Utune Medical

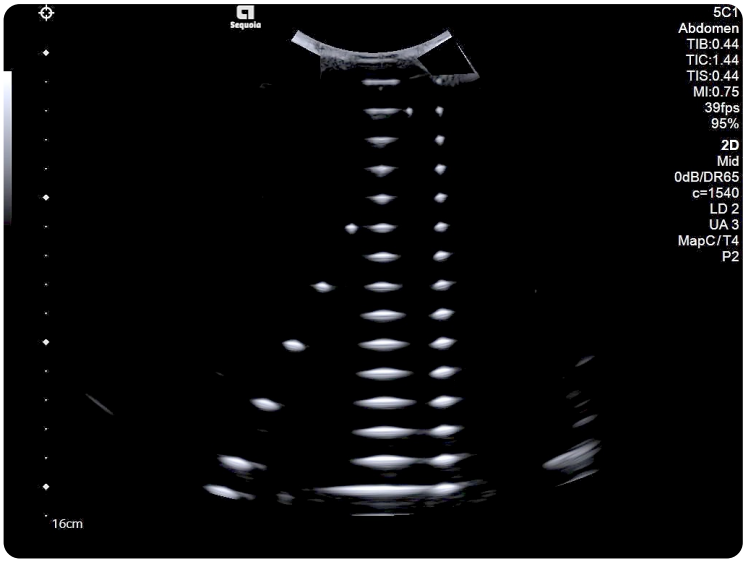
UltraPure

High Dynamic Range Phantom

Customizable acoustic properties with water-equivalent echogenicity



Example ultrasound image



Nylon string targets, curved array, 16 cm depth

Nominal values (22 °C)

- 0.5 dB/cm/MHz at 5 MHz
- 1540 ± 10 m/s
- Water-equivalent echogenicity

Fully customizable

- Internal structure
- Speed of sound
- Attenuation
- Target materials and arrangement

Designed for high-dynamic-range ultrasound imaging and slice-thickness evaluation.

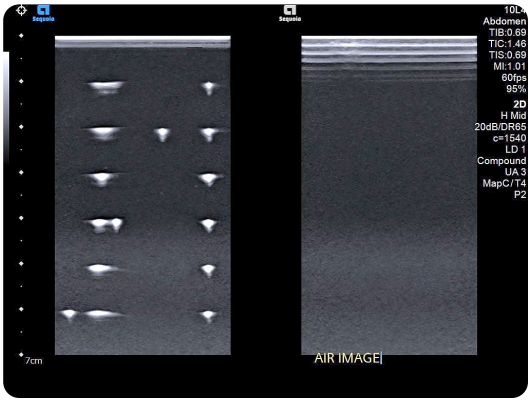
Patent pending. Nominal values describe the design; see the reverse for independent measurements.

Filament targets and slice thickness

The phantom shown uses 100 µm nylon monofilament targets. Alternative filaments are 25 to 100 µm nylon, stainless steel or tungsten.

Target strings run perpendicular and at 45° to the front wall, so slice thickness can be measured with the Skolnick method.

Images taken in the phantom and in air under the same scanner settings show how little signal the water-equivalent background returns.

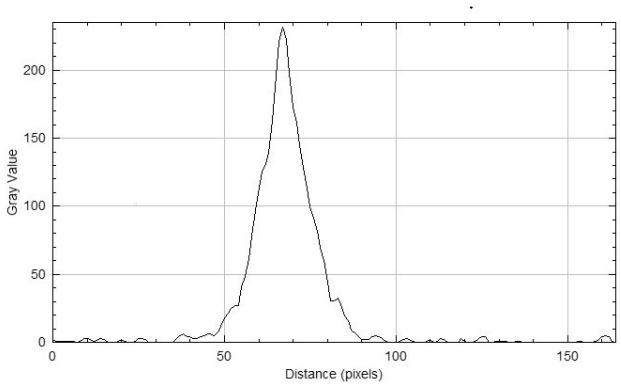


Linear array: in the phantom (left) and in air (right)

High-contrast filament visualization

A grayscale profile across one filament target shows a well-defined echo peak against a near-zero background.

The profile illustrates target visibility. It does not by itself establish a maximum achievable contrast.



Independent acoustic characterization

UW–Madison Quantitative Ultrasound Lab, January 24, 2024. Sample measured at 22 °C.

Property	Measured result	Nominal value
Attenuation at 5 MHz	2.54 ± 0.04 dB/cm (0.508 dB/cm/MHz)	0.5 dB/cm/MHz
Speed of sound at 5 MHz	1534.8 ± 0.6 m/s	1540 ± 10 m/s
Relative echogenicity, fluid	-53.7 ± 4.4 dB (vs. acrylic reflector)	Water-equivalent
Relative echogenicity, deionized water	-52.2 ± 4.6 dB (vs. acrylic reflector)	Reference

The measured fluid echogenicity was comparable to water within uncertainty, at the detection limit of the reported configuration. Nominal product values are design values, not the results of an individual test.