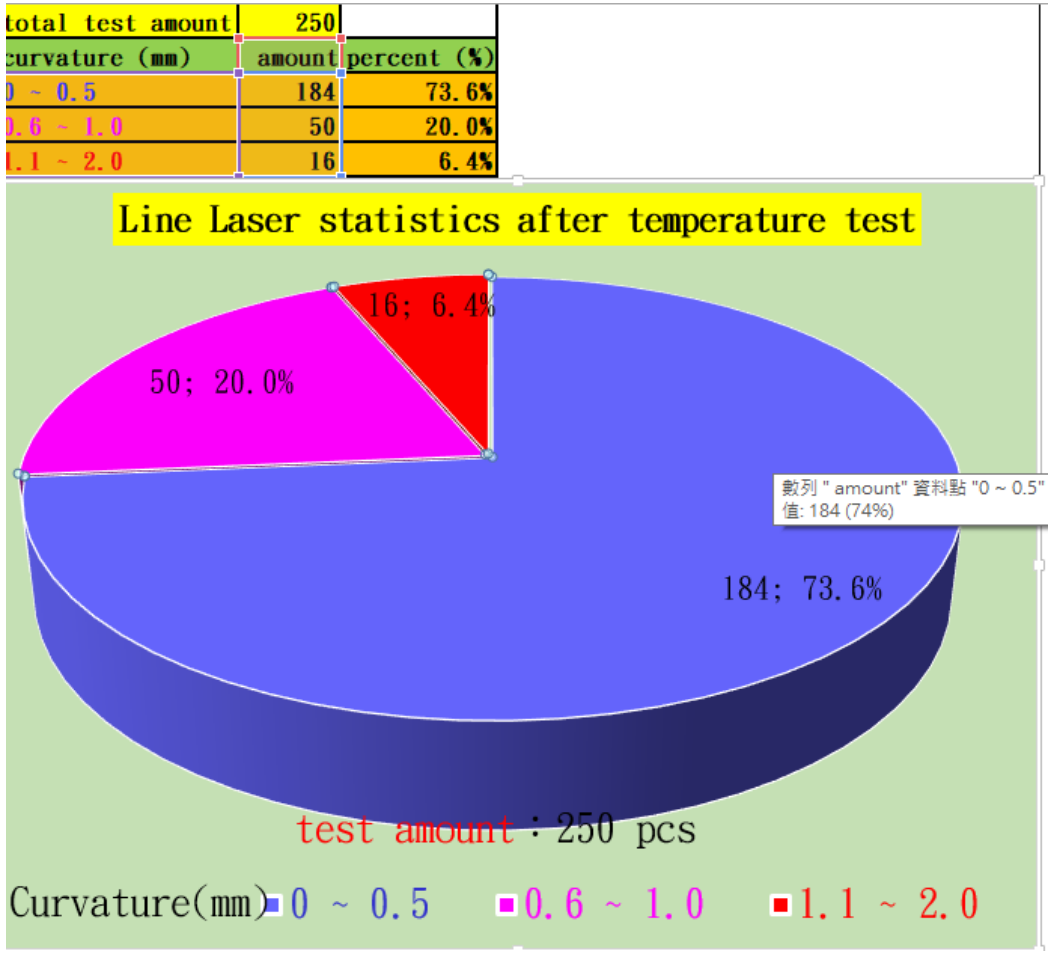
Different angle （-60°，0°，+60°） digital collimator width

Unique Laser Alignment software - 5

5. Computer storages data.

Saving Line Laser module data to improve production process. Using data to communicate with customer.

total test amount	250	
curvature (mm)	amount	percent (%)
0 ~ 0.5	184	73.6%
0.6 ~ 1.0	50	20.0%
1.1 ~ 2.0	16	6.4%



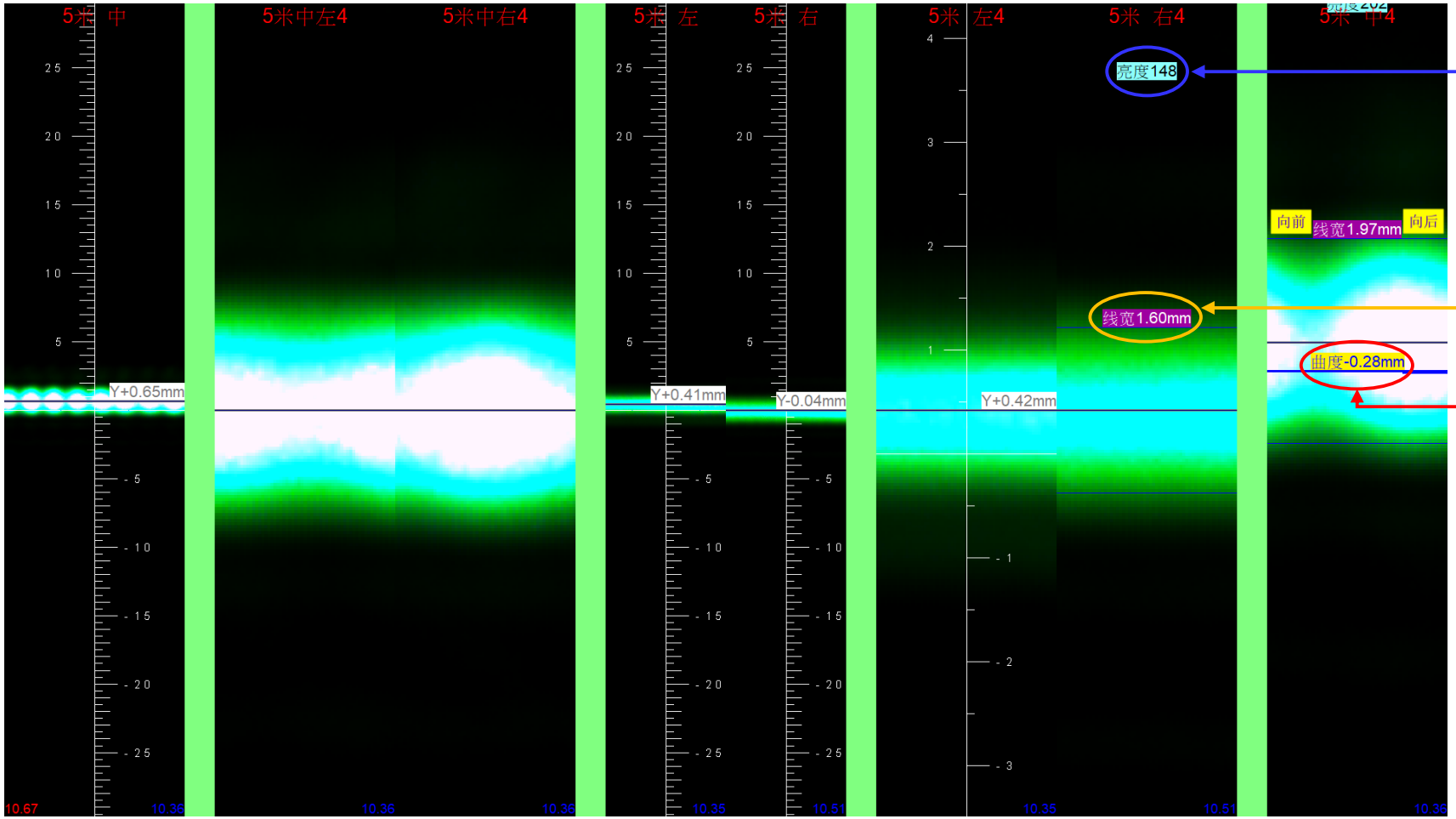
number	time	curvature(mm)
1	19:58:22	-0.06
2	19:56:39	0.06
3	20:01:11	-0.04
4	20:03:55	0.06
5	20:23:02	-0.05
6	20:32:05	-0.01
7	20:34:32	-0.01
8	20:37:07	-0.01
9	20:45:17	-0.04
10	20:52:35	0.01
11	11:02:05	0.04
12	11:04:16	0.04
13	11:06:13	0.07
14	11:09:58	0
15	11:11:49	0.06
16	11:13:30	-0.02
17	11:19:01	0.04
18	11:26:12	0.1
19	11:30:28	0.05
20	11:32:31	0.07
21	11:47:34	-0.02
22	11:49:21	0.04
23	11:53:40	0.03
24	11:56:39	-0.05
25	12:02:43	0.03
26	13:02:32	-0.08
27	13:05:36	0.06
28	10:21:52	-0.02

52	11:22:40	-0.11
53	11:23:45	-0.06
54	11:25:21	0.02
55	11:27:03	-0.01
56	11:28:19	0.06
57	11:30:12	-0.04
58	11:31:35	0.03
59	11:33:15	-0.07
60	11:35:09	-0.03
61	11:36:31	0.05
62	11:38:07	-0.09
63	11:40:13	0.02
64	11:41:37	-0.03
65	11:43:40	-0.02
66	11:45:36	0.05
67	11:52:34	0.05
68	11:53:49	-0.03
69	11:55:46	-0.06
70	11:57:43	-0.02
71	11:58:58	0
72	12:00:03	-0.04
73	12:01:24	-0.05
74	12:02:48	0.01
75	12:04:18	-0.04
76	12:05:32	0.07
77	12:07:43	0.03
78	12:10:37	-0.07
79	12:13:22	-0.02
80	12:16:29	-0.09

99	12:47:27	0.03
100	12:51:33	-0.04
101	19:53:35	-0.07
102	13:21:57	0.12
103	13:24:12	-0.02
104	13:27:48	0.01
105	13:29:08	0.04
106	13:30:22	0.08
107	13:31:45	0.06
108	18:59:19	-0.03
109	13:40:31	0.07
110	13:43:59	0.07
111	13:46:14	-0.03
112	13:47:20	0
113	18:53:50	-0.01
114	13:52:03	-0.09
115	13:56:05	-0.04
116	13:58:18	-0.06
117	14:01:25	-0.02
118	14:03:38	0.07
119	14:05:02	-0.1
120	14:06:40	0.01
121	14:08:38	-0.09
122	14:14:33	0.04
123	14:13:10	0.03
124	14:16:10	0.02

Unique Laser Alignment software - 6

6. Setting different acceptable quality level for each Line Laser Module or customer request.



Setting different acceptable quality level

brightness 100.000~200.000 +

line width (mm) 1.000~20.000 +

curvature 0.000~0.500 +

預設值