

## KS105GS-1 Type Photoacoustic/Ultrasound Body Model

The KS105GS-1 type photoacoustic/ultrasonic phantom is suitable for the performance testing of B-ultrasound equipment with a working frequency ranging from 2 to 20 MHz, as well as ultrasonic imaging equipment with photoacoustic imaging function.

### Technical Specifications

1. Sound velocity of TM material:  $(1540 \pm 10)$  m/s ( $23 \pm 3^\circ$  C)
2. Slope of sound attenuation coefficient of TM material:  $(0.50 \pm 0.05)$  dB/cm/MHz ( $23 \pm 3^\circ$  C)
3. Diameter of nylon target line:  $(0.10 \pm 0.02)$  mm, (0.1, 0.2, 0.3, 0.5, 1) mm
4. Position tolerance of nylon target line:  $\pm 0.05$  mm
5. External dimensions of the phantom: 17 cm (length) \* 13.5 cm (height) \* 9 cm (thickness)
6. Internal net dimensions of the phantom: 15 cm (length) \* 10 cm (height) \* 7 cm (thickness)

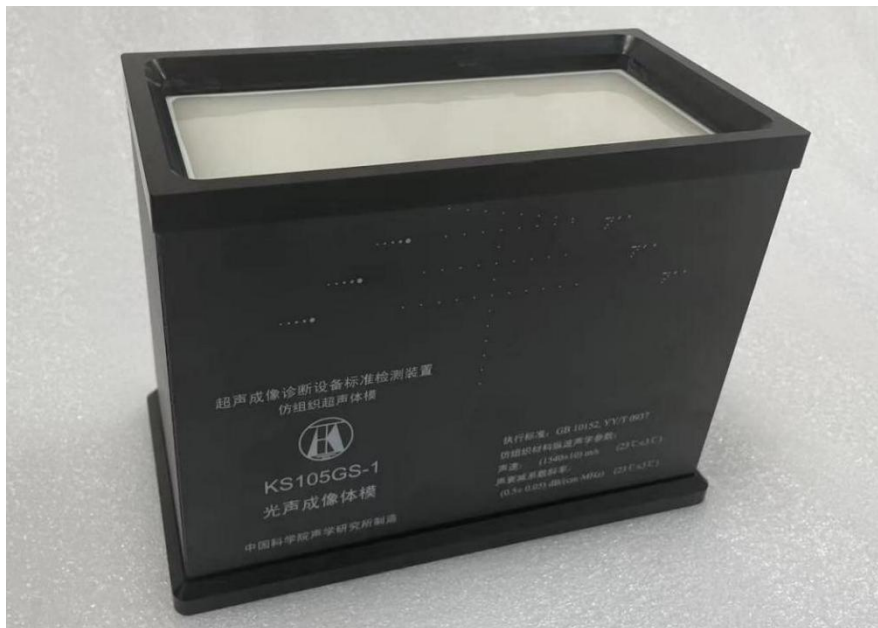


Figure 1: KS105GS-1 type photoacoustic/ultrasonic imaging tissue-mimicking phantom

### Line target system

The TM material is embedded with a group of line targets 11. Their distribution is shown in the attached figure. There are:

#### 1. C: Blind zone target group

The blind zone target group consists of 8 target lines, with a line diameter of 0.10mm. The horizontal spacing between the centers of adjacent target lines is all 5mm, and the distances to the sound window are 9, 8, 7, 6, 5, 4, 3, 2mm respectively.

## **2. B1-B3: Horizontal target group**

The line diameter is 0.10mm, located at depths of 10, 20, and 30mm, arranged horizontally. The center distance between adjacent lines is all 5mm.

## **3. C: Vertical target group**

It contains 12 target lines, with a line diameter of 0.10mm. The center distance between adjacent lines is all 5mm, and the maximum detection depth is 60mm.

## **4. D1-D3: Axial lateral resolution target group**

The lateral resolution target group, with a line diameter of 0.10mm, is located at depths of 10, 20, and 30mm. The center spacing of the target lines in each group from left to right is 0.35, 0.5, 1, 2, 3mm respectively. The distribution map of the target lines of the lateral resolution target group is shown in Figure 3 target group M and Table 1 target group distribution.

Axial resolution target group, with a line diameter of 0.1mm. The top target line of each group is located at depths of 10, 20, and 30mm respectively. The vertical distance between each target line in each group and the corresponding lateral resolution target line above it from left to right is 3, 2, 1, 0.5, 0.35mm respectively. The horizontal distance between the target lines is 0.2mm (i.e., the horizontal offset distance). The distribution map of the target lines of the axial resolution target group is shown in Figure 3 target group M and target group N and Table 1 target group distribution.

## **5. E1 - E3: Photothermal response scale calibration target group**

Each target group is located at depths of 10, 20, and 30 mm respectively. The horizontal distance between the centers of the target lines in each group is 2 mm. The sizes of the target lines in each target group are (0.1, 0.2, 0.3, 0.5, 1) mm.