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Technical solutions

X-RAY professional manufacturer of testing equipment

Product model: S-7200

Product name: Universal X-RAY testing equipment

Manufacturer: SHENZHEN MOREL EQUIPMENTS CO.,LTD

X-RAY ZMX-7200 X-ray inspection equipment introduction

1. Appearance of the equipment



2.Features

Function:

- 1.1 The stage can move in the X Y direction, the detector and the light pipe can move in the Z direction, and the speed can be divided into slow, medium, and fast.
- 1.2 The light tube has a long service life and is maintenance-free for life
- 1.3 It can detect defects less than 2.5 microns, and the detection repeatability is high
- 1.4 Editable inspection program to realize CNC automatic inspection
- 1.5 The testing space is large, which can accommodate various large-size samples, and the stage can carry 10KG items
- 1.6 Large automatic navigation window, mouse click can move the stage to the pointed position
- 1.7 The image detector can be tilted at 45° to the left and right to observe the defects of the sample with a unique angle of view without interfering with the sample.

Advantage:

- 1.8 The effective detection range is larger, and the product magnification and detection efficiency are improved.
- 1.9 Easily identify defects on the side of the product, and realize no dead angle detection
- 1.10 Using the world's top Japanese Hamamatsu (HAMAMATSU) X-ray source
- 1.11 It can easily distinguish the bending and breaking of the gold wire of the semiconductor package
- 1.12 Suitable for mass inspection, improve inspection efficiency, and automatically judge NG products
- 1.13 Super large stage, can place super large industrial control motherboard, super long LED light bar, and electronic products suitable for various fields
- 1.14 The operation is very convenient, you can quickly find the defects of the article, and improve the inspection efficiency

3. Hardware technical parameters

Model	S-7200
HD flat panel detector	Maximum pixel matrix 1536x1536/ pixel pitch 85um

X-ray tube	Tube style	Sealedtube
	Tune voltage	90KV（Optional110/130KV）
	Tube current	200UA
	Tube focus size	5um
	Light tube power	8W
	Geometric magn	150X
Stage	Y axis	520mm
	X axis	520mm
	Z axis	380mm
	Z2 axis	380mm
	T axis	45°
Dimensions and weight	Dimension	1400 * W1300 * H1700mm
	Weight	约 1500kg
power supply	powered by	AC220VAC,50/60Hz
computer	BrandL	Dell
	Operation System	Windows10
	Display	24"LCD
	CPU	Inteli56500
Radiation safety standards	<1uSv/hr（International Safety Radiation Standard）	<0.5uSv/hrFactory radiation standard
working environment	temperature	0-40℃
safety	Radiation safety standard protection box requirements	Itadopts steel/lead/steel protective structure, and the front door window adopts lead-containing glass to protect against rays. At any position 20mm away from the box, the tested radiation dose equivalent rate is less than or equal to 1μ Radiation safety standards, and the protective box requires safety SV/H to comply with international standards
	Safety interlock function	Two high-sensitivity limit switches are set at the opening positions for equipment maintenance. Once the door is opened, the X-ray tube will automatically power off immediately
	Electromagnetic switch protection function	The observation window is equipped with an electromagnetic switch, and

		the observation window cannot be opened when the X-ray tube is in working condition
	View window	With a visible transparent window, it is convenient to observe the sample situation directly from the window during the operation of the equipment
	Emergency stop switch	Emergency stop switches are provided in the prominent positions of the console and the equipment body. In an emergency, the emergency stop switch can be pressed to quickly cut off the power supply system.
	Light tube automatic protection function	After 5 minutes of no operation of the equipment, the light pipe will automatically cut off power immediately and enter the protection state
	Automatic equipment protection function	Once any door or window of the equipment is opened, the equipment will immediately enter the shutdown protection state, and any operation cannot be carried out.

4. Software technical parameters

4.1 Operation mode: keyboard + mouse to complete all operations

4.2 X-ray tube control: Click the button with the mouse to turn on or off the X-ray,

and the real-time tube voltage and tube current values are displayed next to it. The user can click the up and down buttons, or drag the slide bar, or manually enter the adjustment

4.3 Status bar: whether the red and green flashes alternately to indicate the interlock status, preheat status and X-ray switch status

4.4 Image effect adjustment: the brightness, contrast and gain of the image can be adjusted freely to achieve satisfactory results

4.5 Functional modules:

Function	Product List	The user can store the current or recall the previously stored Z-axis position, brightness, contrast function module product list and gain parameters. The same product can be directly recalled next time to improve the inspection efficiency.
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	Navigation window	The picture of the tested item is displayed in the navigation window in real time. By clicking on any position of the picture of the tested item, it can realize automatic follow and automatic positioning, and improve the detection efficiency.
4.5.1 Bubble measurement:		
Bubble rate measurement	Motion axis state	Real-time display of coordinate position
	Test results	Display the results of each measurement in order (bubble ratio, distance, area, etc.)(Measurement items set by the user)
	speed control	The moving speed of each axis can be adjusted to slow speed, normal speed and fast speed
	Automatic calculation	The user can adjust the grayscale threshold, pixel, contrast, size filter and other parameters to get the accurate result of the automatic calculation
	Adjustment parameters	The user can adjust the grayscale threshold, pixel, contrast, size filter and other parameters to get the accurate result of the automatic calculation
	Manually add or delete bubbles	Users can draw polygons or free graphics, which are calculated into the bubble rate as bubbles. Right-click on the image that does not reduce the bubble is a bubble, you can cancel the bubble
	Storage parameters	The user can store the grayscale threshold, pixel, contrast, size filter and other parameters of the current measurement bubble, and the same product can be directly called to improve the detection efficiency next time.
4.5.2 Size measurement:		
Size calculation	Proportion calculation of tin filling holes	It is mostly used to measure the through-hole tin rate of the circuit board, and set a point D more than the measured distance. The vertical distance from point D to the reference line is divided by the vertical distance of point C to obtain the percentage of the vertical distance of D to C
	distance	Click the two points A and B to set the reference line as needed, and then click point C to measure the vertical distance from point C to the reference line
	angle	Click the two points A and B to set the baseline as required, and then click point C to measure the angle between the BA and BC rays
	Round shape	It is mostly used to measure round components such as solder balls, click three points to confirm a circle, Measure the perimeter, area and radius, and the number of rows and columns, the software will automatically take each inspection point and save the picture
	Square	It is mostly used to measure square components, click two points to confirm a square, and measure

		Long and wide area
	radian	Mostly used to measure the curvature or curvature of LED binding wires
4.5.3 Batch testing:		
Batch testing	CNC inspection	For the inspection points with a regular arrangement, the user only needs to set two of the inspection points and the number of rows and columns, and the software will automatically take each inspection point and save the picture
	Automatic Identification	For the detection points with obvious characteristics, the software can automatically identify the specific location and perform Measure and save the picture
	Laser positioning	Red dot laser positioning device, dual assistance, easy to navigate
Report generation	According to the analysis result, the judgment result can be marked on the picture, or it can be directly divided into CSV files. File format or report document	

5. Standard configuration

name	quantity	unit	Remark
90KV enclosed X-ray tube	1	Pieces	HAMAMATSU, Hamamatsu, Japan
Stage	1	Pieces	Size: 520mm*520mm
Flat panel detector	1	Pieces	130mm*130mm Ultra HD
Image processing CPU	1	Pieces	Intel I5 processor
LCD Monitor	1	Pieces	24 inches

6. Stage control

6.1 Use the space bar to adjust the speed of the stage: slow, constant, fast 6.2 Keyboard control

X, Y, Z three-axis movement and tilt angle

6.3 The user can control the speed and angle of the stage through programming

7. All from the BGA testing program

7.1 Simple mouse click programming, automatic detection of every device on the assembly without operator intervention

7.2 Automatic BGA inspection program can accurately check the diameter of BGA, the proportion of void area and roundness

7.3 The automatic BGA testing program has high repeatability of testing results to facilitate process control

7.4 The test results will be displayed on the screen and can be output to Excel for easy review and archiving

8.CNC programming

8.1 Simple mouse click operation to write detection program

8.2 The stage can be positioned in the X, Y direction; the X-ray tube and the detector can be positioned in the Z direction

8.3 Software setting voltage and current

8.4 Image settings: brightness, contrast, auto gain and exposure

8.5 Users can set the pause time for program switching

8.6 Anti-collision system can meet the maximum tilt and observation

9.Picture of main imported parts

(Hamamatsu X-ray tube & digital high-definition flat panel detector)



10.Our biggest and most core advantage

10.1 X-ray source

10.2 Digital HD Detector

The X-ray source is Japanese Hamamatsu (HAMAMATSU), and the detector is an Iray ultra-high-definition digital flat-panel detector.

HAMAMATSU was established in 1953, Hamamatsu Photonics Co., Ltd. (hereinafter

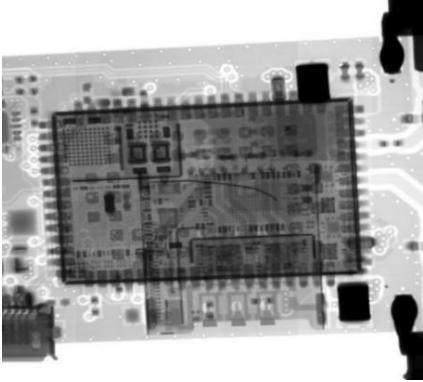
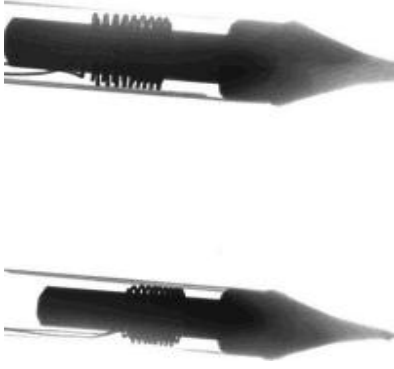
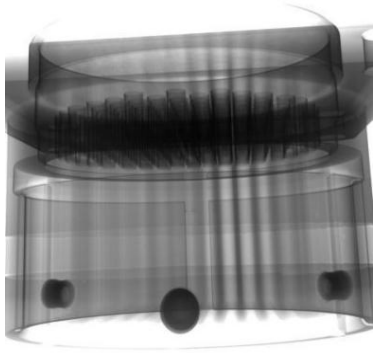
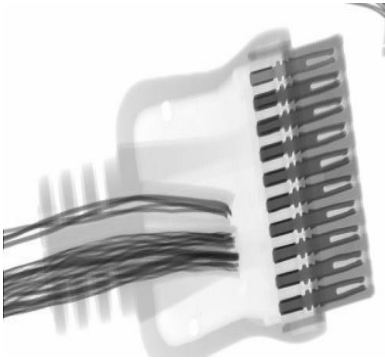
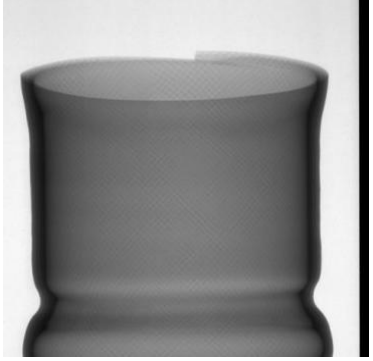
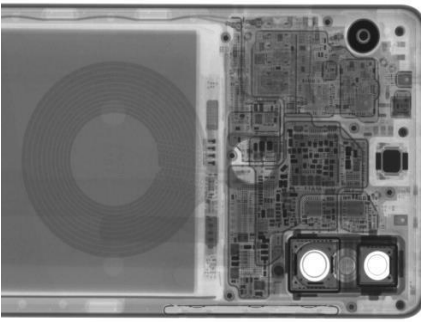
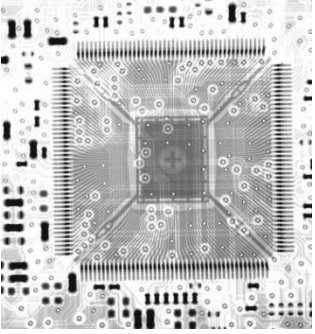
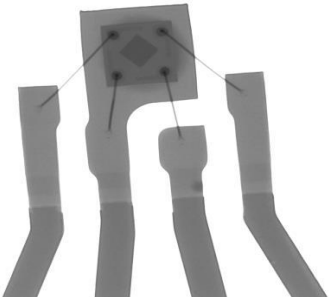
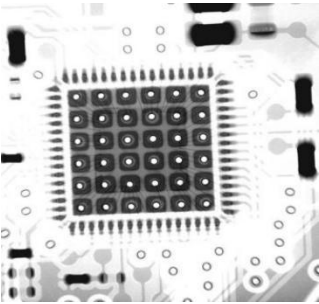
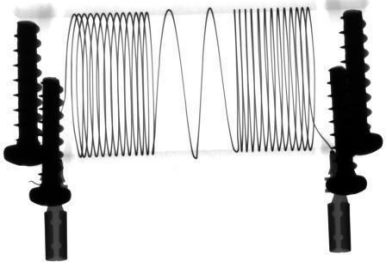
referred to as Hamamatsu Group), is the world's highest level of science and technology, the largest market share of the optical science and optical industry company. Professor Masatoshi Koshihara from the University of Tokyo, who used 11200 20-inch photomultiplier tubes from the Hamamatsu Group, won the 2002 Nobel Prize in Physics for his neutrino experiment. Hamamatsu Group's products are widely used in medical biology, high-energy physics, space exploration, precision analysis and other industrial fields. It is a leader in the optical industry. HAMAMATSU's X-ray source is currently the world's longest and most stable, with a service life of up to 12-15 years.

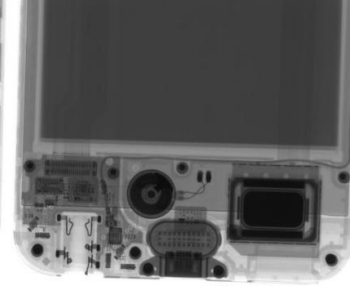
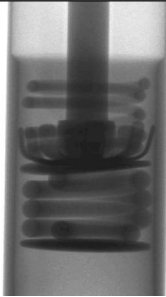
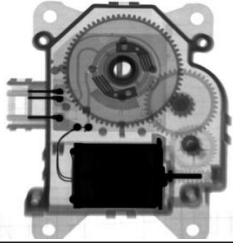
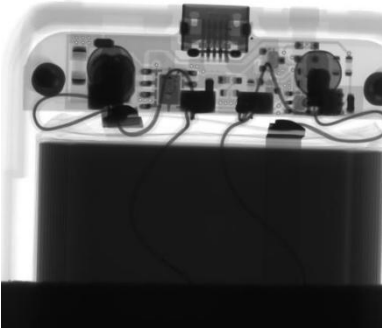
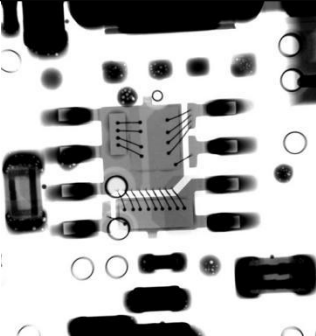
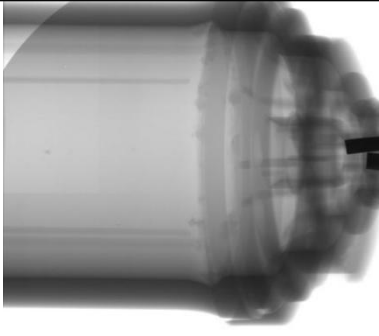
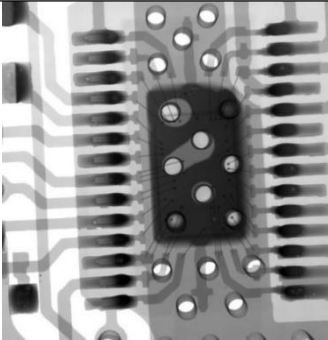
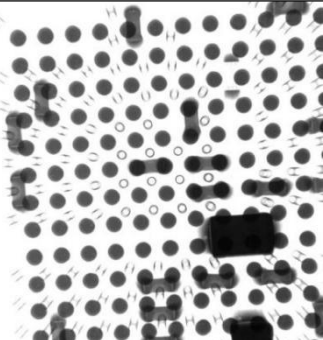
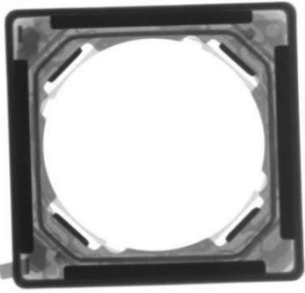
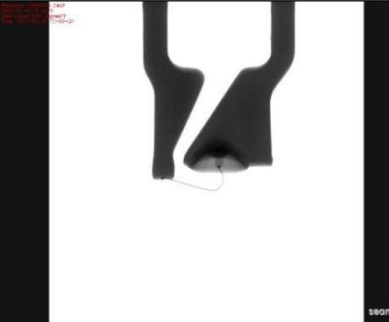
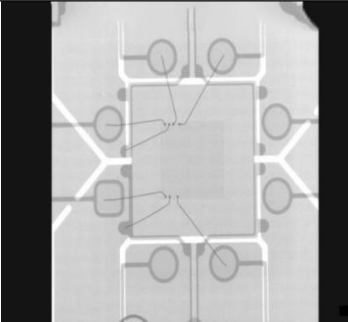
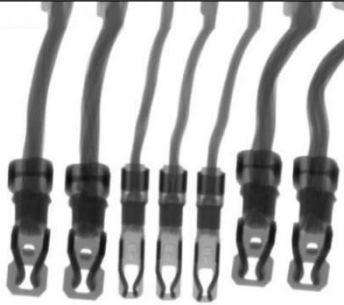
Iray Asia Headquarters is located in the Medical Device Park of Zhangjiang East District, Pudong, Shanghai. It focuses on the development and production of amorphous silicon flat panel detectors, a key component of medical imaging equipment. It is led by internationally renowned experts in the field of radiation imaging and microelectronics. Under the advocacy of the German government's industrial development policy, we are committed to the current international cutting-edge X-ray digital imaging technology and provide high-quality flat panel detectors and DR solutions. German iray launched the scintillator project at the end of 2012, creatively building an international amorphous silicon flat-panel detector industry chain. At present, iray has realized the development of static, dynamic, wireless and breast flat panel detector series. The performance index is higher than that of international competitors, and the designed product life can reach 15-20 years.

11.Scope of application

Automotive electronics, molded plastic parts, tire wheels, IC semiconductors, LED, PCBA, BGA/QFN testing, biological agricultural seeds, aviation components, aluminum die-casting parts, electrical and mechanical parts, wiring harness/USB/plugs, etc.

12.X-RAY application case

Shield cover chip	White light soldering iron tip	Plastic Products
		
UCB connector	Electronic cigarette (ceramic)	rubber tube
		
Xiaomi mobile phone	BGA chip	LED lamp beads
		
IC semiconductor	Memory chip	fuse
		

OPPO phone	Emerson Sensor	switch
		
Walkie talkie	Percentage of tin hole filling	Water purifier (plastic bucket)
		
IC semiconductor	BGA chip soldering analysis	Apple camera module
		
Diode detection	IC gold wire detection	Wire speed connector
		
LED dock light bubble test	Thermal sensor	Diode capacitance
