

# MicroCT Bar Pattern Phantom

## QRM-Barpattern-Phantom

NEW  
PHANTOM  
2009

The Micro-CT Bar Pattern Chip Phantom is a perfect tool to assess in-plane and axial spatial resolution of any Micro-CT system in a direct visible manner.

The bar pattern chip offers a good alternative for indirect methods to evaluate spatial resolution in high res X-ray imaging modalities. The phantom comprises two silicon chips, one orientated in-plane and one perpendicular (axial) orientated to it. The chips are placed in a full resin cylinder with high mechanical accuracy or on a support in a hollow cylinder.

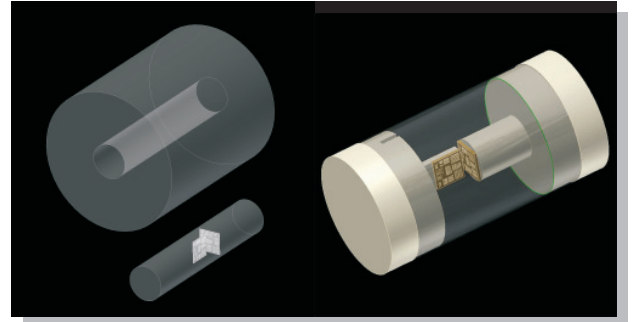
The 5 x 5 mm<sup>2</sup> chip contains bar (trenches) and point pattern with diameters from 5 to 150  $\mu\text{m}$  line/point thickness.

The depth of the structures varies between 80 and 120  $\mu\text{m}$ .

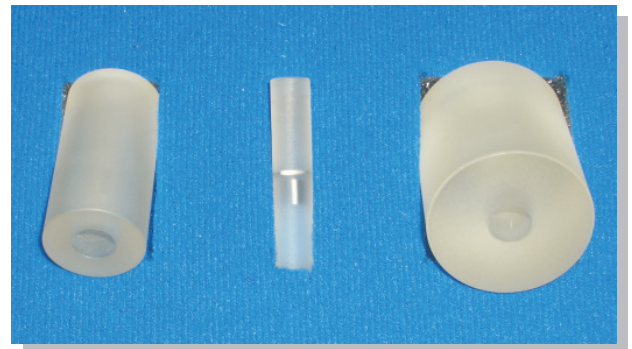
The different structures on the chip are arranged in such a way over the chip, that spatial resolution can be evaluated in the center as well as in the periphery of the image/chip in a single measurement.

linewidth [ $\mu\text{m}$ ]	linepairs / mm
5	100
10	50
15	33.3
20	25
25	20
30	16.6
50	10
100	5
150	3.3

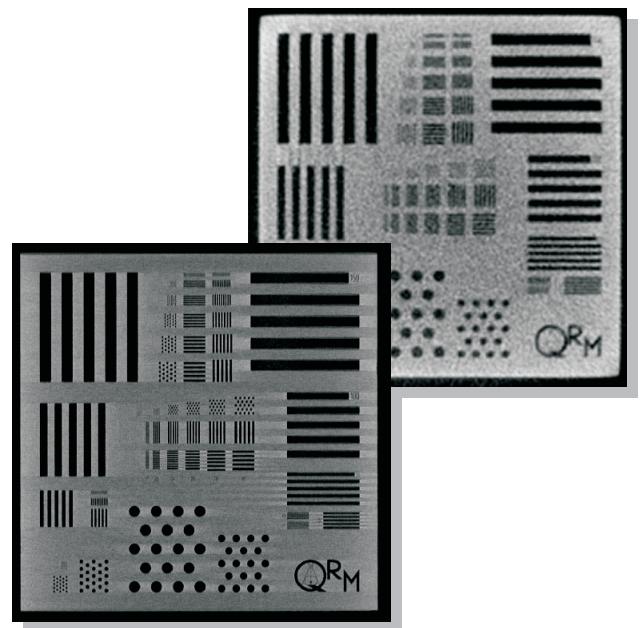
Bar / line pattern on the silicon chip



QRM-MicroCT-Barpattern in resin and air

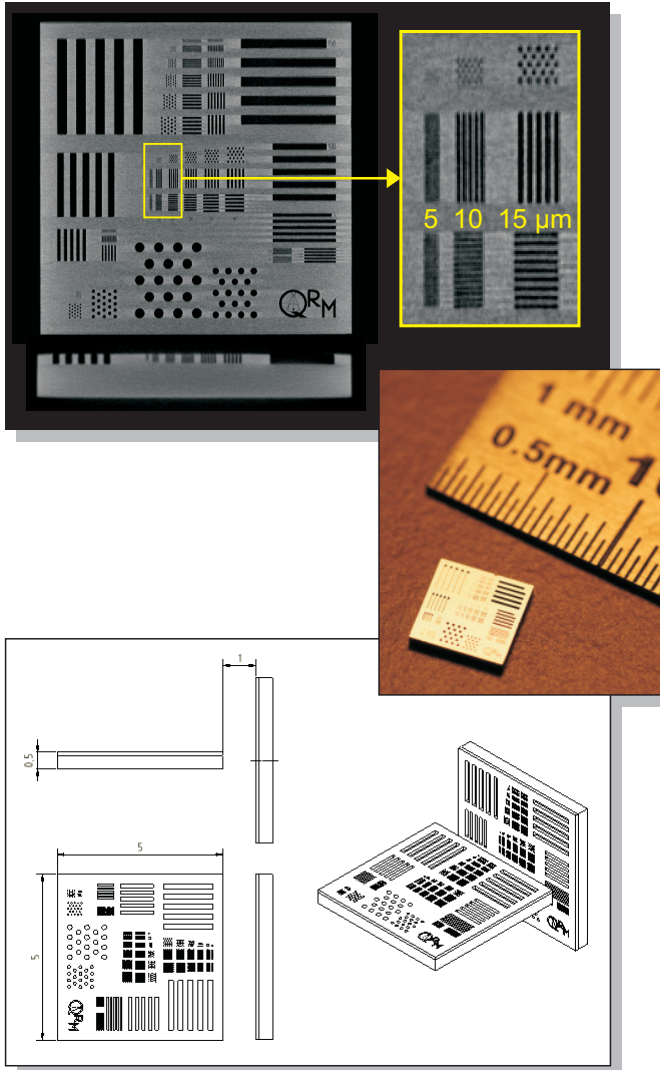


QRM-MicroCT-Barpattern in resin with adapters



Micro-CT scans in air (left) with 5.5  $\mu\text{m}$  voxel size and in resin (right) with 40  $\mu\text{m}$  voxel size

# MicroCT Bar Pattern Phantom



orientation of the bar pattern chips in phantom

## Specifications

### QRM-MicroCT-Barpattern-Phantom (resin)

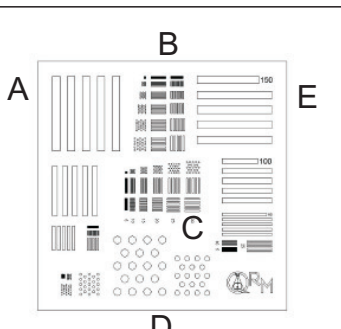
Material of phantom ..... resin  
 Material of chip ..... silicon  
 Contrast ..... silicon / resin  
 Diameter ..... upon request (min. 7 mm)  
 Total length ..... 40 mm  
 Weight ..... ~ 10 g

The resin cylinder, including two chips, is available in any favored diameter down to 7 mm. Adapter cylinders for larger FOV are available as well.

### QRM-MicroCT-Barpattern-Phantom (air)

Material of phantom ..... air / plastic  
 Material of chip ..... silicon  
 Contrast ..... silicon / air  
 Wall thickness ..... 0.2 mm  
 Diameter ..... 20 mm  
 Total length ..... 40 mm  
 Weight ..... ~ 8 g

The phantom with chips placed on a support for measurements in air has a diameter of 20 mm (wall thickness of 0.2 mm).



Block	linewidth ( $\mu\text{m}$ )	linepairs per pattern	points ( $\mu\text{m}$ )	points per pattern
A	5, 10, 25, 50, 100, 150	5		
B	5, 10, 15, 20, 25, 30	5	5, 10, 15, 20, 25, 30	18
C	5, 10, 15, 20, 25, 30	5	5, 10, 15, 20, 25, 30	18
D			5, 10, 25, 50, 100, 150	18
E	5, 10, 25, 50, 100, 150	5		