

HANDHELD XRF ROHS ANALYZER



Handheld XRF RoHS Analyzer - ToronXRF™ 3000R

Handheld XRF RoHS Analyzer delivers rapid, nondestructive elemental screening for manufacturers, recyclers, and quality-control teams who need to verify compliance with restricted-substance regulations. The ToronXRF™ 3000R uses energy dispersive X-ray fluorescence to identify and quantify toxic elements such as lead, cadmium, mercury, and chromium directly in raw materials, components, and finished goods. Results are available in as little as one second, giving operators lab-comparable accuracy without sending samples out for testing.

Built around a digital signal processor and a silicon drift detector, the ToronXRF™ 3000R matches the sensitivity of benchtop XRF systems while remaining light enough for one-handed field use. A 5-inch high-definition touchscreen rotates a full 360 degrees so results stay readable in tight spaces or low light. Waterproof and dustproof housing lets the instrument move between the production floor, the incoming-materials dock, and outdoor field inspections without a change in equipment.

Quality engineers, third-party auditors, and recycling operators rely on the ToronXRF™ 3000R to catch noncompliant materials before they reach the next stage of production or resale. The instrument analyzes solids, liquids, and powders without sample preparation, and its dual operating modes let both new technicians and experienced analysts get accurate readings from the same device.

APPLICATIONS

Handheld XRF RoHS Analyzer - ToronXRF™ 3000R Applications

The Handheld XRF RoHS Analyzer supports hazardous-substance screening across the manufacturing, recycling, and consumer-goods sectors.

- Electrical and Electronic Manufacturing: screens components, connectors, and finished assemblies for restricted elements such as lead, cadmium, and mercury before products ship

- Waste Electrical and Electronic Equipment (WEEE) Recycling: sorts and verifies scrap electronics and recovered materials for hazardous substance content prior to processing or resale
- Toys and Children's Products: verifies compliance with restricted-substance limits in plastics, coatings, and metal components used in toys and juvenile products
- Packaging Materials Manufacturing: checks inks, coatings, and substrates for cadmium, lead, and other regulated elements in food-contact and consumer packaging
- Consumer Goods Inspection: performs on-site screening of finished consumer products, including stationery and household items, for RoHS-restricted metals
- Machinery Manufacturing and Processing: confirms incoming raw materials and components meet material composition specifications before assembly
- Battery Component Testing: identifies restricted heavy metals in battery casings, terminals, and electronic components during production
- Third-Party Compliance Assessment: gives independent labs, auditors, and raw material suppliers a portable tool to verify material declarations on-site

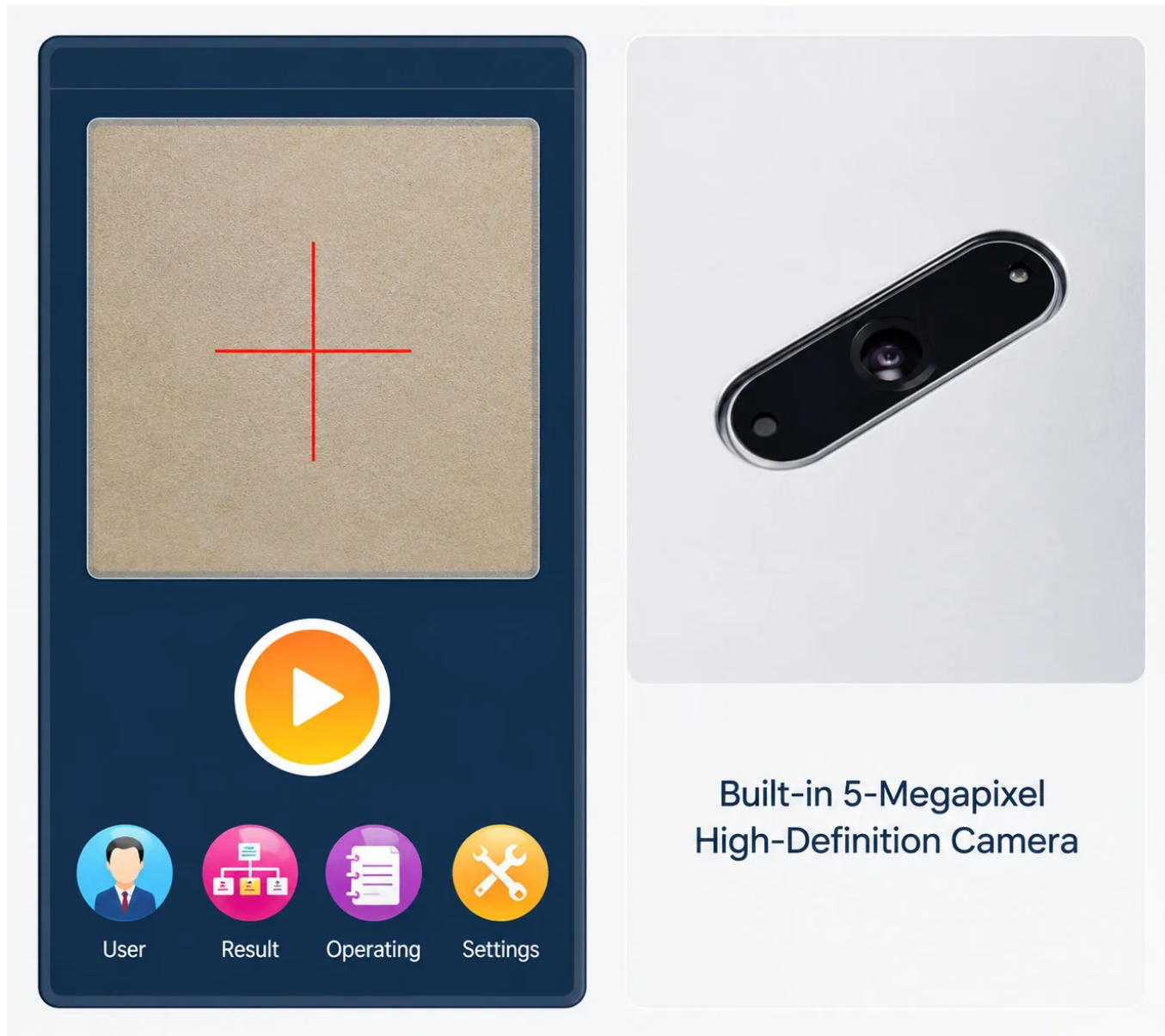


FEATURES

Handheld XRF RoHS Analyzer - ToronXRF™ 3000R Key Features

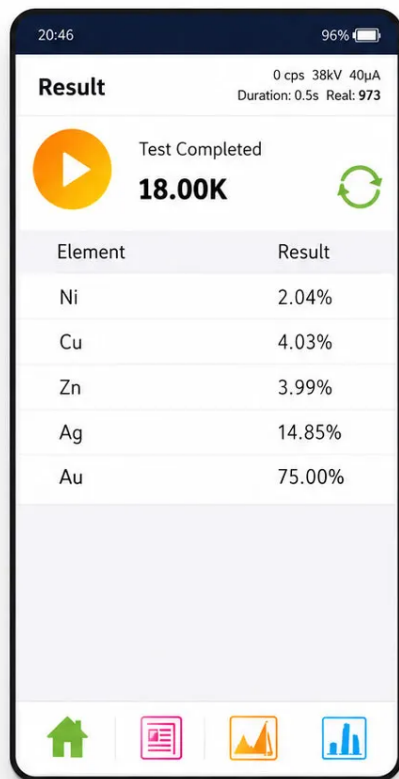
The ToronXRF™ 3000R combines benchtop-level analytical performance with a rugged, field-ready design.

- 40-Element Simultaneous Analysis: detects elements from magnesium to uranium (atomic numbers 12 to 92) in a single measurement, covering the full range of RoHS-regulated substances
- Sub-Two-Second Detection: returns results in as little as one second, letting operators screen high volumes of incoming material or finished goods without production delays
- Digital Multi-Channel Processing: processes spectral data at up to 500,000 counts per second for spectral resolution that approaches benchtop XRF performance
- Helium-Free Light Element Detection: resolves light elements such as magnesium, aluminum, and silicon without the cost or complexity of helium purging
- 360-Degree Rotating HD Touchscreen: keeps the 5-inch display readable from any angle, including low-visibility field conditions
- Waterproof and Dustproof Housing: withstands harsh production, warehouse, and outdoor field environments without sacrificing measurement accuracy

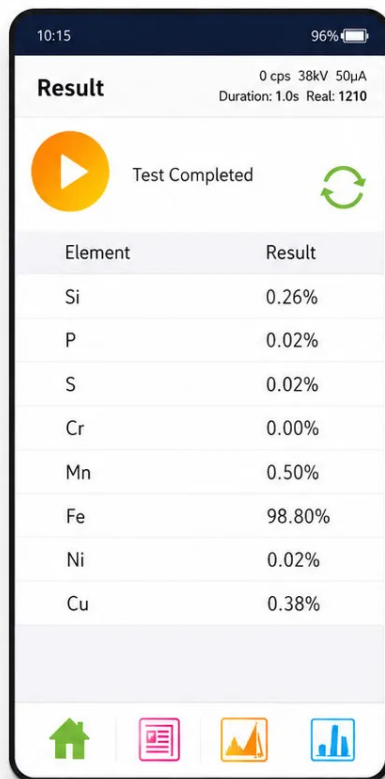


- Built-In 5-Megapixel Camera: lets operators confirm exact sample positioning before and during each measurement
- Automatic Collimator and Filter Switching: adjusts beam geometry and filtration automatically to match different sample types and application requirements

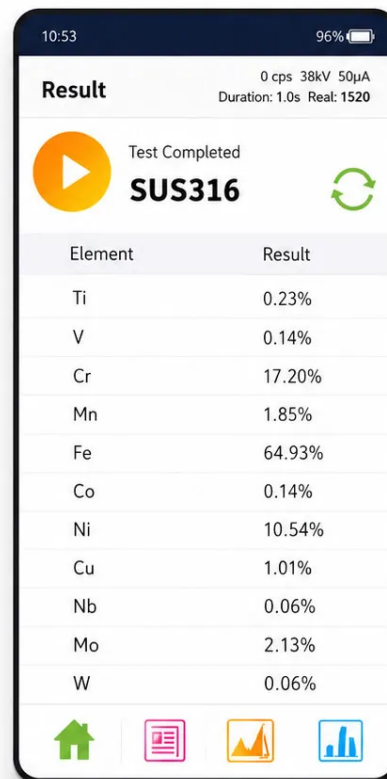
- Multi-Layer Radiation Safety System: combines automatic tube shutoff without a sample present, a lead-coated steel housing, and a rubber scatter shield with a manual security interlock that blocks unauthorized software control
- Color-Coded Status Indicator: signals power, active testing, and fault conditions at a glance through a green, red, and yellow warning light system
- Dual Operator and Expert Software Modes: gives new technicians a simplified one-step workflow while offering experienced analysts full access to advanced settings
- Extended Battery Life: runs up to 12 hours on the standard 9,000mAh battery, with an optional 27,000mAh battery extending runtime to approximately three days
- Portable Test Stand Compatibility: mounts to an optional table stand for bench-style measurement without sample preparation



**18K Precious Metal
Detection**



Low Alloy Steel Test



Alloy Test

THEORY & METHOD

Theory and Method

Energy dispersive X-ray fluorescence identifies elements by exciting their atoms with a primary X-ray beam. When a high-energy photon strikes an atom, it can eject an electron from an inner shell through the photoelectric effect, leaving a vacancy. An electron from an outer shell then drops down to fill that vacancy and releases the excess energy as a fluorescent X-ray photon. Because each element has a unique electron shell structure, the energy of the emitted photon acts as a fingerprint that identifies the element present in the sample.

The ToronXRF™ 3000R generates its primary beam with a miniature silver-target X-ray tube operating at up to 50kV and 200uA. A silicon drift detector captures the fluorescent photons returning from the sample and measures the energy of each one individually. Digital multi-channel processing technology sorts these photons by energy at rates up to 500,000 counts per second, building a spectrum in which each peak corresponds to a specific element and its intensity corresponds to concentration.

Automatic collimators and six switchable filters shape the excitation beam for different sample types and element ranges, improving sensitivity without operator intervention. This combination of a silver-target tube, high-resolution detector, and digital multi-channel analysis allows the instrument to resolve light elements such as magnesium, aluminum, and silicon without a helium purge, while maintaining the detection limits needed for trace-level RoHS screening.

TECHNICAL SPECIFICATIONS

Handheld XRF RoHS Analyzer - ToronXRF™ 3000R Technical Specifications

Parameter	Specification
Analytical Method	Energy dispersive X-ray fluorescence (EDXRF)
Elemental Range	Atomic number 12 to 92 (magnesium to uranium)
Simultaneous Elements	Up to 40 elements
Detection Time	1 to 60 seconds

Parameter	Specification
Content Range	ppm to 99.99%
Detection Limit	Approximately 5 ppm (element and matrix dependent)
Detector	SDD detector, optional Fast-SDD detector
Detector Resolution	128 eV
Excitation Source	50kV / 200uA silver-target miniature X-ray tube with integrated high-voltage power supply
Collimator and Filter	4.0mm and 2.0mm collimator diameters, 6 filters with automatic switching
Sample Types	Solid, liquid, powder
Data Processing Technology	Digital multi-channel processing, up to 500,000 counts per second
Video System	5-megapixel high-definition camera
Display	5-inch transfective LCD touchscreen, 360-degree rotation
Connectivity	GPS, WiFi, Bluetooth, waterproof mini USB, SPI data transmission
Microcomputer	1 GHz CPU, 1GB system memory, expandable to 32GB storage
Voltage	Rechargeable lithium battery, standard 9,000mAh (up to 12 hours), optional 27,000mAh (up to 3 days); 110V to 220V universal charging adapter
Operating Temperature	-20°C to +50°C
Operating Humidity	90% or less
Dimensions	244mm (L) × 90mm (W) × 330mm (H)
Weight	1.7 kg

Included Accessories

Item	Description
Standard Battery	9,000mAh rechargeable lithium battery
Spare Battery	Optional 2,700mAh battery for extended field use
Travel Case	Heavy duty travelling case with foam insert for safe transport
Bluetooth Printer	Optional portable Bluetooth printer for on-site report printing
Car Charger	Optional vehicle charging accessory
Table Stand	Optional portable test bench stand for bench-style measurement



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