SUN NUCLEAR corporation

Sono**404**™ Small Parts Phantoms

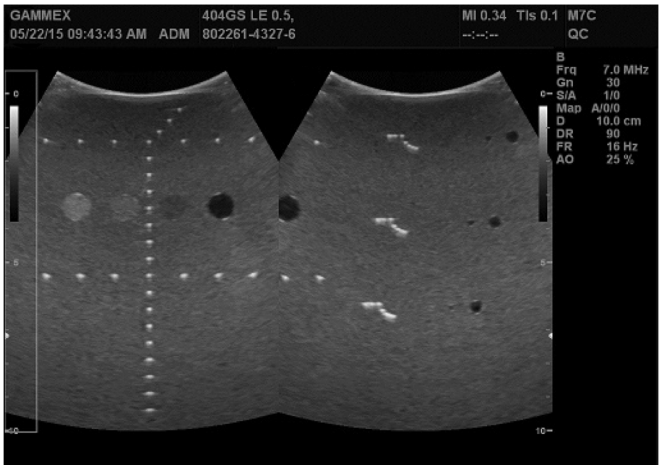
Enhance the accuracy of your QC measurements in vascular and cardiology ultrasounds.

- Efficiently test and train for the most difficult cases
- Ensure all transducers and system settings are fully tested across the entire clinical frequency range from 2 to 18 MHZ with patented HE (High Equivalency) Gel™
- Test your high frequency transducers routinely to ensure accurate patient measurements

Sono404 Phantoms are in use today in breast care centers and diagnostic ultrasound departments around the world. Their continued widespread adoption is attributed to a design that keeps pace with advancing ultrasound imaging technologies for measuring image quality of small parts and intra-cavity ultrasound systems.

Sono404 Phantoms:

- Meet or exceed ACR, AIUM, EFSUMB, IAC, IEC, IPEM, and WHO QA guidance/standards
- Have been designed with medical physicists, and include closely spaced pin targets, ideal for testing high frequency transducers
- Feature durable and reliable HE Gel, with a near-linear-response of attenuation with with frequencies between 2 and 18 MHz
- Offer response of attenuation with frequencies over 8 MHz to support accurate axial resolution and penetration depth representative of human tissue



Closely spaced pin targets are ideal for testing high frequency transducers.

"The Sono404 was used in our breast center for over 11 years. Sun Nuclear rejuvenated and serviced it. Now it has been restored to its original state, identical to when it was purchased."

James A. Zagzebski, Ph.D., FAAPM
Professor Emeritus, Retired Chair
Department of Medical Physics,
Wisconsin Institutes for Medical Research

sunnuclear.com
7600 Discovery Drive, Middleton, WI 53562 USA

Sono404 Small Parts Phantoms

- Primarily designed to meet specialized needs in vascular and cardiology ultrasound applications
- Features closely spaced pin targets, ideal for testing high frequency transducers
- Includes HE Gel, which can be rejuvenated so your phantom can be re-validated to strengthen your investment
- Supports compliance with ACR, AIUM, ESTRO and other QA program requirements

Specifications

Attenuation Coefficient[1]	0.5 or 0.7 dB/cm/MHz
Variation of Attenuation with Frequency[2,3]	$f^{1.08}$ at 0.5 dB/cm/MHz $f^{1.1}$ at 0.7 dB/cm/MHz
HE Gel Freezing Point	< 0°C
HE Gel Melting Point	>100°C
Frequency Range	2 - 18 MHz
Speed of Sound	1540 m/s
Scanning Surface	Composite Film
Pin Target Material	Nylon monofilament
Case Material	Extruded ABS Plastic
Weight	1.75 kg (3 lbs. 13 oz)
Dimensions	17 x 8.25 x 15.875 cm (6.75 x 3.25 x 6.25 in.)

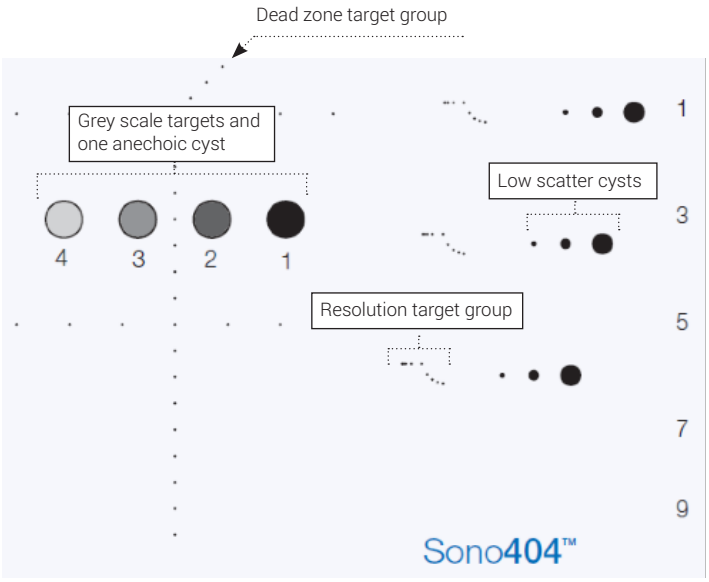
Target Specifications

Cystic Targets	
Diameters	1, 2, 4 and 7 mm
Placement	1, 3, 3.5 and 6 cm deep
Grey Scale Targets	
Dimensions	7 mm Diameter
Placement	3 cm deep
SOS	1540 ±10 m/s
SOS^{TD}	1.5 m/s/°C
Contrast	-6dB, +6dB, high scatter relative to background
Pin Targets	
Diameter	0.1 mm
Vertical Spacing	5 mm at 1 to 9 cm deep
Horizontal Spacing	10 mm at 1 and 5 cm deep
Resolution Target Groups	
Depth	1, 3.5 and 6 cm deep

Accessories

- Precision Sono Transducer Holder
  - Securely holds a transducer in a precise location for reproducible tests over time
  - Fits all Sun Nuclear B-Mode & Doppler Flow phantoms
- Padded travel case with shoulder strap

Target Schematic



[1] Browne, J., Ramnarine, K., Watson, A., Hoskins, P., Assessment of the Acoustic Properties of Common Tissue-mimicking Test Phantoms. Ultrasound in Medicine and Biology, Vol. 29 (7), pp. 1053-1060, 2003.

[2] Goldstein, A., The Effect of Acoustic Velocity on Phantom Measurements. Ultrasound in Medicine and Biology, Vol. 26, pp. 1133-1143, 2003.

[3] An attenuation coefficient of 0.5 dB/cm/MHz represents healthy human liver tissue and 0.7 dB/cm/MHz represents fatty liver tissue.

[4] Near-linear responses of attenuation with frequencies between 2 to 18 MHz support accurate axial resolution and penetration depth representative of human tissue.

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