



天瑞仪器
Skyray Instrument



EDX1800E X-ray Fluorescence Spectrometer

- RoHS and Free Halogen Detection
- Coating detection
- Heavy metal detection

EDX1800E X-ray Fluorescence Spectrometer

According to the wide application of EDX1800B in various fields, EDX1800E is specially designed for better performance and higher safety protection class.

New-generation high-voltage power supply and X-ray tube improves the reliability of the product; high-power of new type X-ray tube increases the testing efficiency of the instrument.



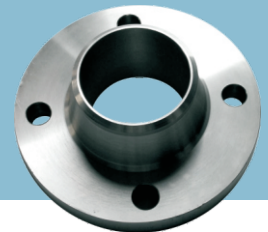
Applications

RoHS testing and analysis

Thickness measuring for metal coating, content measuring for electroplating solution

Mainly used in RoHS Directive-related industries, heavy metals and Free Halogen comply

ROHS



Performance advantages

Down-lighting style: capable for testing samples with various shapes

Collimator and light filter: electrically switch various collimators and light filters, applicable for different measuring methods

Mobile platform: refine platform can be moved manually, easily locate testing point

High-resolution detector: increase the accuracy of the analysis

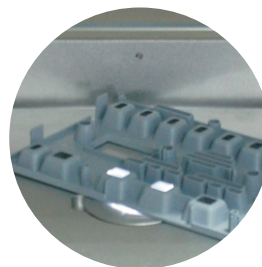
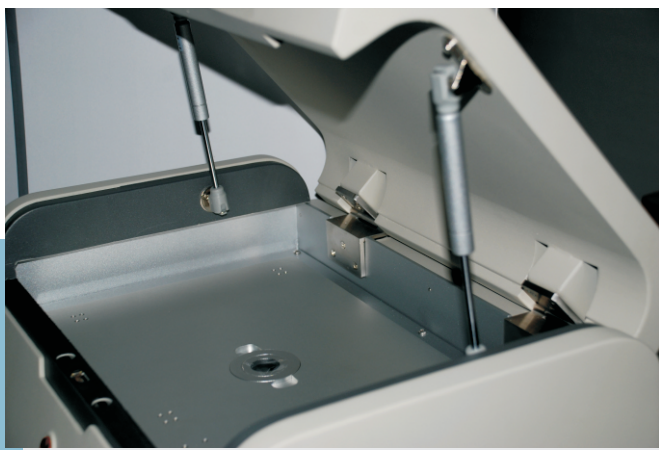
New-generation high-voltage power supply and X-ray tube: stable and reliable performance, up to 100W power can achieve higher test efficiency

Streamlined man-machine design, ensuring operational safety

Super man-machine operation indicator, experiencing comfortable operation



**75 elements detected, 1ppm of detection limit,
repeatability 0.05%, stability 0.05%**



A new generation of X-ray tube with better shielding effect, enable an equal radiation level of X-ray as at normal atmospheric environment
Stable and reliable performance, up to 100W power can achieve higher test efficiency

Self-locking when testing and HV power supply emergency lock equipped on the upper-cover of the instrument, providing all-round protection

Technical parameters

Analyzable elements: Sulfur (S) ~ Uranium (U)
Detection limit of the analysis: 1ppm
Analyzable content: normally 1ppm~99.99%
Multiple analysis and cognition models selectable
Independent matrix effect correction models
Multi-variable non-linear regression procedure
Repeatability for multiple measurements up to 0.05% (more than 96% content)
Long-term working stability of 0.05% (more than 96% content)
Working temperature: 15°C~30°C
Power supply: AC 220V±5V, purifying AC regulated power supply suggested
Energy resolution: 144±5eV
Sample chamber size: 439mm×300mm×50mm
Instrument dimension: 550mm×410mm×320mm
Instrument weight: 45kg

Configuration

Mobile sample platform
Signal to noise ratio intensifier
SDD detector
Signal detection electronic circuit
High- and low-voltage power supply
High-power X-ray tube
Computer and ink-jet printer



Skyray EDX 1800 series comparisons

Standard configurations

Item	EDX 1800B	EDX 1800E
Detector	Si-Pin semiconductor detector, electrical refrigerating instead of liquid-nitrogen refrigerating, stored at room temperature, easy to use. SNR intensifier can be attached.	New-generation SDD detector made in USA with internationally leading technology, improved resolution and test efficiency.
Pre-amplifier and main amplifier circuit	The detector contains pre-amplifier and main amplifier circuit, with integrated design ensuring better stability and higher reliability of the instrument	A whole-new design of pre-amplifier and main amplifier circuit, latest micro-electronics modular technology applied, unified design, ensuring more consistent and stable technical specifications of the instrument
Test and analysis softwar	Special RoHS test software, metal coating analysis software, and component analysis software	whole-new designed professional analysis software, including RoHS& halogen-free; alloy number; metal coating and other analysis software, embedded fundamental parameter analysis algorithm, support qualitative and quantitative analysis with no standard sample

Technical specifications

Item	EDX 1800B	EDX 1800E
Resolution of detector	Resolution can reach $160\pm 5\text{eV}$ (measured with Fe55 at counting rate of around 1000/S), moreover, new type of detector greatly improves the detection line of measured hazardous substances	Resolution can reach $144\pm 5\text{eV}$ (measured with Fe55 at counting rate of around 1000/S)
Precision of instrument	0.1% (measured sample with >96% content)	0.05% (measured sample with >96% content)
Working scope of X-ray tube	New style of structural design ensures the heat dissipation of the light tube, and increases the service life of the light tube. 5~50KV high-voltage with up to 1mA current (set through software as required by customer)	Copper shell ensures the heat dissipation of the light tube, and greatly increases the service life of the light tube. 5~50KV high-voltage; current increased to 1.5mA (the upper limit of the light tube power increased by 50%)
Applications recommended	RoHS, hazardous heavy metal detection; metal coating analysis; component analysis for alloy material; not applicable to light elements, such as Na, Mg, Al, Si	RoHS& halogen-free; alloy number; metal coating and other element analysis

Environmental indicators for heavy metals

Item	EDX 1800B	EDX 1800E
RoHS measurement accuracy	1.For about 1000ppm of sample, the accuracy deviation is $\pm 100\text{ppm}$ (plastic sample as standard) 2.For about 100ppm of sample, the accuracy deviation is $\pm 15\text{ppm}$ (plastic sample as standard)	1.For about 1000ppm of sample, the accuracy deviation is $\pm 50\text{ppm}$ (plastic sample as standard) 2.For about 100ppm of sample, the accuracy deviation is $\pm 10\text{ppm}$ (plastic sample as standard)
RoHS detection range	5 hazardous heavy metal elements stated in RoHS, including Cr, Hg, Pb, Br, Cd, can be detected. The highest detection limit can be 3ppm; moreover, can be applied to test other hazardous metal elements; the special test software can be upgraded for free permanently.	5 hazardous heavy metal elements stated in RoHS, including Cr, Hg, Pb, Br, Cd, can be detected. The highest detection limit can be 2ppm; moreover, can be applied to test other hazardous metal elements; the special test software can be upgraded for free permanently.

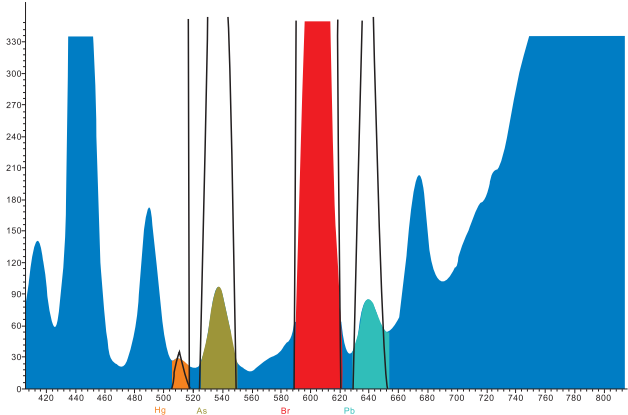
Software

Item	EDX 1800B	EDX 1800E
Component analysis software	Windows operating system, Chinese-version software (English-version software provide)	Windows operating system, Chinese-version software (English-version software provide)
	Can set password with technical management authority, better protecting test data from arbitrary modification	Can set password with technical management authority, better protecting test data from arbitrary modification
	Spectral analysis methods include five methods: total-area, net-area, Gaussian fitting, multi-component fitting, pure element fitting	Spectral analysis methods include five methods: total-area, net-area, Gaussian fitting, multi-component fitting, pure element fitting
	Curve types: linear, quadratic, interpolation; each of them can be combined with the method of "Normalization".	Curve types: linear, quadratic, interpolation; each of them can be combined with the method of "Normalization".
	The software has qualitative analysis and automatic element recognition function, easy to recognize and determine the sample element; qualitative analysis report with spectrogram can be printed.	The software has qualitative analysis and automatic element recognition function, easy to recognize and determine the sample element; qualitative analysis report with spectrogram can be printed.
	With the function of virtual spectrum superposition, easy for qualitative and comparative analysis of the sample	With the function of virtual spectrum superposition, easy for qualitative and comparative analysis of the sample
	Collimator and lighter filter can be switched automatically by the software, reducing measurement errors caused by mistakenly manual replacement of the collimator.	Collimator and lighter filter can be switched automatically by the software, reducing measurement errors caused by mistakenly manual replacement of the collimator.
		Achieve better results of testing mutually interfering elements
Coating analysis software	Windows operating system, Chinese-version software (English-version software provide)	Windows operating system, Chinese-version software (English-version software provide)
	Can set password with technical management authority, better protecting test data from arbitrary modification	Can set password with technical management authority, better protecting test data from arbitrary modification
	Standard sample-free analysis method (FP method); the test is not limited by standard samples. Can be used to test various complex coating.	Standard sample-free analysis method (FP method); the test is not limited by standard samples. Can be used to test various complex coating.
	The software has the function to standard sample calibrating function; both single standard sample and multiple standard samples can be used to check standard sample-free results, making test results approximate to actual value.	The software has the function to standard sample calibrating function; both single standard sample and multiple standard samples can be used to check standard sample-free results, making test results approximate to actual value.
	The software has qualitative analysis and automatic element recognition function, easy to recognize and determine the sample element; qualitative analysis report with spectrogram can be printed.	The software has qualitative analysis and automatic element recognition function, easy to recognize and determine the sample element; qualitative analysis report with spectrogram can be printed.
	With the function of virtual spectrum superposition, easy for qualitative and comparative analysis of the sample	With the function of virtual spectrum superposition, easy for qualitative and comparative analysis of the sample
	Collimator and lighter filter can be switched automatically by the software, reducing measurement errors caused by mistakenly manual replacement of the collimator.	Collimator and lighter filter can be switched automatically by the software, reducing measurement errors caused by mistakenly manual replacement of the collimator.
		Achieve better results of testing mutually interfering elements

Examples of detection



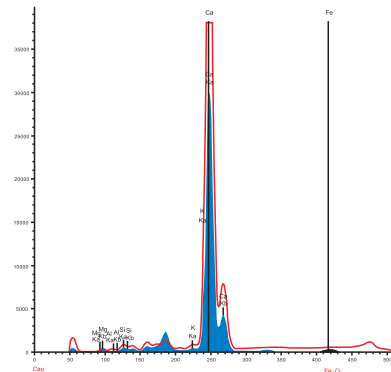
RoHS detection



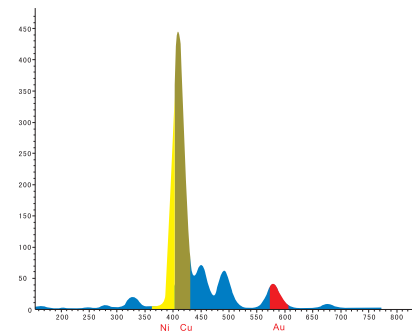
Spectrogram, the test result



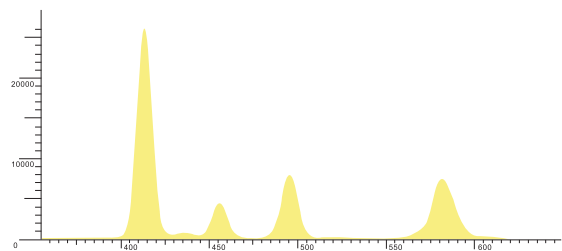
Geological and mineral detection



Coating detection



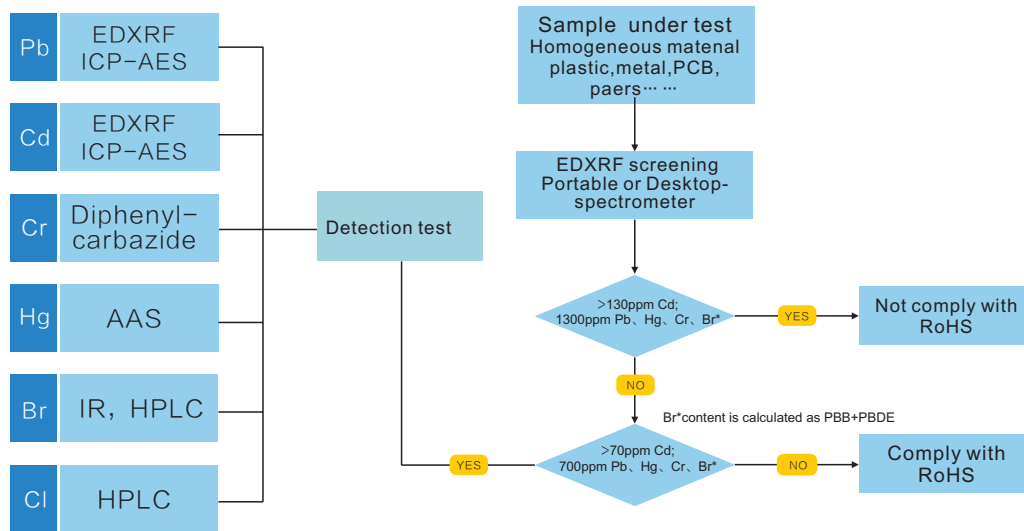
Heavy metal detection



About RoHS and WEEE Derectives

On February 13, 2003, the EU officially announce the directives of The Waste Electrical and Electronic Equipment (2002/96/EC, referred to as WEEE) and the Restriction on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Directive (2002/95/EC, referred to as RoHS), stipulating that, the produce’s responsibility of WEEE became effective on August 13, 2005, and six hazardous substances would be prohibited to use in relevant electrical and electronic equipment from July 1, 2006.

Screening analysis method of XRF detecting RoHS Directive



RoHS Directive test standard

Hazardous substance element	Cd	Pb	Hg	Cr ⁶⁺	PBB _s	PBDE _s	Cl	Cl+Br
Limit(PPM)	100	1000	1000	1000	1000	1000	900	1500

Restricted elements and respective typical applications

Pb	
Solder	
Coating	Toner and desiccant
Glass material	Pb is permitted to be contained in fluorescent lamps.
Ceramic material	Pb is permitted to be contained in some of electric ceramic materials.
Iron, aluminium, copper material	A certain content of Pb is permitted.
Plastic	PVC stabilizer and toner
Battery	Pb is permitted to be contained in acid battery for vehicles.

Cr ⁶⁺	
Passivation layer	Usually used for the surface of bare metals for coating adhesion
Anti-corrosion coating	Coated layer
Chromium coating	Metallic chromium coating is not in the monitored list.
Plasticizers	Usually used in plastic electroplating process rather than final products.

Cd	
Plastic	Stabilizer and toner
Solder	Barely used
Ceramic	Barely used
Connector	Relay and switches
Battery	Cd permitted to use in Ni, Cd batteries
Semi-conductor	Photodetector and solar-cell panel

Hg	
Battery	Prohibited (refer to Battery Directive)
Connector	Relay and micro-switches
Fluorescent lamp	A certain content of Hg is permitted.

PBB _s &PBDE _s	
Plastic	Brominated flame retardants

We Skyray Make Precision Instruments Only

Spectrum Color spectrum Mass spectrum

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