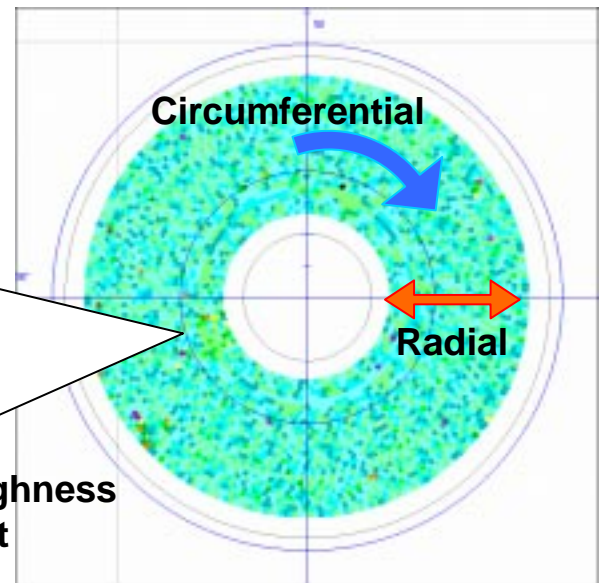
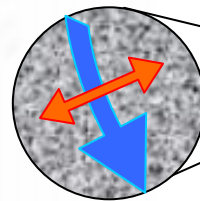


# TMS-2000RC

## The Ultimate Disk Measurement System

**NEW**

*Radial & Circumferential* Measurements  
of Sub Angstrom Ultra Smooth Disks • • •  
• LESS THAN 1Å • • • •



**Bi-directional Roughness  
For each data point**

### Revolutionizing Disk Manufacturing

The fastest, most accurate, non-contact texture measurement system in the world. Laser technology of today for the future. The system collects scattered light and segments the scattered light to compare anisotropic and isotropic roughness of the surface. Currently being used successfully by major disk manufacturers. Discover the ultimate solution to fast, accurate measurements in disk manufacturing.

#### Features:

- **Non-Contact Measurements** cannot harm test surfaces
- **Results** – RA, RMS roughness from 0.2Å up to 1,000Å
- **Cost** – Lower costs than Profilometer, AFM or Interferometers
- **Precision** – Resolution of 0.01Å reproducibility +/-0.25Å or ½% and repeatability: +/-0.1 Å
- **Speed** – Typically 100 test points per second

#### Benefits:

- Quadruple Production Throughput
- Measures Radial, Circumferential, Total, Interrupted & Zone Textures
- Increased Performance/Quality
- Unaffected by environmental conditions
- Minimal operator training required
- Lowest cost per measurement of any system
- Correlates to other measurement instruments via slope/offset or bandwidth compensation.

# The Ultimate In Microroughness Measurements

The fastest, highest resolution, most stable non-contact microroughness measurement system in the world. Advanced laser-based system ideally suited for quantifying and mapping full surface, interrupted, and zone textures. The roughness direction is selectable

from Radial, Circumferential, or Total. Now used by major disk and wafer manufacturers. Discover the ultimate answer to fast, reliable microroughness measurements in disk manufacturing, with systems that simplify lab to manufacturing correlation.

## ■ Measurements

## Technical Specifications

<b>Source:</b>	Class II Laser, 670 nm	<b>Resolution:</b>	0.01Å
<b>Spot Size:</b>	~1mm diameter	<b>Repeatability:</b>	±0.1Å (same sample, same machine)
<b>Number of Spots:</b>	Programmable (full sample to single test point)	<b>Reproducibility:</b>	±0.15 Å (whichever is greater) (same sample, same machine)
<b>Primary &amp; Secondary Results:</b>	RA or RMS (Rq) Microroughness P-V, RMS Slope, TIS, Diffuse Reflectance, Total Reflectance, Specular Reflectance, R-C Ratio	<b>Spatial Filtering Frequency:</b> (wavelength)	Low Band: 0.026 to 0.129 $\mu\text{m}^{-1}$ (7.8 to 38 $\mu\text{m}$ ) High Band: 0.129 to 1.14 $\mu\text{m}^{-1}$ (0.88 to 7.8 $\mu\text{m}$ ) Full Band: 0.026 to 1.14 $\mu\text{m}^{-1}$ (0.88 to 38 $\mu\text{m}$ ) Comp Band: Selectable from 0.2 to 150 $\mu\text{m}$
<b>Speed:</b>	100 Measurements per second★	<b>Microroughness:</b>	Selectable between Radial, Circumferential, or Total
<b>Range:</b>	From 0.2Å up to 5000Å (RMS or RA)	★ Varies with Scan and User Setup	

## ■ Rotary Stage

Repeatability: ±0.01°  
Accuracy: ±0.05°

## ■ Linear Stage

Repeatability: ±0.0005 inch (±0.01 mm)  
Accuracy: ±0.0010 inch (±0.03 mm)

## ■ Operating Environment

41°F (5°C) to 104°F (40°C)

## ■ Data Generation

ASCII Data Files (Detailed), SPC Data Files, Color plots with Scan Notes,

## ■ Computer

Pentium class Computer, with optional Color Printer

## ■ Sample Holders

Standard Disks: 65mm, 95mm other sizes available

## ■ Materials

Aluminum, Nickel, Silicon, and other reflective materials

## ■ Installation

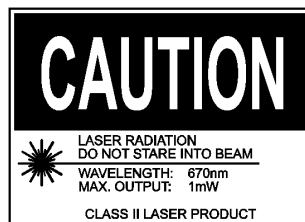
Electrical Requirements: 100-240 VAC – 50/60Hz Meets Class ten clean room requirements.

## ■ Shipping Weights

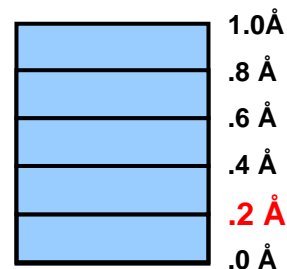
Computer: 70 lbs/32 kg  
TMS-2000: 70 lbs / 32 kg  
Total w/packing: 156 lbs. / 71 kg



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MEASUREMENT  
SYSTEMS, INC.**  
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## TMS RC Angstrom capabilities

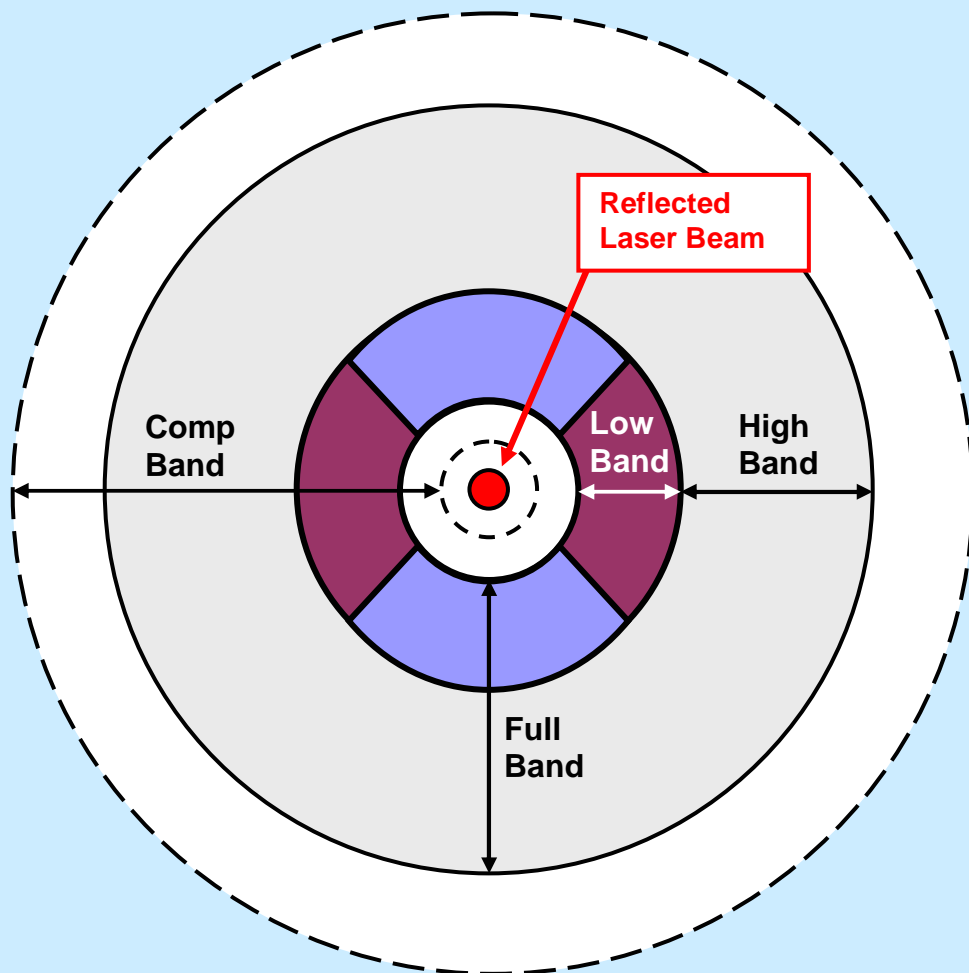


Phone 503-227-5178 • Fax 503-227-5040 • on the web at <http://www.schmitt-ind.com>

Patent #'s 5,661,556 and 5,625,451 other patents pending — Note: All Specifications are subject to change without notice  
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# TMS-2000RC

## SCATTER PATTERN SURROUNDING REFLECTED LASER BEAM



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High Band



Radial



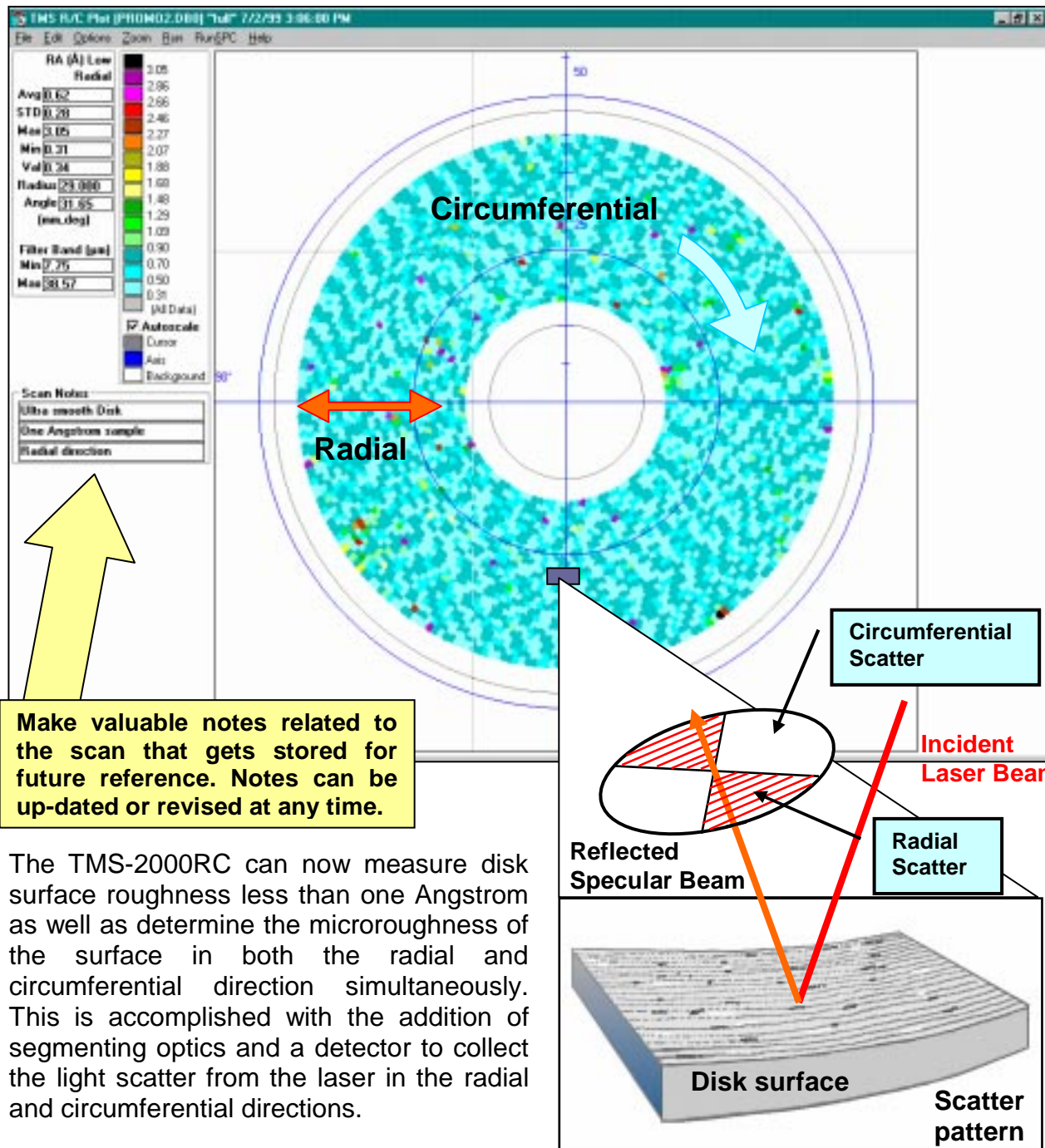
Circumferential



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# TMS-2000RC

**Radial & Circumferential Measurements for the next generation in disk media, Ultra smooth disks.**



Make valuable notes related to the scan that gets stored for future reference. Notes can be up-dated or revised at any time.

The TMS-2000RC can now measure disk surface roughness less than one Angstrom as well as determine the microroughness of the surface in both the radial and circumferential direction simultaneously. This is accomplished with the addition of segmenting optics and a detector to collect the light scatter from the laser in the radial and circumferential directions.