

## OptiSon® Ultrasound Beam Analyzer

Visualize in real time and measure acoustic fields in seconds or minutes.

Now you can achieve control of project timing and costs, gain a more comprehensive and confident understanding of the system and transducer performance, eliminate the tedium of testing and provide timely results.

With 50  $\mu\text{m}$  resolution and high dynamic range, there is no need to guess about the real field distribution.

Now in a digital imaging version for better spatial resolution (1392x1040) and 12 bit depth!

### Features

#### Quantitative

The OptiSon® Beam Analyzer quantifies beam plots, focal distances and total power from a single image. Power measurements correlate to radiation force balance and hydrophone - as does tomographic reconstruction for intensity. It can have higher spatial resolution than mechanical scanning and is invulnerable to high intensities or rough handling.

#### Eliminates Standing Waves

Unlike mechanical scanning methods such as acoustic microscopy and hydrophone surveys, the sensor in OptiSon® does not invade or disturb the acoustic field. Instead, acoustic waves are detected by Raman-Nath diffraction of light in a transparent medium, and captured by a video frame grabber.

#### Visual Advantage

- Reveals radiation ordinarily missed by a hydrophone survey.
- Provides instant identification of non-uniform wave formation at different frequencies.
- This enables diagnosing uneven thickness of piezo-electric materials or matching layers.
- Maps whole acoustic field in linear or log (dB) scale that can be displayed in black & white or pseudo-color.
- Easily generates one, two or three-dimensional maps of power or intensity and instantly reveals heating of transducer surface.

#### Unprecedented Dynamic Range

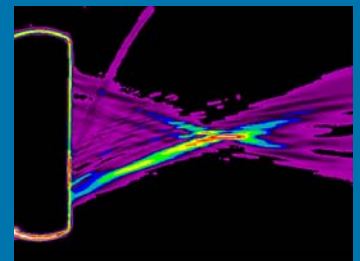
The proprietary optical design generates images with a dynamic range never possible with previous schlieren designs.



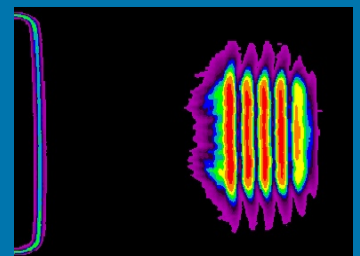
OptiSon® S-12D



OptiSon® HF



Highly focused beam showing anomalous sidelobe caused by a crack in the radiating surface.



Short burst

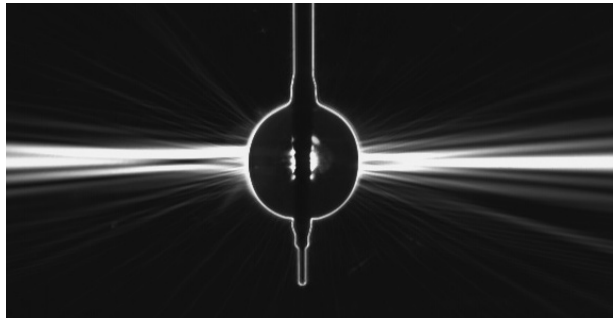
## Technical Specifications

### OptiSon® S-12D (Digital Imaging)

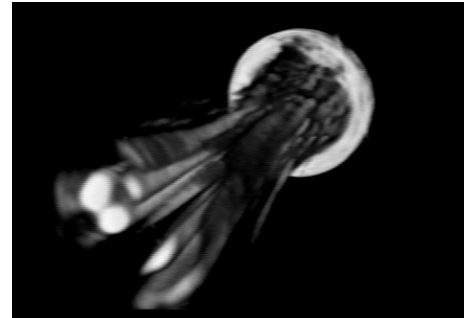
- Field of view: 9x12 cm to 3x4 cm (zoom 3:1)
- Image definition: 1392 x 1040 pixels and 12 bits
- Bandwidth: 1 to 100 MHz  
Spatial Resolution: Field of view/1390 or 50  $\mu\text{m}$  (whichever is larger)
- Time Resolution (Pulsed): 150 ns  
Dynamic Range: 30 to 60 dB
- Power measurement accuracy:  $\pm 2\%$  between 5 mW and 100 mW
- Tank dimensions: 33 cm (H) x 28 cm (W) x 32 cm (L)

### OptiSon® HF (High Frequency)

- Field of view: 12.5mm x 16.7mm (480 x 640 pixels)
- Image definition: 640x480 pixels, RS-170
- Bandwidth: 10 MHz to 100 MHz
- Spatial Resolution: 12  $\mu\text{m}$
- Time Resolution (Pulsed): 10 ns  
Dynamic Range: up to 52 dB
- Power measurement accuracy:  $\pm 2\%$  between 5 mW and 100 mW
- Tank dimensions: 18 cm (H) x 11 cm (W) x 16 cm (L)



Beam from an ablation catheter



Tomographically reconstructed beam generated by a cylindrically asymmetric source.

