



— 专业电测设备制造商 —

Test Plan for Air-Conditioning Display Board of Company X

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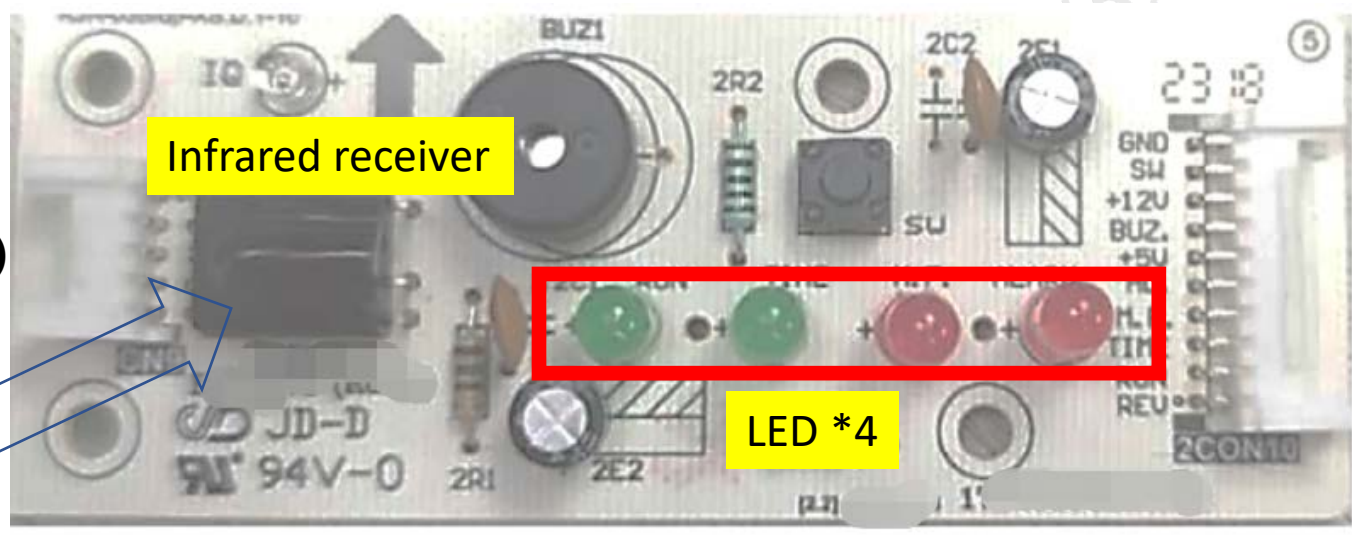
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1.1 Introduction for products and test items

Current test items:

1. Infrared detection
2. LED(different colors)

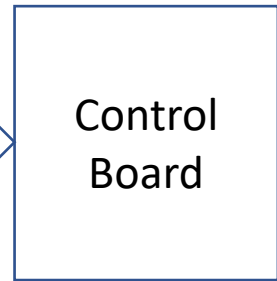


Test method:

Connect the wires to the control board manually

Press the remote control

Judge whether the function is normal through the LED status.



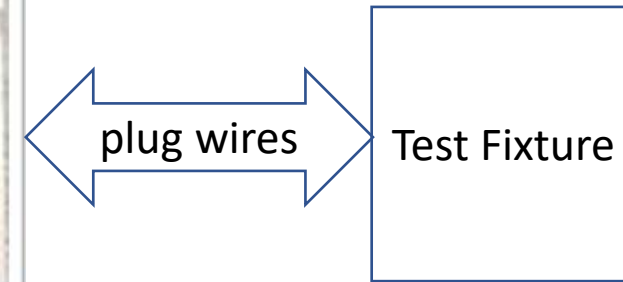
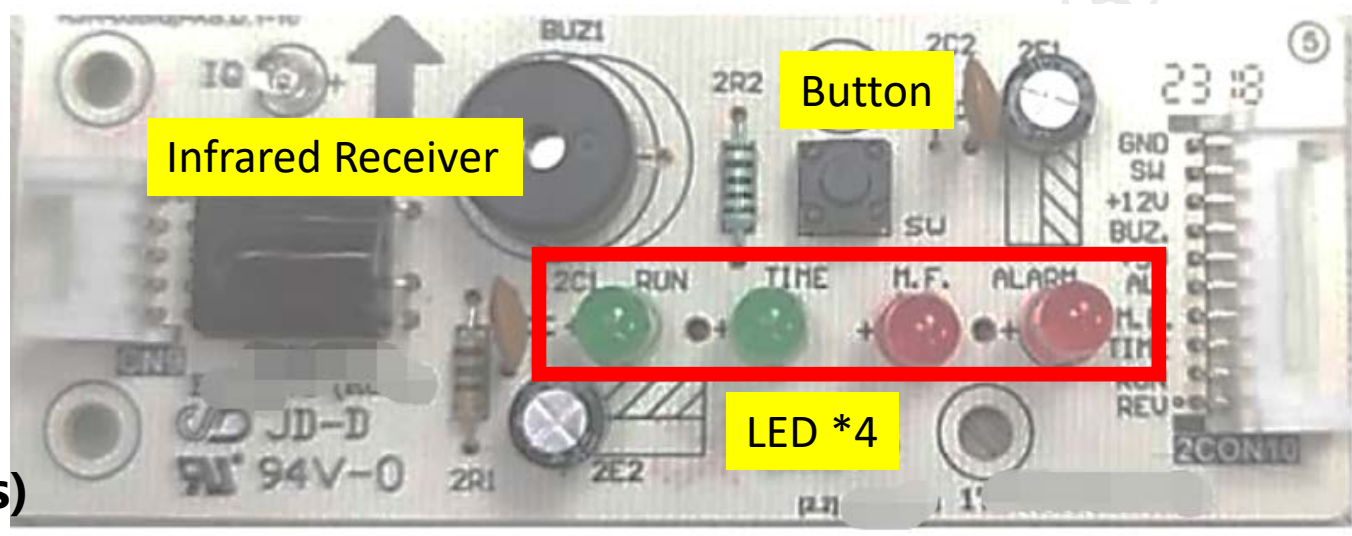


1.2 Introduction for products and test items

Items to be tested:

1. Components and solder state
2. Infrared receiver
3. Button
4. LED(different colors)

[CCD automatic recognition]



Test method:

Connect the board to the PTI system through the fixture, with the related hardware, to identify the function of each component automatically and distinguish the defective products.

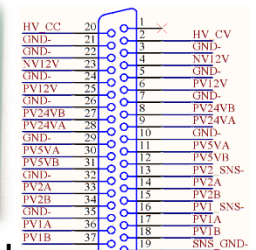
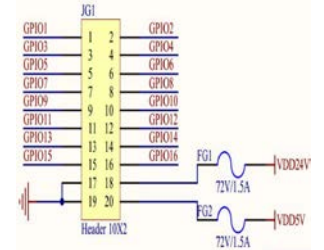
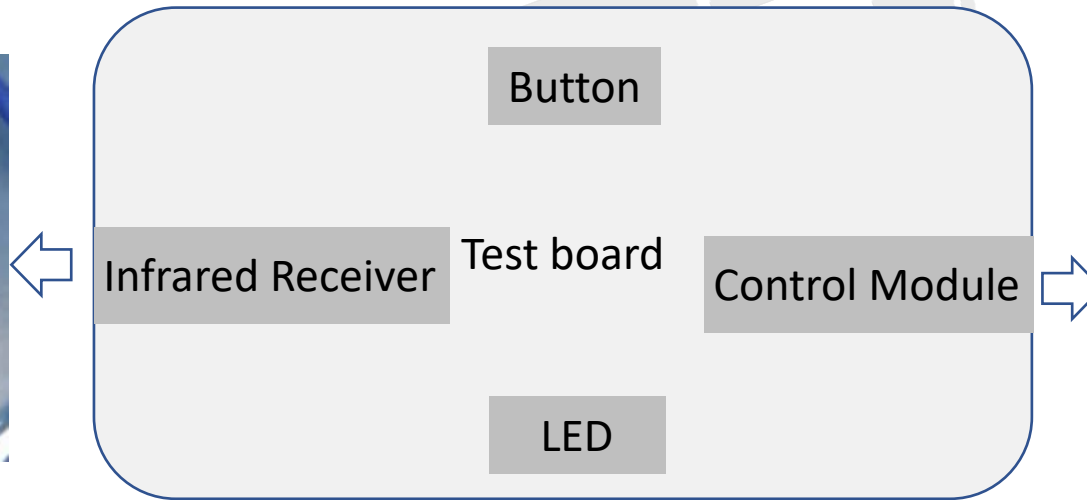


2. 1 Test Plan

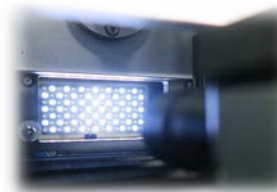


Infrared Test Board

Needle Cylinder



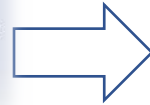
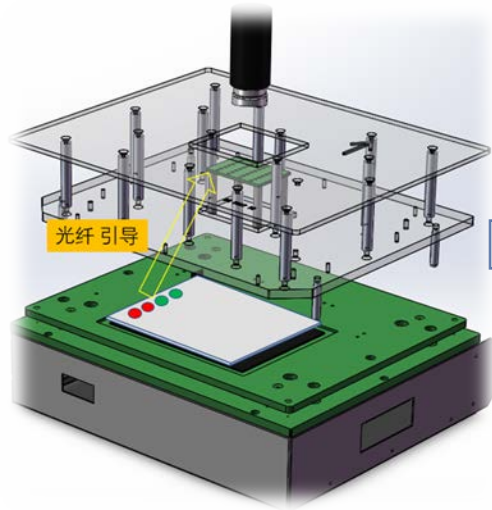
DTM Board



CCD Test



2. 2 Test Plan

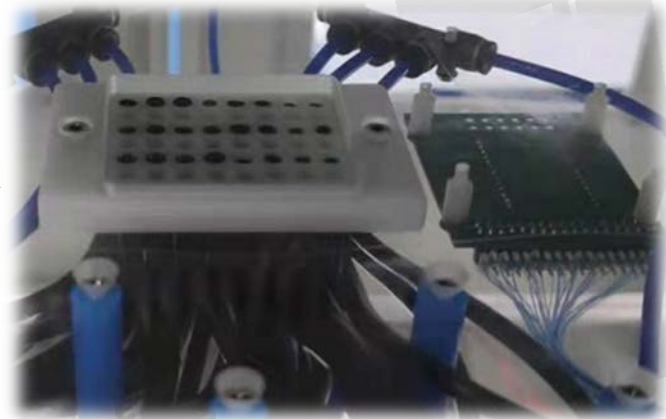
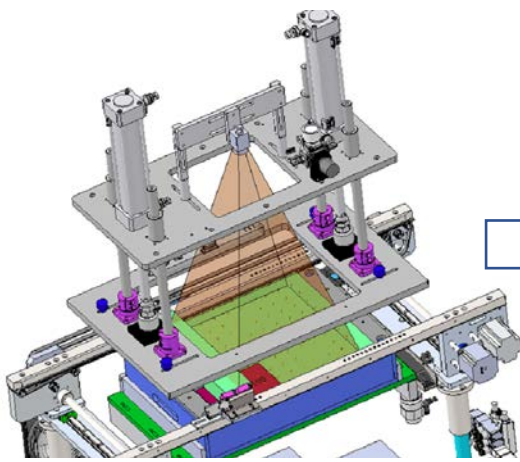


- LED Collection
- Button Collection
- Infrared Collection
- Power Supply + Control

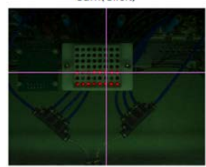




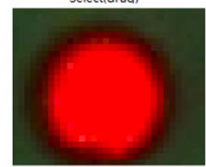
3. 1 Fixture Planning and Testing Process



Cam(Click)



Select(drag)



Current:

Result:

Quality:

ConfiqName:

AreaPostion:

AreaWidth:

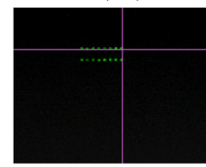
AresHeight:

Normal:

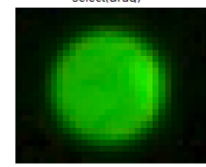
Direction:

Miss:

Cam(Click)



Select(drag)



Current:

Result:

Quality:

ConfiqName:

AreaPostion:

AreaWidth:

AresHeight:

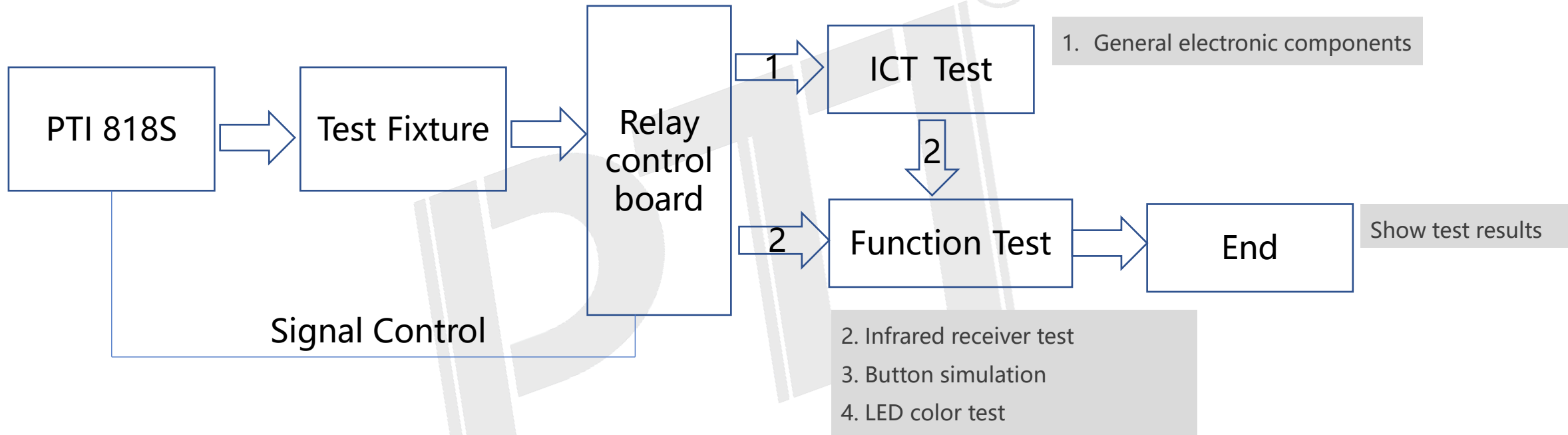
Normal:

Direction:

Miss:



3. 2 Fixture Planning and Testing Process



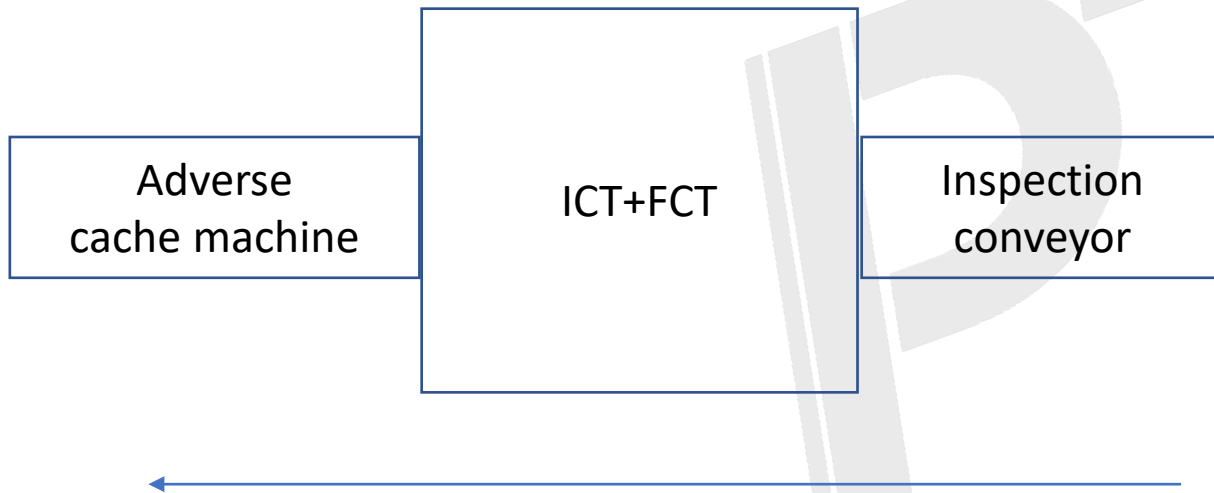
Testing Process :

Routine electronic component test --> Infrared receiver --> Button test--> LED color-->End



4. Production Process and Function

◆ Production Process





4. Production Process and Equipment Selection

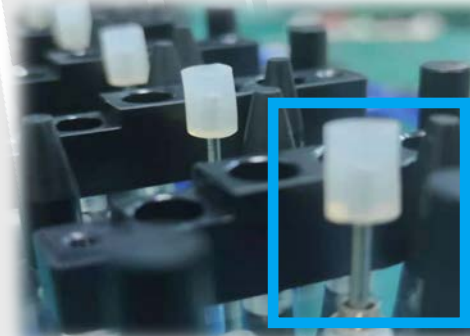
ICT+FCT Test

Statistics	Test	ReTest	Total			
Test	24	100.0%	0	0.000%	24	100.0%
Accept	24	100.0%	0	0.000%	24	100.0%
OpenFail	0	0.000%	0	0.000%	0	0.000%
ShortFail	0	0.000%	0	0.000%	0	0.000%
CompFail	0	0.000%	0	0.000%	0	0.000%

File	1712300005113.pjt
Date	2021-08-18 17:16:26
Board: 1	Barcode: Test: PASS
Board: 2	Barcode: Test: PASS
Board: 3	Barcode: Test: PASS
Board: 4	Barcode: Test: PASS
Board: 5	Barcode: Test: PASS

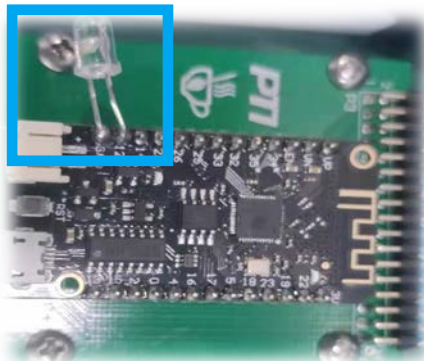
STEP	BX	Description	Module	Type	Function	Delay	Test	Dev%
1	B0	Switch-ON	Digital module	GPIO	write	0	1.000	0.0%
2	B0	B1-test	Analog module	CompTest	ResTest	100	1.263	-87.4%
3	B0	B2-test	Analog module	CompTest	ResTest	10	0.657	-93.4%
4	B0	B3-test	Analog module	CompTest	ResTest	10	0.589	-94.1%
5	B0	B4-test	Analog module	CompTest	ResTest	10	0.594	-94.1%
6	B0	B5-test	Analog module	CompTest	ResTest	10	0.609	-93.9%
7	B0	B6-test	Analog module	CompTest	ResTest	10	0.740	-92.6%
8	B0	B7-test	Analog module	CompTest	ResTest	10	0.745	-92.5%
9	B0	B8-test	Analog module	CompTest	ResTest	10	1.063	-89.4%
10	B0	Switch-OFF	Digital module	GPIO	write	0	1.000	0.0%

Button Test



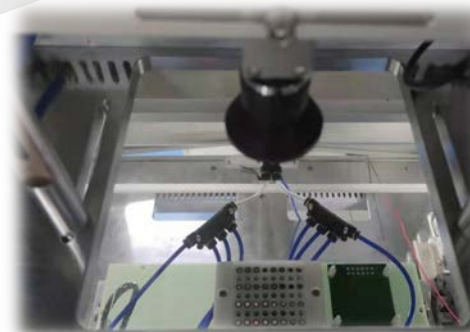
STEP	BX	Description	Module	Type	Function	Delay	Test	Dev%
1	B0	Switch-ON	Digital module	GPIO	write	0	1.000	0.0%
2	B0	B1-test	Analog module	CompTest	ResTest	100	1.263	-87.4%
3	B0	B2-test	Analog module	CompTest	ResTest	10	0.657	-93.4%
4	B0	B3-test	Analog module	CompTest	ResTest	10	0.589	-94.1%
5	B0	B4-test	Analog module	CompTest	ResTest	10	0.594	-94.1%
6	B0	B5-test	Analog module	CompTest	ResTest	10	0.609	-93.9%
7	B0	B6-test	Analog module	CompTest	ResTest	10	0.740	-92.6%
8	B0	B7-test	Analog module	CompTest	ResTest	10	0.745	-92.5%
9	B0	B8-test	Analog module	CompTest	ResTest	10	1.063	-89.4%
10	B0	Switch-OFF	Digital module	GPIO	write	0	1.000	0.0%

Infrared test



STEP	BX	Description	Module	Type	Function	Delay	Test	Dev%
63	B0	Power module	Power module	configure	5V	20	0.000	0.0%
64	B0	Power module	Power module	power on	5V	20	4.883	-2.34%
65	B1	Soft command	Soft Cmd	Delay	300	0.000	0.0%	
66	B1	Digital module	GPIO	write	0	1.000	0.0%	
67	B1	Digital module	GPIO	write	550	1.000	0.0%	
68	B1	Soft command	Soft Cmd	Delay	1800	0.000	0.0%	
69	B1	B1-Infrared-check	Analog module	voltage measure	single end	10	3.336	1.09%
70	B2	B2-Infrared-check	Analog module	voltage measure	single end	10	3.376	2.3%
71	B3	B3-Infrared-check	Analog module	voltage measure	single end	10	3.375	2.27%
72	B4	B4-Infrared-check	Analog module	voltage measure	single end	10	3.365	1.97%
73	B5	B5-Infrared-check	Analog module	voltage measure	single end	10	3.380	2.42%
74	B6	B6-Infrared-check	Analog module	voltage measure	single end	10	3.356	1.7%
75	B7	B7-Infrared-check	Analog module	voltage measure	single end	10	3.373	2.21%
76	B8	B8-Infrared-check	Analog module	voltage measure	single end	10	3.336	1.09%

LED Test

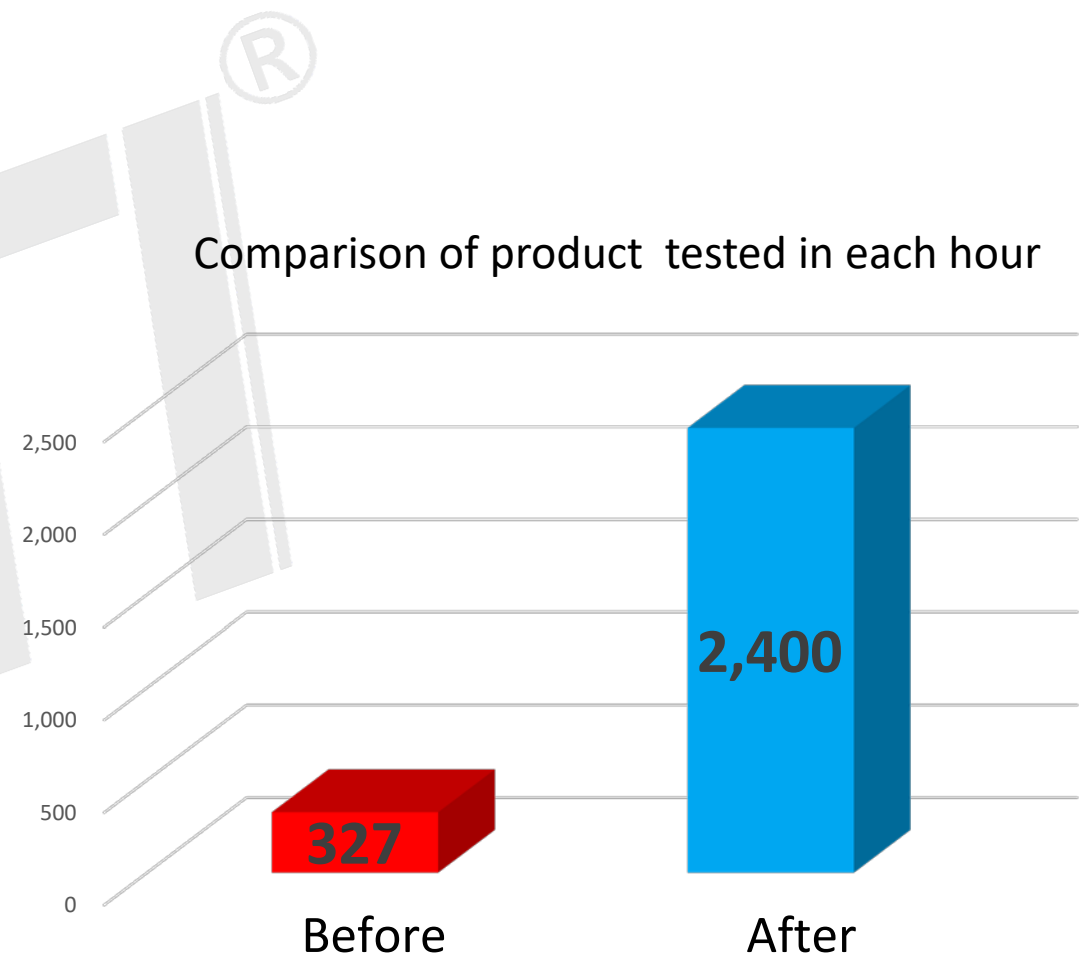


STEP	BX	Description	Module	Type	Function	Delay	Test	Dev%
39	B0	Power module	Power module	power on	XV2	0	1.898	-1.86%
41	B0	Camera	Camera	CameraIn	0	0.000	0.0%	
41	B0	Soft command	Soft Cmd	Delay	0	0.000	0.0%	
42	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	2000	0.000	0.0%
42	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	18.000	0.0%
44	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	14.000	0.0%
45	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	13.000	0.0%
46	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	0.000	0.0%
47	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	0.000	0.0%
48	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	0.000	0.0%
49	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	0.000	0.0%
50	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	0.000	0.0%
51	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	10.000	0.0%
52	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	8.000	0.0%
53	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	7.000	0.0%
54	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	6.000	0.0%
55	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	6.000	0.0%
56	B0	MF-LED-Colour-RED	AOI	Component	CheckColor	0	6.000	0.0%
57	B0	alarm-LED-Colour-RED	AOI	Component	CheckColor	0	11.000	0.0%

5.1 The Effect After Using This Device

※Production capacity is 8 times than before
(can test eight products at the same time)

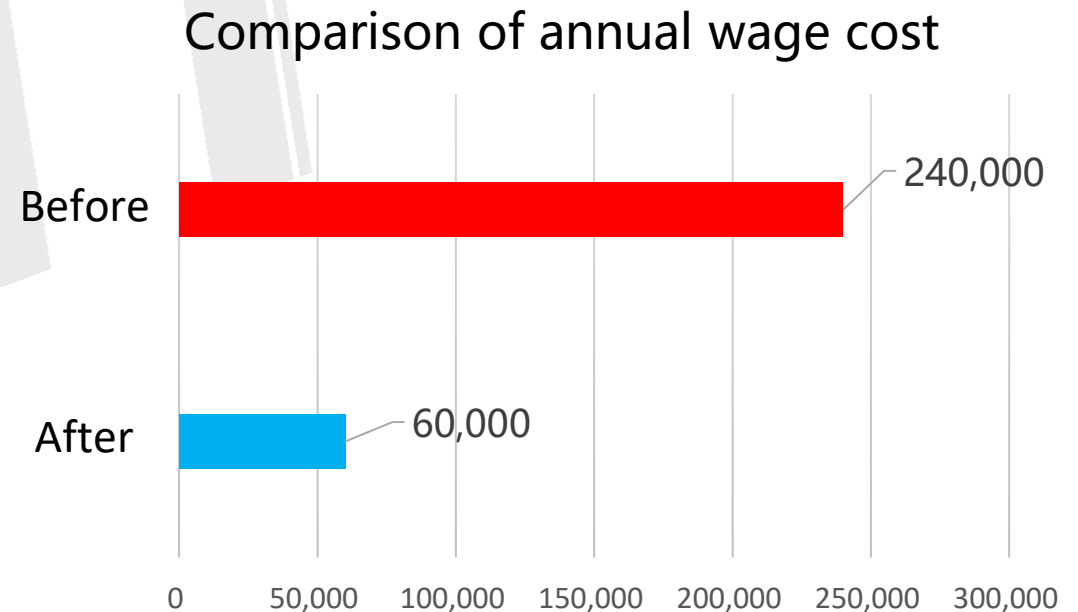
Number	Process	Before		After	
		Time(s)	Cycle time	Time(s)	Cycle time
1	Put the product	2.0	11	2.0	12.00
2	Plug wires	1.5		0.0	
3	RUN-LED Green	1.0		8.0	
4	TIME-LED Green	1.0		0.0	
5	M.F.-LED Red	1.0		2.0	
6	ALARM-LED Red	1.0			
7	Unplug wires	1.5			
8	Take the product	2.0			
9	The numbers of products can be tested in the same time		1		8
10	Test time of each product (s)		11	Production capacity is 7 times than before	1.5
11	Product tested in each hour		327		2,400



5.2 The Effect After Using This Device

※ Costs reduce: reduce 3 employees ,
the expected expenditure will be reduced ¥180,000 /year

Number	Test Name	Employee	State	Need Employees	Average salary (month)	Salary (year)
1	ICT	1	Before	4	5,000	240,000
	Function Test	3				
2	ICT + Function Test	1	After	1	5,000	60,000

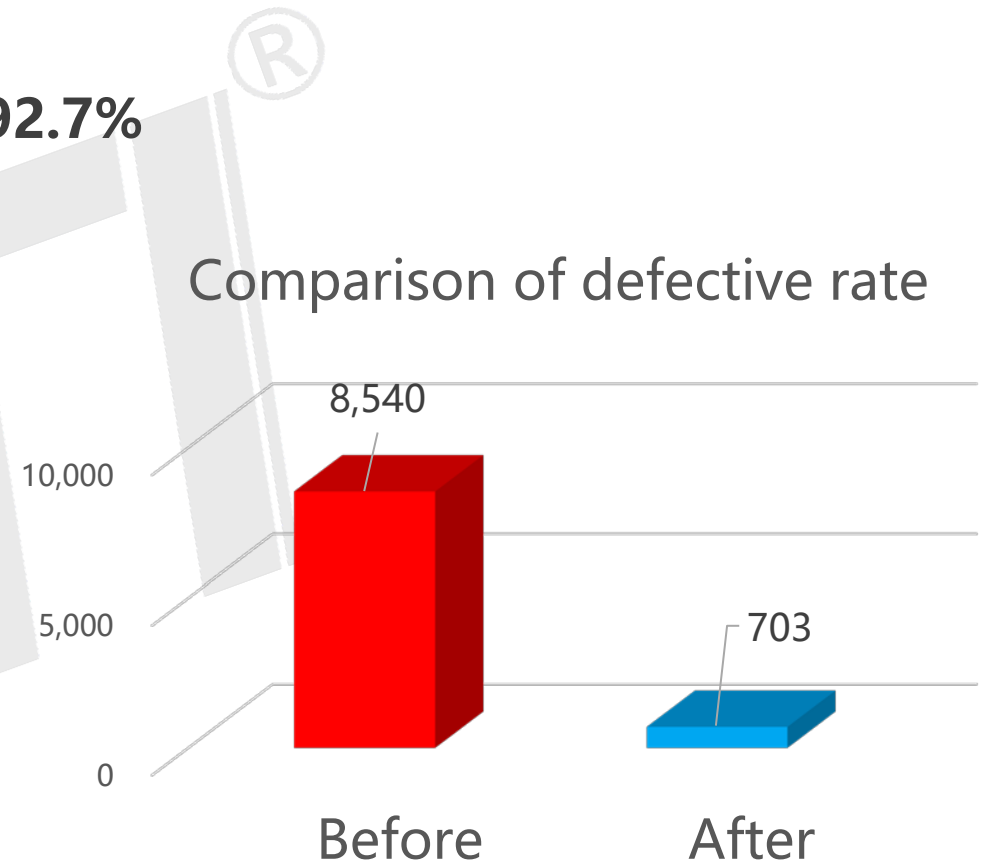




5.3 The Effect After Using This Device

Quality improved: Defective rate has decreased 92.7%

Number	Defects	Before	After	Note
1	infrared	457	397	1. Defect rate: PPM 2. defect (material + process)
2	LED	7,732	231	
3	button	351	75	
4	total	8,540	703	





6. Conclusion

Number	Project	Before	After	Result
1	production capacity	327/hour	4,144/hour	Increase: 11.8 times
2	needed employees	4	1	Reduction: 75%
3	defective rate 【PPM】	8540	703	Decrease: 92.7%

In summary:

After we use the automation equipment, the production capability increases, the costs of spending reduces, and the quality of production is improved.

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WORK TOGETHER FOR A BETTER FUTURE

谢谢！



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