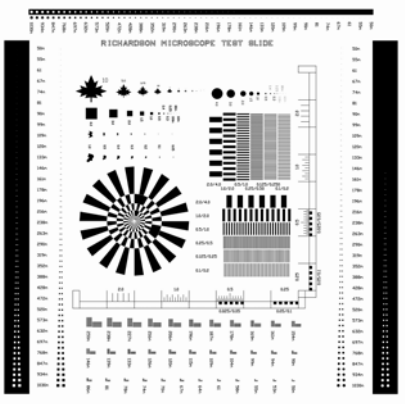
Electron Microscopy Sciences

Our original test slide was powerful..
Gen III is Omnipotent!!!!!!!!

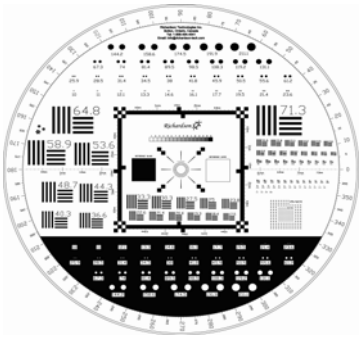
The Richardson Test Slide Generation III

So Powerful it can detect the moment of absolute certainty.

Attune your instrument to consistently achieve the exacting performance you demand.



Detail of High Magnification Patern



Detail of Low Magnification Pattern

Richardson Gen III Test Slides far surpass all others, containing a complete collection of features and scales, down to a revolutionary 50 nanometres. More than powerful, the Gen III is economical as well ? You can save considerably by buying just one test slide with all the features you need. Our line-up is suitable for most optical, scanning and electron (requires plating, not included) microscopy techniques.

Two pattern styles are available – a low magnification pattern for 1x to 20x objectives and a combined low and high magnification version for 1x up to your most powerful objective. Both are available with or without cover slips. Each of our test slides offers more than 20 different test patterns, such as scales, gratings, squares and circles, which are used to assess the quality of an image and to quickly provide easy to understand information on chromatic, spherical and other types of image aberration. Calibrated distances, shapes and line widths provide reliable and simple calibrations of magnification, image resolution and shape identification in even the highest magnification microscope and imaging systems.

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Range and Precision Enable Diverse Applications

Applications for the Richardson Test Slide include:

- Microscope image calibration for absolute size
- Machine vision characterization and calibration
- Image quality testing and demonstration
- Resolution limit testing and demonstration
- Demonstration of optical image formation
- Aberration testing for optics, microscopes and video
- Testing photographic imaging and enlarging systems

Powerful and Indispensable in Many Environments

Richardson Test Slides may be used in many fields, including:

- Light Microscopes
  - Brightfield
  - Reflected Light (Epi-illumination)
  - Darkfield
  - Phase Contrast
  - Differential Interference Contrast
  - Hoffman and LMC Contrast
  - Infrared Microscopy
  - Ultraviolet Microscopy
- Acoustic Microscopy
- Atomic Force Microscopy
- Confocal Microscopy
- Nearfield Scanning Optical Microscopy
- Digital Microscopy

Different Versions for Various Uses

Richardson Test Slides are designed for light microscopy, in bright field, dark field, LMC or Hoffman contrast modes, and confocal microscopy. Our slides are ideal for testing resolution, contrast, aberrations, depth of field and flatness of image focus. Five models are available, depending on your specific needs

Part #	Pattern	Substrate	Cover Glass	Mount
80305 Low Magnification	Metalized opaque ~20nm thick chromium with low magnification outer pattern	Fused Silica	None	75 x 25 x 1mm anodized black aluminum frame
80306 Low Magnification	Metalized opaque ~20nm thick chromium with low magnification outer pattern	Fused Silica	#1.5 Approx. 0.17mm thick	75 x 25 x 1mm anodized black aluminum frame
80302 High Magnification	Metalized opaque ~20nm thick chromium with low magnification outer pattern and high magnification inner pattern	Fused Silica	None	75 x 25 x 1mm anodized black aluminum frame
80303 High Magnification	Metalized opaque ~20nm thick chromium with low magnification outer pattern and high magnification inner pattern	Fused Silica	#1.5 Approx. 0.17mm thick	75 x 25 x 1mm anodized black aluminum frame

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Optical Microscopy

Stereo Microscoscopes - 1x to 20x objectives	80302	80303	80305	80306
Stereo Microscopes	F	E	F	E
Machine Vision Microscopes	F	E	E	E
Low Power Infrared Microscopy	F	E	E	F
Quality Control and Calibration	F	E	F	E

No cover slip - 4x to 100x objectives	80302	80303	80305	80306
Brightfield	E	n/a	F	n/a
Darkfield	E	n/a	F	n/a
Phase Contrast	E	n/a	F	n/a
DIC	E	n/a	F	n/a

170 µm Cover slip - 4x to 100x objectives	80302	80303	80305	80306
Brightfield	n/a	F	n/a	n/a
Darkfield	n/a	G	n/a	n/a
Phase Contrast	n/a	G	n/a	n/a
Differential Interference Contrast (DIC)	n/a	G	n/a	n/a
Real Time Microscope (RTM)	n/a	G	n/a	n/a

Other Microscopy Technologies - 4x to 100x objectives	80302	80303	80305	80306
Atomic Force Microscope (AFM)	E[1]	n/a	n/a	n/a
Electron Dispersion Spectrometry (EDS)	F[4]	n/a	n/a	n/a
Infrared Microscope (IR)	E[2]	n/a	n/a	n/a
Near Field Scanning Optical Microscope (NSOM)	E	n/a	n/a	n/a
Scanning Electron Microscope (SEM)	F[4]	n/a	n/a	n/a
Scanning Probe Microscope (SPM)	E	n/a	n/a	n/a
Scanning Transmission Electron Microscope (STEM)	E	n/a	n/a	n/a
Ultraviolet Light Microscope (UV)	E[3]	n/a	n/a	n/a

E: Excellent	G: Good	F: Fair	P: Poor
n/a: Do not use			
Warning: the test slide does not have a cover slip, therefore it cannot be cleaned and should be used in a clean room only			
The test slide has a cover slip and can be cleaned with caution			
[1] Probe may stick to pattern			
[2] Transmitted and reflected light			
[3] Reflected light only			
[4] Charging will occur unless coated			

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Specifications:

General:

Total Pattern Diameter	8.9mm
Wavelength Transmission Range	190-2000nm
Shape Types	Maple leaves, circles, squares, curved shapes, sharp shapes, solid circle pairs, solid square pairs, circular aperture pairs, square aperture pairs, horizontal/vertical resolution bar sets, grid distortion patterns, grey scale, reference black and white areas, angular scale, horizontal and vertical low resolution rulings, angular grating
Substrate Material	0.525+/-mm thick fused silica
Slide Carrier	75x25 mm or 25x25 mm square anodized aluminum
Image Aperture	Greater than 8.0 mm
Operating Temperature Range	0 to 40° C
Acceptable Immersion Fluids	Standard immersion oils
Inner Pattern	
Squares	60nm-4micron
Circles	60nm-4micron
Maple Leaves	250nm-10micron
Number of Gratings	6
Coarse Crating	2 micron lines on 4 micron spacing
Fine Grating	100nm divisions on 200nm centers
Pie Star Outer Diameter	40 µm
Pie Star Inner Ring Diameter	4 µm
Scale Bars	80µm with 10 µm divisions
Finest Scale	100 nm divisions on 200 nm centers
Smallest Solid Circle Pair	50 nm circles spaced 100 nm center to center
Largest Solid Circle Pair	1030 nm circles spaced 2060 nm center to center
Smallest Solid Square Pair	50 nm squares spaced 100 nm center to center
Largest Solid Square Pair	1030 nm squares spaced 2060 nm center to center
Smallest Circular Aperture Pair	50 nm circles spaced 100 nm center to center
Largest Circular Aperture Pair	1030 nm circles spaced 2060 nm center to center
Smallest Square Aperture Pair	50 nm squares spaced 100 nm center to center
Largest Square Aperture Pair	1030 nm squares spaced 2060 nm center to center
Smallest Horizontal/Vertical Resolution Bar Set	50 nm bars on 50 nm spacing
Largest Horizontal/Vertical Resolution Bar Set	250 nm bars on 250 nm spacing
Outer Pattern	
Smallest Solid Circle Pair	10 µm circles spaced 20 µm center to center
Largest Solid Circle Pair	211.1 µm circles spaced 422.2 µm center to center
Smallest Circular Aperture Pair	10 µm circles spaced 20 µm center to center
Largest Circular Aperture Pair	211.1 µm circles spaced 422.2 µm center to center
Smallest Horizontal/Vertical Resolution Bar Set	0.8 µm bars on 0.8 µm spacing
Largest Horizontal/Vertical Resolution Bar Set	71.3 µm bars on 71.3 µm spacing
Grid Distortion Pattern	25µm circles on 62.5 µm spacing 12.5 µm circles on 31.3 µm spacing
Low Resolution Horizontal and Vertical Rulings	Divisions of 1mm, 0.5mm, 0.1mm and 0.05mm
Angular Grating	Divisions of 10°, 5°, 1°, and 0.5°
Grey Scale	16 Division grey scale
Reference Black and White	100% opaque/100% transmissive squares, 600 µm x 600 µm

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