

XRF 2000



Cost-effective, High-quality
X-ray Systems
for Plating Thickness
and Composition Measurement

UPA Technology
www.upa.com

Product Specifications

Microsoft Windows

The XRF 2000 uses Microsoft Windows, allowing multiple tasks to be performed simultaneously. During operation it is possible to review measurements, perform spectrum analysis, and process statistics all while automatically sending the measurement data to Microsoft Excel or other QC programs.

Multiple Measurement Capabilities

The XRF 2000 rapidly and non-destructively measures single-layer, multi-layer, and composition of alloys. Metal content in plating solutions and qualitative material analysis of alloys are also quickly determined.

“Point and Measure” Automatic Parts Positioning

Simply move the cursor to any area of the video image, click the mouse, and the stage moves the part directly under the X-ray beam. Fast, controllable parts positioning is accomplished with ease in seconds.

Custom Statistics Reports

Instantly preview data in any of the five custom report formats. Measurement data, including statistics, X-Bar & R charts, and even a picture of the sample being measured, can be printed in a variety of layouts. Out-of-tolerance measurements are highlighted in red.

Laser Focus Feature

Precision laser focusing on parts provides the most consistent measurement accuracy possible and eliminates operator error.

Stage Forward for Easy Parts Loading

Opening the chamber door automatically brings the stage forward for fast parts loading and unloading. Precise sample placement is also aided by a positioning laser.

Multiple Chamber Models

Three chambers are available including the H, L, and PCB models. Optional features such as programmable stages, filters, and multiple collimators allow measurement of parts of various sizes and shapes for your specific requirements.

X-Ray Beam Video Display

The X-ray beam image is displayed actual size ensuring precise positioning on small parts.

Exclusive “Shutterless” Design Extends Tube Life

Unlike other X-ray systems, the XRF 2000 generates X-rays only while taking measurements. Since the X-ray tube completely shuts off between measurements, there is no need for a mechanical shutter. Less X-ray tube use equals cooler operating temperatures and longer tube life.

Chamber Temperature Regulation

Another first in X-ray design is the exclusive cooling controls which maintain consistent temperature of key system electronics. Measurement stability is further enhanced by the reduction in temperature variation.

2-D and 3-D Plating Thickness Mapping

Topographic mapping of plating thickness is easily accomplished. The resulting graphic is displayed in color or can be printed for further analysis. Stage programs include both automatic random and constant distance measurements.

Automatic X-Ray Beam Alignment

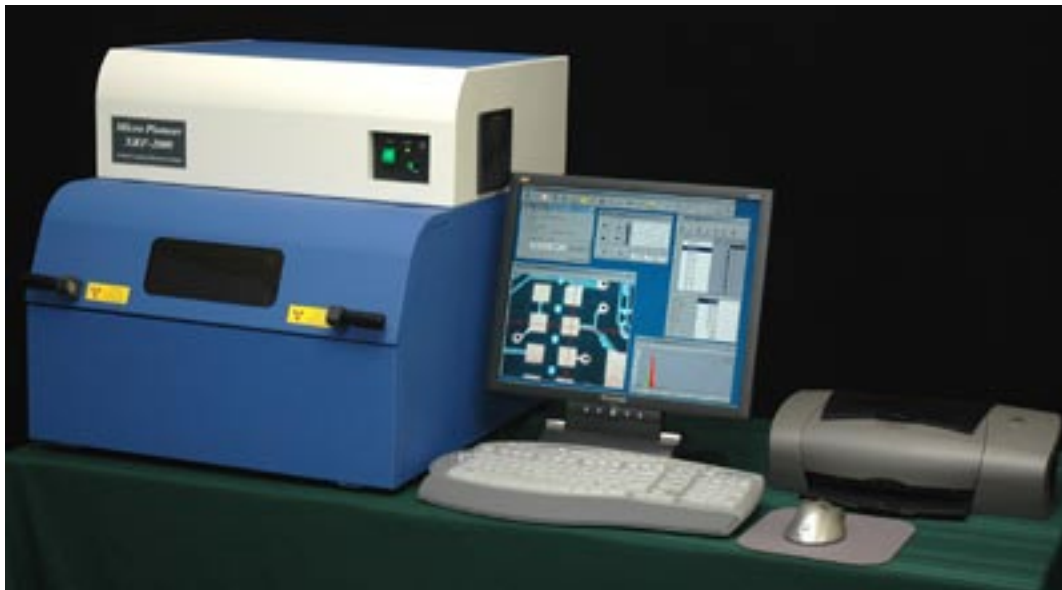
The Beam Position feature aligns the X-ray beam to the camera image. This prevents measurement errors, unnecessary service calls, or instrument down time due to misalignment.

Instrument Service and Support

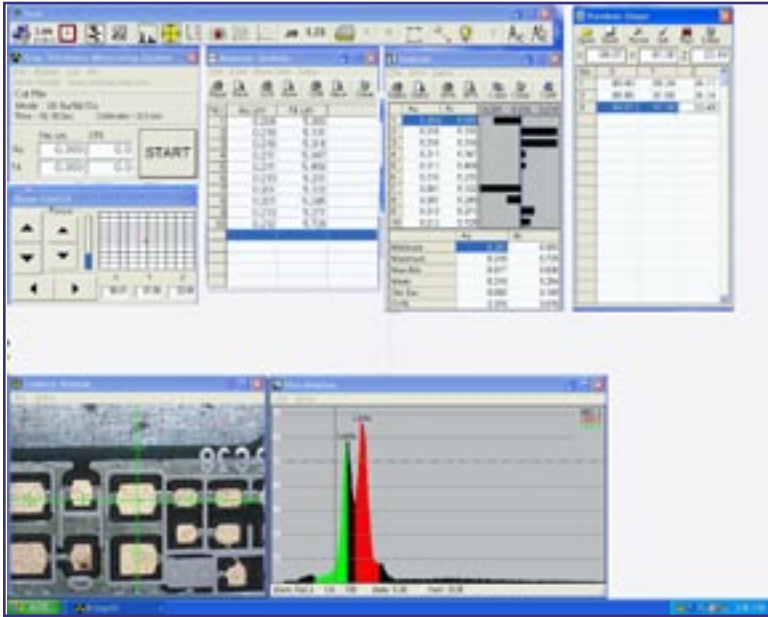
Instrument service and diagnostics are simplified by intelligent product engineering and the use of interchangeable components. XRF service, calibration, and technical support is provided by UPA Technology’s experienced staff

X-Ray Calibration Standards

UPA Technology calibrates all instruments and thickness standards per ISO-17025. Thickness standards for most measurement applications are in-stock for prompt delivery and are offered at competitive prices. All thickness standards are traceable to the NIST and guaranteed accurate.



Graphics and Displays



Full System Screen Display

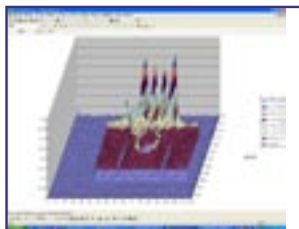
The image shows a window titled "Random Stage" containing a table of stage positions. The table has columns for No., X, Y, and Z. The third row is highlighted in blue.

No.	X	Y	Z
1	90.40	85.24	24.11
2	95.85	81.60	24.14
3	99.07	87.08	23.49

Stage Position Display



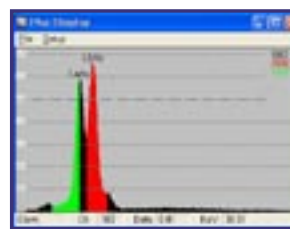
Tool Bar with Mouse-over Descriptions



3-D Plating Topography



Camera Display



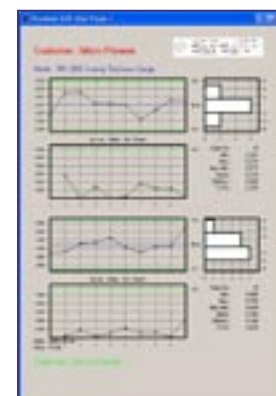
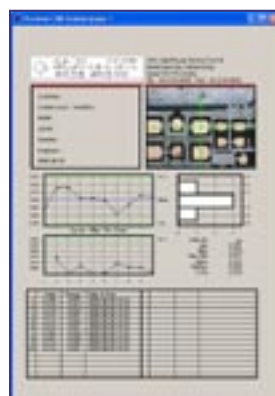
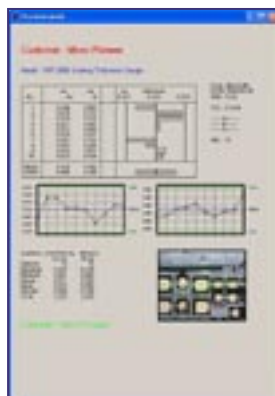
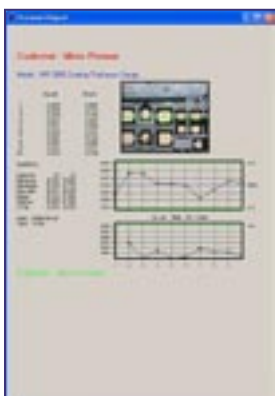
Element Analysis

The image shows a measurement screen with a table of data and a "START" button. The table has columns for "The. Id.", "CPD", "S/Fs", "S/d", "P/S", and "M".

The. Id.	CPD
S/Fs	2.15
S/d	19.144
P/S	10.403
M	

Measurement Screen

Custom Report Formats



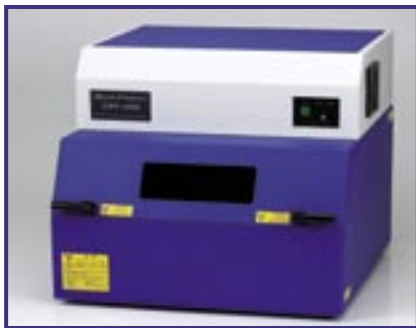
X-Ray System Specifications

Chamber	
Input Power	115 volts AC 50/60hz
Data Port	RS-232
Temperature Control	Automatic preamp and chamber temperature regulation
Focusing	Precision laser assisted
Sample Positioning	Laser-guided parts placement
Safety Circuitry	Automatic X-ray shut-off within 0.5 seconds, if chamber door opened during measurement
Multi-Channel Analyzer	
Channels	1024 channels
Pulse Processing	High speed using micro-processor
Temperature Control	Automatically regulated
X-Ray Source	
X-Ray Tube	Long life, tungsten target, miniature spot size
High Voltage	0-50kV, oil-cooled
Tube Current	0-1.0 Ma
XRF Housing	Large oil-filled tank encloses both X-ray tube and high voltage
Collimators	
Type	Single fixed or multiple (automatic)
Single Fixed	4, 8, 12, 16 Mils diam. or 2x12 Mils rectangular
Multiple Automatic (5 Total)	4, 8, 12, 16 Mils diam and 2x12 Mils rectangular

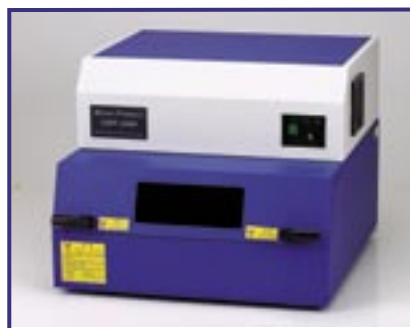
Detection System	
Detector	Proportional counter
Filters	Motorized Cobalt (Ni optional)
Computer System	
Computer	IBM compatible AT/PC
Features	Windows operating system, CD/DVD drive, and USB ports
Monitor	Flat screen LCD
Printer	Industry standard printer
X-Y-Z Stages	
Operating Type	Precision, high speed stepper motors with ramped acceleration and cushioned deceleration
Stage Positioning	Mouse or automatic controls "Point and Measure" 2-D and 3-D positioning
EZ Loading Stage	Automatic stage forward by opening/closing door
Camera System	
Camera	Digital, CCD, color, high-resolution
Display Image	Monitor overlay video display
Reticle Image	Software generated target
X-Ray Beam	Actual-size beam displayed by software
XRF Beam Alignment	X-ray beam and camera optics are auto aligned
Sample Lighting	Long-life LED, adjustable

Calibrations	
Application	Single layer, multi-layer, alloy thickness and composition, plus solution analysis
Correction Functions	- Density correction - Drift correction by reference sample
Statistical Analysis	
Statistics	Mean, maximum, minimum, range, standard deviation
Charts and Graphs	X-bar and range chart, histograms
Report Printing	
Reports	Five (5) custom report formats
Previewing	Instant previewing of reports
Custom Heading	Company name and logo
Parts Images	Sample picture can be printed on report
Qualitative Element Analysis	
Method	ROI and peak distance method
Display	Color spectrum with element labeling
Magnification	Magnifies/highlights desired items
Stage Programs	
2-D	Regular distance parts and surface measurements
3-D	Topographical mapping of plating thickness
Random	Irregular distance parts measurement

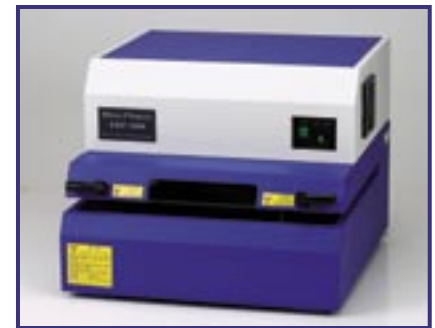
Chamber Model Specifications



Type H



Type L



Type PCB

Model Name	Type H	Type L	Type PCB (slotted)
Chamber Dimensions	W 24.5" x D 27.0" x H 24.0"	W 24.5" x D 27.0" x H 19.5"	W 24.5" x D 27.0" x H 19.5"
Inside Chamber Dimensions	W 22.0" x D 22.0" x H 4.0"	W 22.0" x D 22.0" x H 0.8"	Infinity x H 0.8"
X-Y-Z Stage Travel	W 8.0" x D 6.0" x H 4.0"	W 8.0" x D 6.0" x H 0.8"	W 8.0" x D 6.0" x H 0.8"
Maximum Part Weight	7 lbs.	3 lbs.	3 lbs.

These specifications are subject to change without notice due to product improvements.



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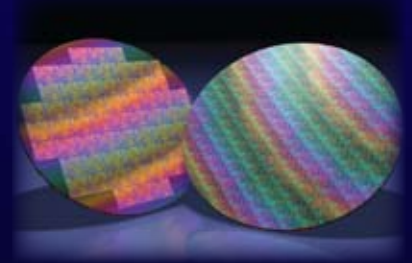
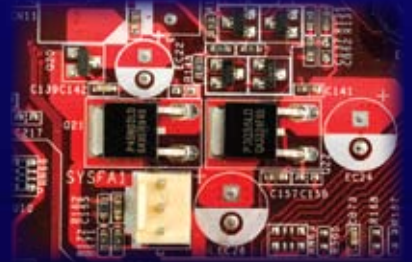
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XRF 2000-R



Elemental Analyzer and Coating Thickness X-Ray

- High Resolution, Solid State Detector
- RoHS/WEEE Compliance Testing
- Trace Element Analysis 0.1 – 100%
- Multi-layer Platings Measurement
- Plating Bath Analysis
- Hazardous Materials Detection
- Measures liquids, solids, powders, films and irregular shapes
- Precious metals analysis (gold, silver, platinum, and jewelry)



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X-Ray System Capabilities

- Precious metal alloy assay and element identification
- Trace analysis of hazardous materials
- Coating thickness measurement for multiple layers, or Sn-Pb composition
- RoHS, WEEE and ELV optimized applications
- Qualitative analysis for up to 30 elements
- Large chambers with automatic filters, multiple collimators and XYZ stages

X-Ray System Specifications

Chambers: Multiple models

X-Ray Tube: Micro-Focus 50Kv @ 1.0 mA with W, Ag, Mo or Rh targets

Detector: Silicon, Pin Diode, Peltier cooled

Filters: Up to 6 motorized, primary X-Ray filters

Collimators: Up to 5, from 4.0 mils - 125 mils

Sample Stage: Programmable X-Y-Z with automatic focus, Point & Measure and EZ parts loading features

Data: 5 custom report formats or direct to Excel

Video: Color, Hi-resolution, 20X magnification

Electrical: 110/220V AC 50/60 Hz

Typical Analysis Results

Jewelry Standards

Element	Actual	Measured
Pt	100%	99.99%
Pt	97.0%	97.02%
Au	100%	99.99%
Au	76.3%	76.18%
Au	51.8%	51.67%

PVC Standards

Pb	400 ppm	406 ppm
Cd	100 ppm	102 ppm
Hg	200 ppm	191 ppm
Cd	400 ppm	415 ppm
Br	500 ppm	520 ppm



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