

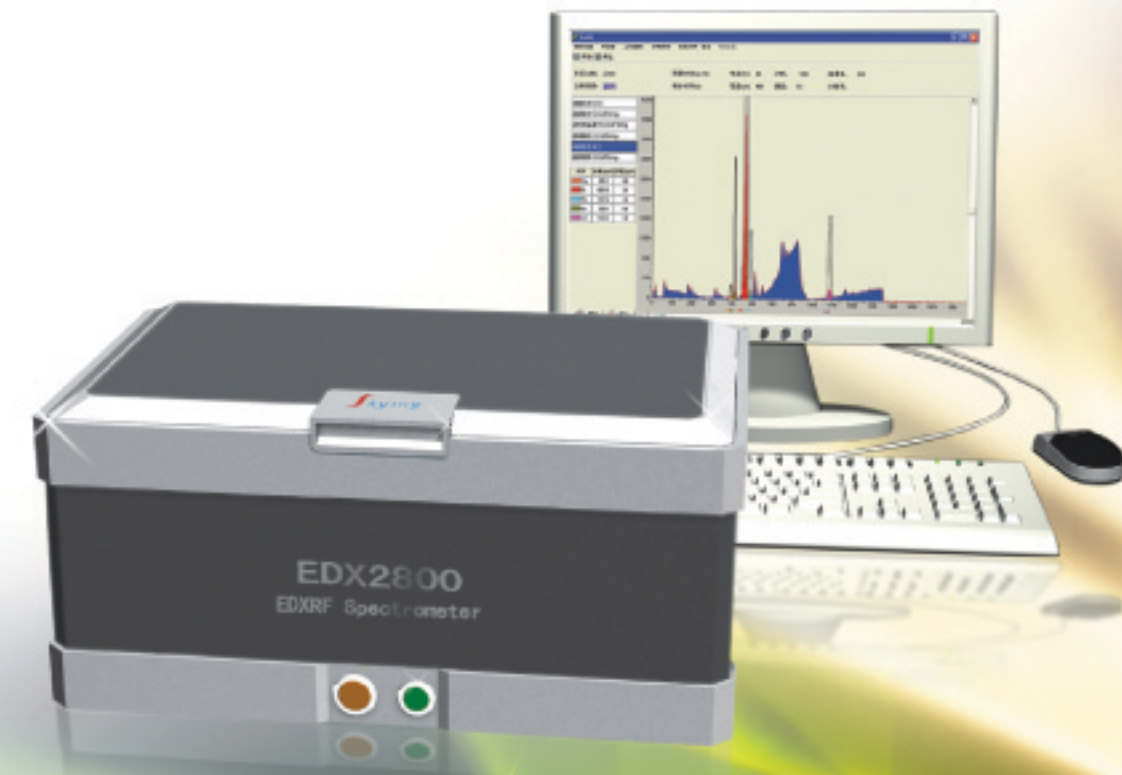
Skyray Instrument Inc. *EDX2800* X-Ray Fluorescence Spectrometer



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EDX2800

Elegant Delicate Convenient



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EDX2800 is a new spectrometer with better performance developed by Skyray on the basis of EDX3000B

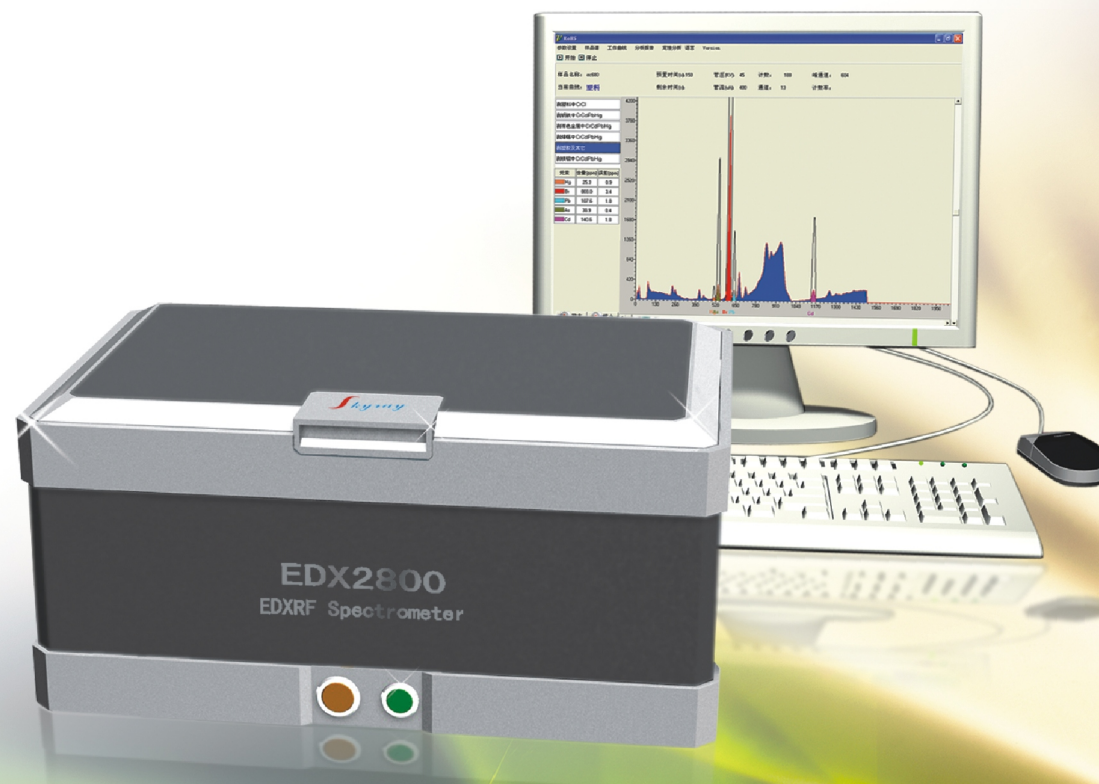
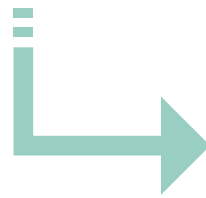
- ▶ The automatic collimator and filter switch make your operation more convenient
- ▶ The delicate movable platform makes the measurement more accurate
- ▶ An Added Signal-to-Noise Enhancer (SNE) gives extra guarantees of accuracy
- ▶ Elegant outlook brings you aesthetic feeling of science and technology and relax your mind

Adhere to excellence and create perfection continuously

Designed and developed for RoHS detection

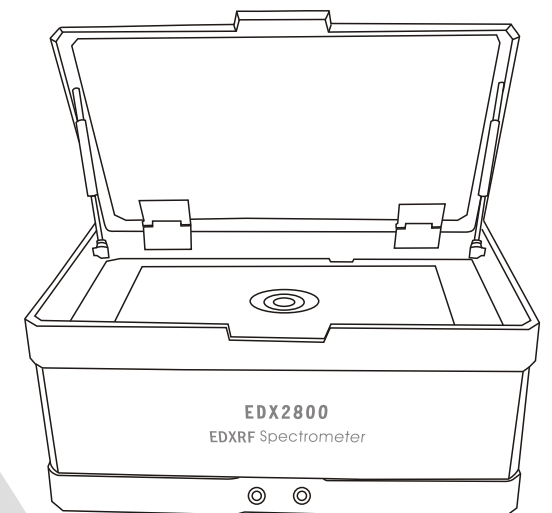
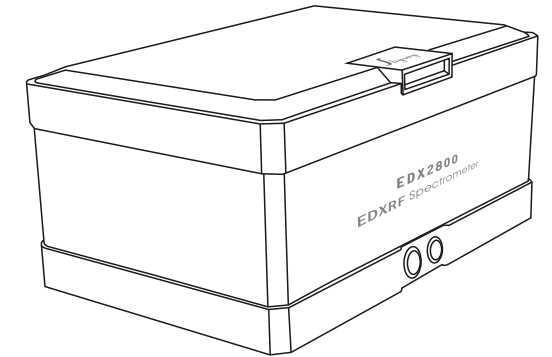
Good results can be obtained when testing noble metals such as Au, Ag, Pt, Pd

Also can be used to test plating thickness



Configuration:

- Signal-to-Noise Enhancer (SNE)
- Switch collimators and filters automatically for different samples
- Unique light path enhancement system, convenient for users to observe samples more accurately
- Used for RoHS substances detection, plating coating and full element analysis, one machine for multiple purposes
- Electro-refrigeration Si-PIN semiconductor detector, without liquid nitrogen refrigeration
- Specially developed measurement software with user friendly operation interface
- Inbuilt high resolution camera, convenient for users to analyze samples at any moment
- Precise movable platform, can adjust the position of samples more accurately and conveniently
- An attractive and fashionable design
- Size of sample chamber: 605mm * 395mm * 100mm



Main specifications:

Elements can be tested: 75 elements from sulfur to uranium

Measurement time: 60-300s

Energy resolution: 165 ± 5 eV

High voltage: 5-50 kV

Tube current: 50-1000 μ A

Ambient temperature range: 15-30 $^{\circ}$ C

The element content range can be tested: 1ppm-99.99%

The detection limit of the hazardous substances (Cd/Pb/Cr/Hg/Br) in RoHS directive can reach 1 ppm.

Power supply: AC 220V \pm 5V (AC purified stabilized voltage power supply is suggested)

Weight: 60kg

Select filter automatically

Switch collimator automatically and freely

Electro-refrigeration Si-PIN semiconductor detector

Enhanced metal element sensitivity analyzer

Triple safety protection mode

Independent matrix effect correction models

Multi-variable non-linear regression procedure

Arbitrary optional analysis and identification models

Can analyze 24 elements simultaneously

EDX 2800 will be a good partner for you to complete RoHS testing.

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Pursuing perfect quality

We are struggling for every detail.

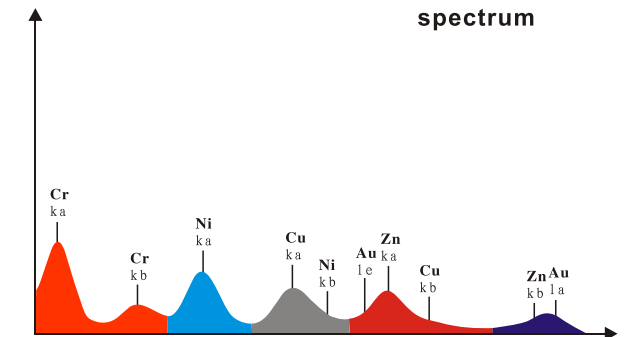


EDX2800

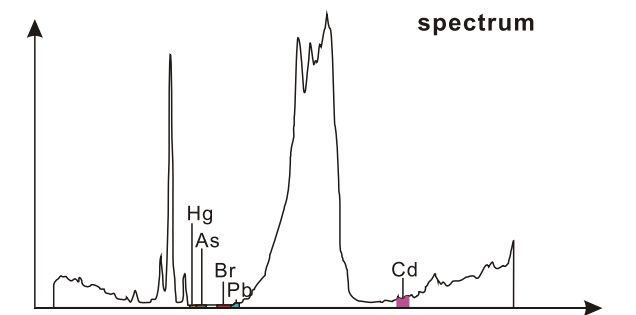
- Measurement part: watch shell
- Measurement time: 200s
- High voltage: 40kV
- Tube current: 250 μ A
- Count rate: 3000cps



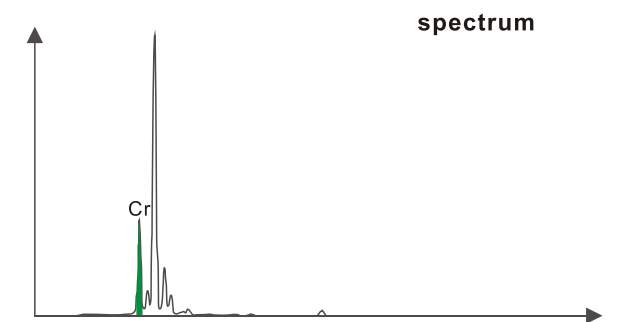
Outer layer: Au Thickness: 0.26 μ m
 Second layer: Ni Thickness: 4.71 μ m
 First layer: Cr Thickness: 2.73 μ m
 Matrix elements and their contents:
 Cu(50%) Zn(50%)



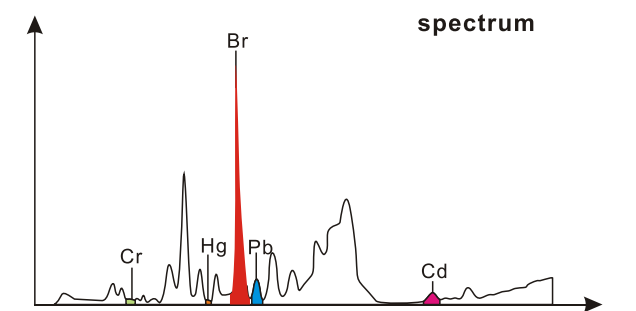
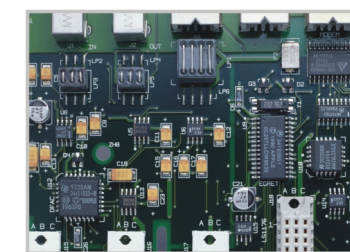
Plastics



Stainless steel



PCB



What is RoHS and WEEE Directive ?

On 13 Feb, 2003, European Union issued Directive 2002/95/EC on RoHS and Directive 2002/95/EC on WEEE. The EU directives RoHS and WEEE have been implemented. New electrical and electronic equipment put on the market from 1 July 2006 shall not contain lead(Pb), mercury(Hg), cadmium(Cd), hexavalent chromium(Cr⁶⁺), polybrominated biphenyls(PBBs) or polybrominated diphenyl ethers(PBDEs).

Testing standards for substances restricted by RoHS Directive

Hazardous substances	Standards (mg/kg)
Cd	100
Pb	1000
Hg	1000
Br(PBBs & PBDEs)	1000
Cr ⁶⁺	1000

Restricted substances and their typical uses

Pb	
Solders	
Paints	Pigments and driers
Glass materials	Pb is allowed in fluorescent lamp
Ceramic materials	Pb is allowed in certain electronic ceramic materials
Iron, aluminum and copper materials	A certain amount of Pb is allowed
Plastic	PVC stabilizer and pigments
Batteries	Pb is allowed in acidic batteries for vehicles

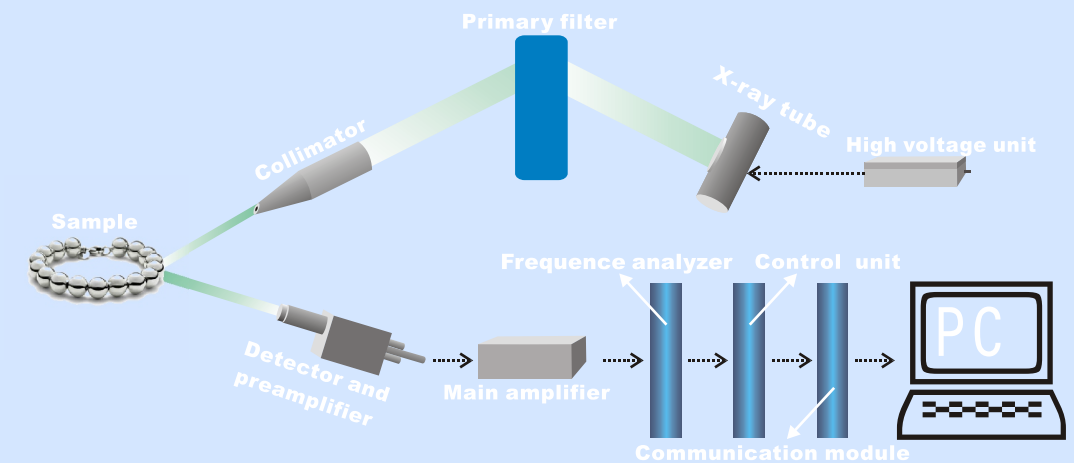
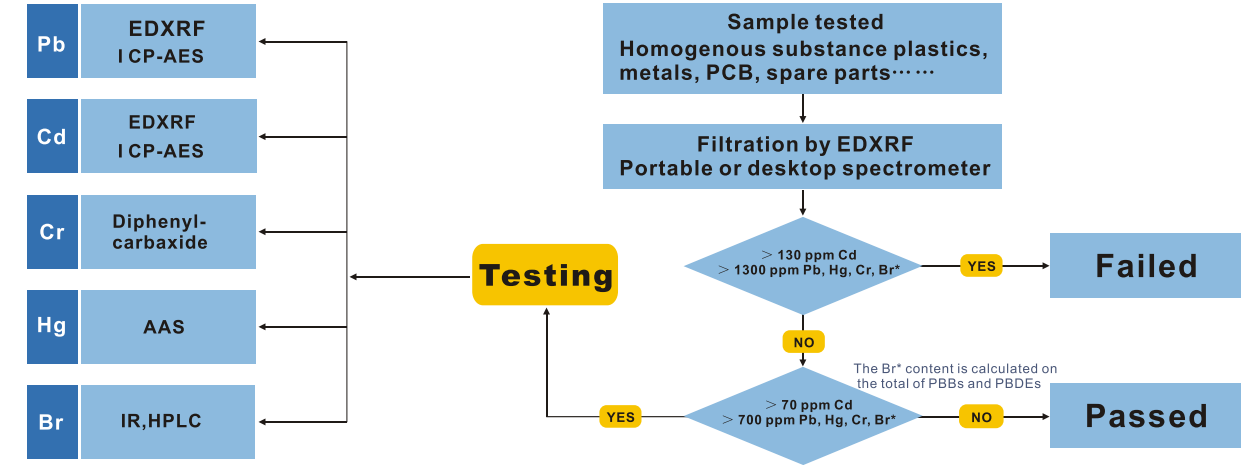
Cd	
Plastics	Stabilizer and pigments
Solders	Seldom used
Ceramic materials	Seldom used
Connectors	Relays and switches
Batteries	Cd is allowed in Ni-Cd batteries
Semiconductors	Optical sensors and solar cell panels

Hg	
Batteries	Prohibited (see battery directive)
Connectors	Relays and sensitive switches
Fluorescent lamps	A certain amount of Hg is allowed

Cr VI +	
Passivation layers	Commonly used for naked metal surfaces to enhance adhesion of plating layers
Anti-corrosive plating layers	Painting and plating layers
Chrome plating layers	Plating layer of chromium metal is not under control
Plasticizer	Commonly used to plastics plating process but not final products

PBB&PBDE	
Plastics	Brominated flame retardants

The analytical method of filtration for RoHS substances



Characteristic X-rays of elements

Each element will emit X-ray with its own energy when it is excited, this characteristic X-ray is called X-ray fluorescence. That is the basis for analysis.

Scatting

It is the background of the spectrum.

Photoelectron

It is what the detector analyzes.

The X-ray fluorescence intensities of interested elements in the sample are I₁, I₂, I₃, I₄, I₅ etc. And the element content is a function of X-ray fluorescence intensity I of the element. The general formula is as follows:

$$C=f(I_1, I_2, I_3, I_4, I_5, \dots)$$

The function is too complicated to calculate, and the empirical formula is as follows:

$$C=K_1I_1+K_2I_2+K_3I_3+K_4I_4+K_5I_5, \dots$$

C means

The content of element in the sample.

I₁, I₂, I₃...mean

X-ray fluorescence intensities of elements in the sample respectively.

K₁, K₂, K₃...mean

Coefficients to be calculated.

The coefficients K₁, K₂, K₃...can be determined with the samples of known contents though the establishment of scale merit.

ROHS & WEEE