

Qualana

Micro-XRF Spectrometer for Precise, Reliable Data



Can you be confident in your data?

Qualana targets the intended measurement point with high precision and links positional information with analytical results, delivering data you can rely on with greater confidence.



Rigaku
POWERING NEW PERSPECTIVES

Micro-XRF Spectrometer

Qualana



Many failures and defects originate in features too small to evaluate with conventional XRF. Micro-area analysis helps reveal their true cause.

Micro-XRF that supports reliable decision-making

Qualana helps reduce the uncertainty often encountered in micro-area analysis. By accurately targeting the intended measurement point and linking positional information with analytical results, it helps users proceed with greater confidence based on the results obtained. Qualana also reduces the need for repeat measurements or additional verification by other techniques, supporting faster root-cause analysis.

Measure the intended micro-area directly

In micro-area elemental analysis, even a slight offset between the optical observation point and the X-ray irradiation point can affect the conclusion. Qualana's Vertical3-Axis Targeting is a proprietary optical system that vertically aligns the low-magnification camera, high-magnification camera, and X-ray source. Combined with high-precision stage control, it accurately guides the observed location to the X-ray irradiation point. This reduces misjudgments caused by positional offsets and minimizes realignment work, helping identify root causes more quickly.

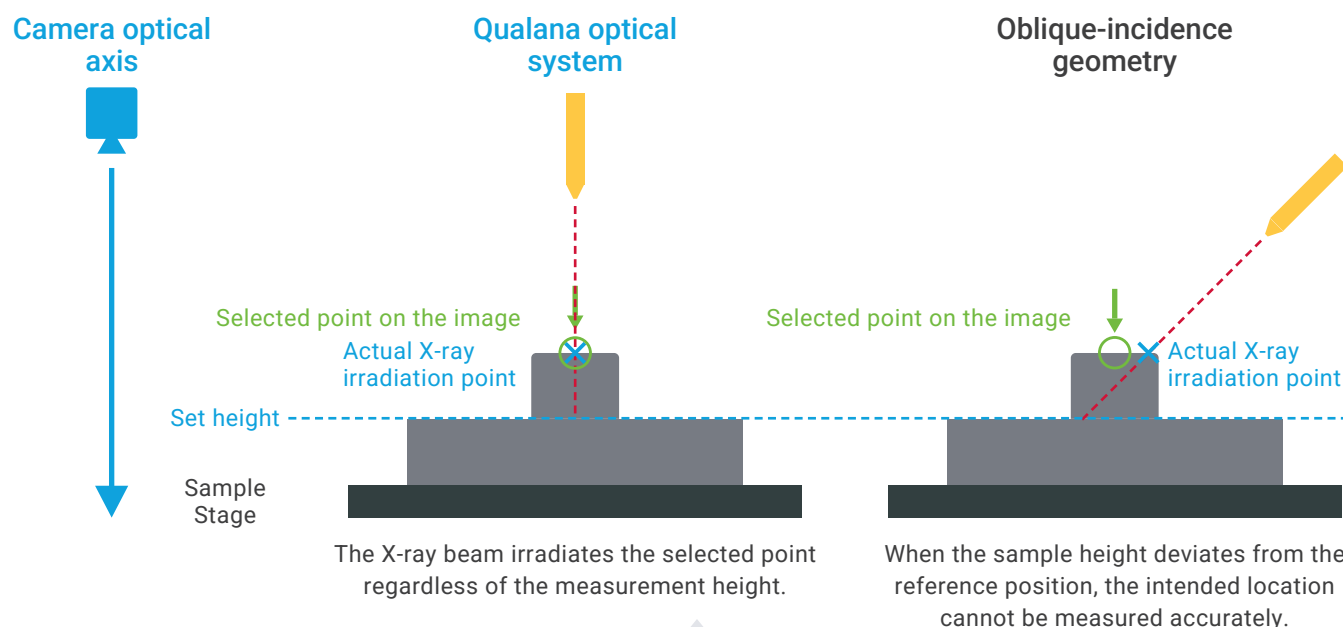
Traceable workflow for easier explanation and verification

Rather than measuring the entire sample in detail from the start, Qualana lets users first grasp the overall picture through large-area mapping and then examine only the necessary locations in detail. This approach reduces measurement time while lowering the risk of overlooking important features, helping users reach the data needed for decision-making. Because the measurement workflow can be traced, the effort required for explanation and verification is reduced.

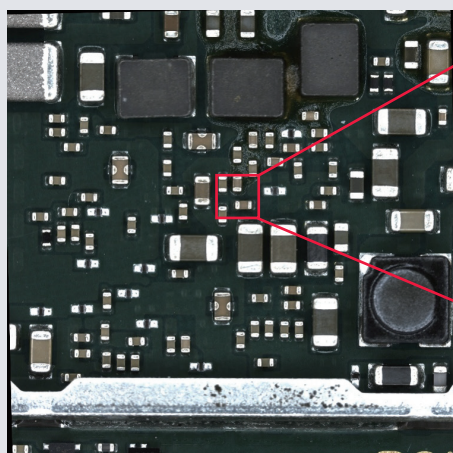
Vertical Incidence and a High-Precision Stage Minimize Offset Between the Optical Observation Point and X-ray Irradiation Point

Measure the intended micro-area directly: minimized offset.
Reduced uncertainty.

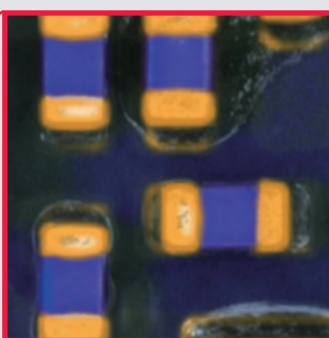
In conventional micro-area measurements using oblique X-ray incidence, even a slight offset can lead to misidentification of the measurement point or uncertainty in interpretation. Qualana makes it easier to measure the intended location directly, enhancing the reliability of spot analysis. Analyze exactly the area you intend with greater confidence. Unlike conventional systems, where differences between the optical viewing angle and X-ray beam can cause the analysis location to shift as sample height varies, Qualana's Vertical3-Axis Targeting optical system aligns the camera and X-ray source on the same vertical axis. Combined with high-precision stage control, this minimizes the difference between the area you select and the area actually analyzed by X-rays.



PCB sample with a 1 mm height difference

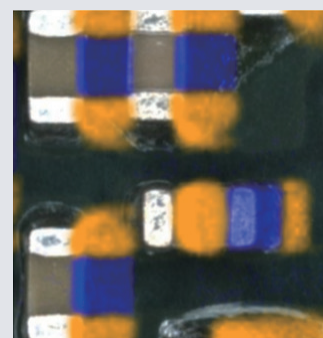


Qualana optical system



Obtain elemental maps with good alignment to the optical image.

Oblique-incidence geometry



Accurate elemental maps cannot be obtained from uneven samples.

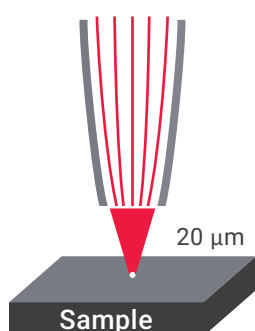
Selectable spot size to suit your application

Qualana is designed to allow users to select the optimal spot size according to the measurement purpose.

Spot Focus Control allows the spot size to be selected from 20 to 200 μm , enabling both large-area mapping and detailed spot analysis with a single instrument.

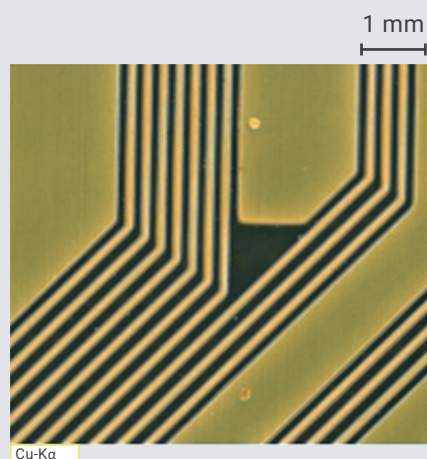
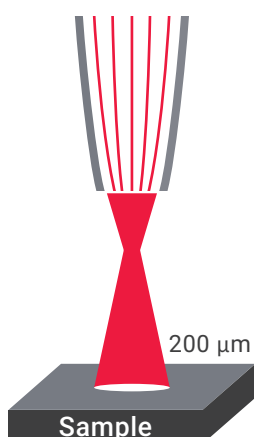
Quantitative analysis using Fundamental Parameter (FP) method is supported for all spot sizes—20, 50, 100, 150, and 200 μm —providing reliable results across diverse applications.

Spot Analysis



Selectable to Suit the
Application

Large-Area Mapping

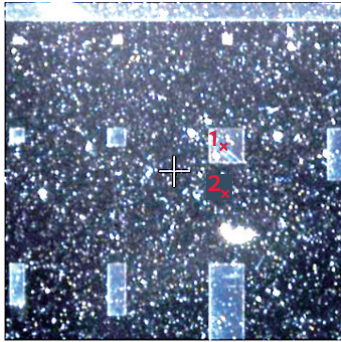


Elemental Map and Optical Image of
a Printed Circuit Board

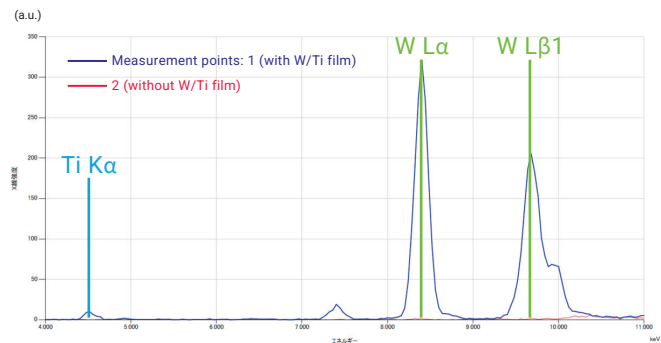


Standardless thin-film analysis

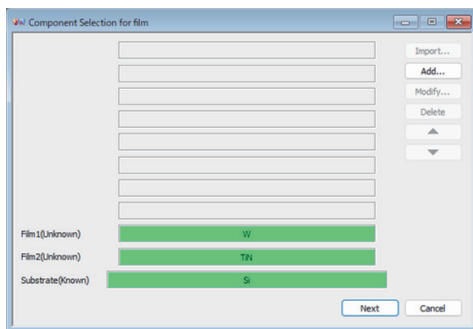
Qualana incorporates Rigaku's Fundamental Parameters (FP) technology, built on more than 50 years of XRF expertise. With a built-in sensitivity library essential for quantitative analysis, Qualana enables evaluation of thin-film thickness and composition without the need for reference standards. Because analysis can be performed directly at the observed location without damaging the sample, Qualana supports efficient thin-film evaluation for research, development, and failure analysis.



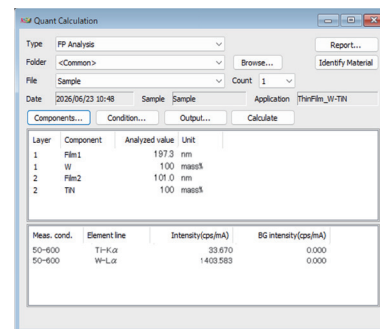
W/TiN multilayer film on Si substrate



High-magnification observation and point analysis



Substrate and layer information entry (up to 10 layers and 100 components)



Standardless thin-film analysis using the FP method

Large-area mapping for large or tall samples

Qualana accommodates samples up to 220 (W) × 220 (D) × 120 (H) mm and performs full XY mapping over an area of up to 200 × 200 mm (equivalent to an 8-inch wafer) without repositioning the sample. Automatic height adjustment and collision-avoidance sensors enable stable measurements even for tall samples.



Foreign Particle Analysis on Battery Sheets

Measure battery sheets without cutting the sample.



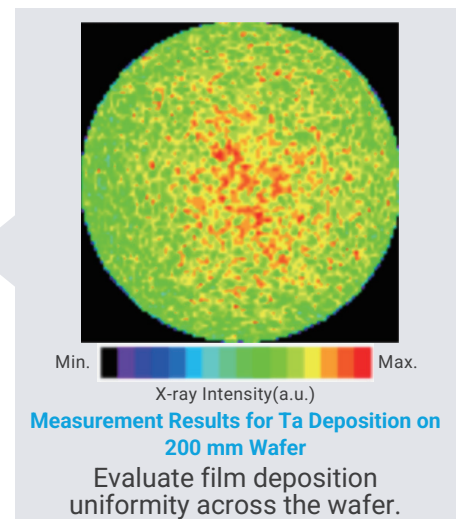
Plating Analysis of Metal Components

Analyze tall metal samples as received.



Thin-Film Evaluation on Large Wafers

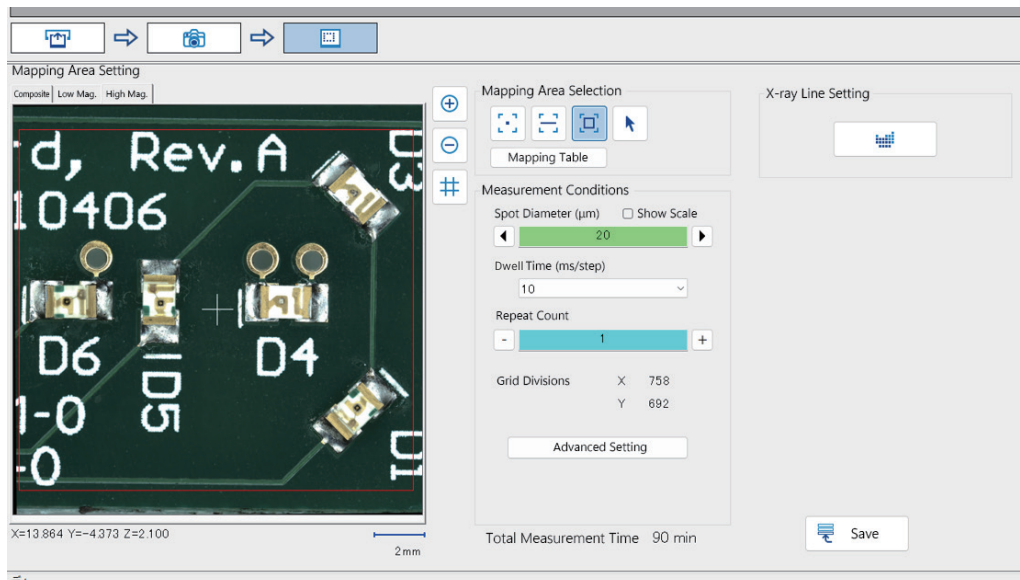
Measure large wafers without repositioning.



Intuitive, ready-to-use software

Qualana software designed to help operators become proficient quickly.

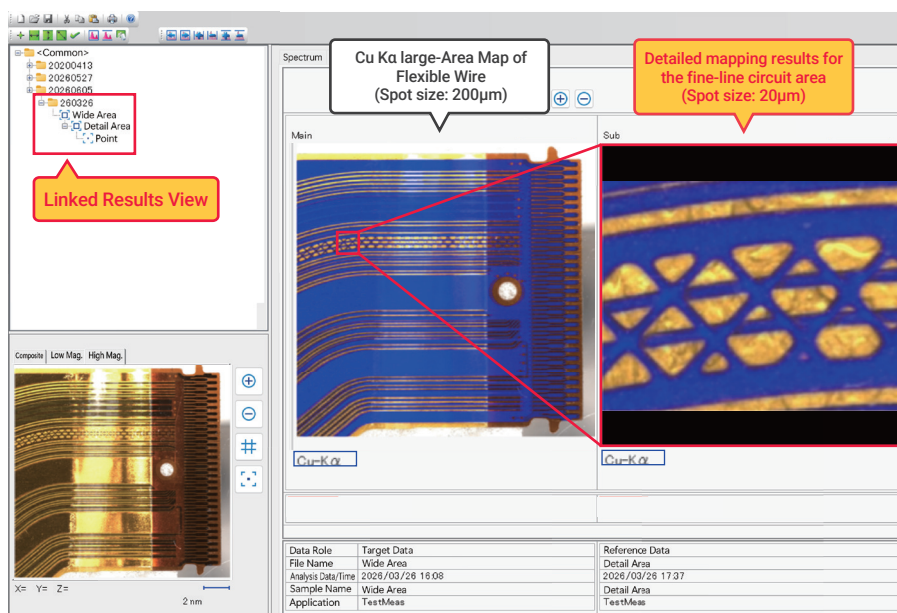
A single, streamlined four-step workflow covers sample loading, imaging, parameter setup, and measurement.



Set measurement conditions intuitively while viewing the sample image.

A measurement workflow that connects large-area mapping to spot analysis

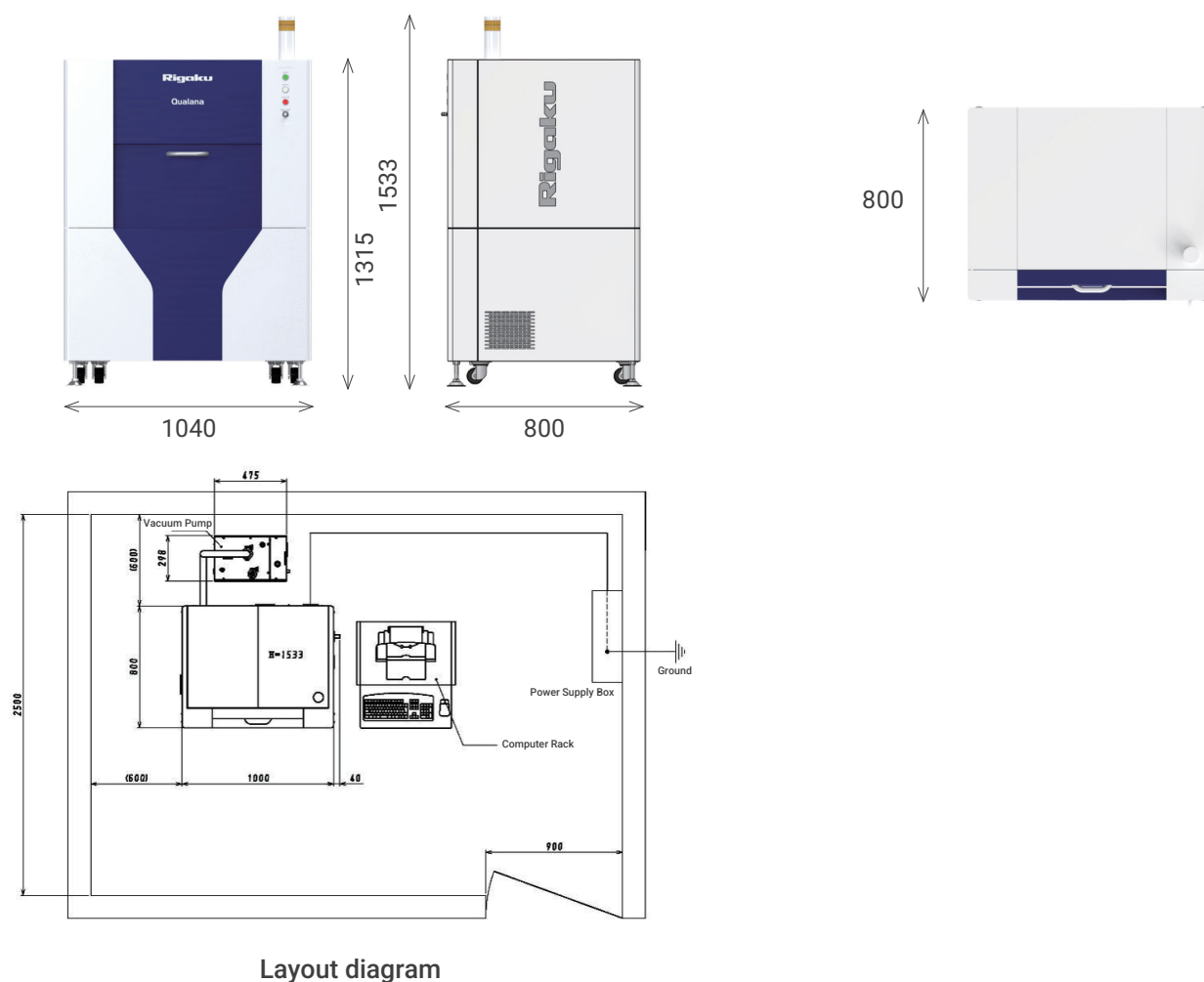
Qualana software supports a continuous analysis workflow: first grasp the overall picture through large-area mapping, then examine only the necessary locations in detail. Because mapping results and follow-up spot analysis data are linked and stored together, users can later review which results prompted additional measurements and why. This reduces the effort required to explain and verify data.



Specifications

X-ray tube	Air-cooled microfocus X-ray tube (no cooling water required), Rh target
Detector	Silicon drift detector (SDD)
Analytical spot size	< 20 μm @ Mo-K, FWHM
Mapping area	Up to 200 mm $\times$ 200 mm
Maximum sample size	220 mm $\times$ 220 mm $\times$ 120 mm
Measurable elements	C to Cm (vacuum), Al to Cm (air)
Measurement atmosphere	Air, vacuum
Quantification methods	Bulk FP, Thin-Film FP (Multilayer FP)
Power requirements	Instrument: Single-phase 200–240 V, 20 A PC: Single-phase 100 V, 15 A
Operating temperature	22–28°C (daily fluctuation within $\pm 2^\circ\text{C}$)
Relative humidity	10–75% RH
Vibration	$\leq 2 \text{ m/s}^2$ (not perceptible to humans)
Weight	560 kg
Utility	Vacuum pump included

Dimensions (mm)



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Specifications and appearance are subject to change without notice.