



Model 549

General & Small Parts
Phantom

Product Description

The Model 549 General & Small Parts phantom is an easy, comprehensive means of evaluating imaging systems with an operating frequency range of 2.25 to 15.0 MHz. The first 6 cm of this model has been designed to accommodate the higher frequencies, whereas the area between 6-30 cm is reserved for frequencies less than 7.5 Mhz. The scanning wells when filled with water provide an ideal means to evaluate endoscopic probes. Simply lie the active area of the transducer onto the surface of the phantom, the procedure is the same as for any standard linear transducer.

The Model 549 is designed with a combination of monofilament line targets for distance measurements and tissue mimicking target structures of varying sizes and contrasts. One hundred and twenty (120) cystic-like target structures are positioned in-line vertically, thereby permitting an entire target group to be displayed in one view. Due to the acoustic similarity of the background material and the target structures, artifacts caused by distortion, shadowing or enhancement have been eliminated. Six gray scale targets ranging in contrast from +15 to -15 dB are provided to evaluate the system's displayed dynamic range and gray scale processing performance.



Tests Performed

- Dead Zone or Ring-Down
- Vertical Measurement Calibration
- Horizontal Measurement Calibration
- Sensitivity/Penetration
- Functional Resolution
- Focal Zone
- Axial & Lateral Resolution
- Image Uniformity
- Gray Scale & Displayed Dynamic Range



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General		Tissue Mimicking Material	
Overall Dimensions	36.5 x 25.7 x 9.5 cm		
Housing Material	PVC	Type	Urethane rubber
Wall Thickness	1.0 cm*	Freezing Point	< -40°C
Scan Surfaces	4	Melting Point	> 100°C
Scan Surface Dimensions	21.0 x 7.0 cm 31.5 x 7.0 cm	Attenuation Coefficient	0.5 dB/cm/MHz ± 10.0% Measured at 3.5 MHz
Weight	7.1 Kg (15.5 lbs.)	Speed of Sound	1450 m/s ±1.0% at 23°

Line Targets		Anechoic Target Structures	
Material	Monofilament Nylon	Group 2, 3, 4 mm Type	Non-echogenic cylindrical
Diameter	0.05 mm & .12 mm	Targets in each group	30
Position Tolerance	± 0.1 mm	Diameters	2.0, 3.0, 4.0 mm
Vertical Group Interval Spacing Depth 1.0– 6.0 cm Depth 6.0 – 30.0 cm	.5 cm 1.0 cm	Interval Spacing (center to center)	1.0 cm
Depth	1.0 - 30.0 cm	Depth Scan surface 1	1.0 - 30.0 cm
Horizontal Group Number of Groups	8	Group 6, 8 mm	
Interval Spacing	1.0 cm	Targets in each group	15
Depths Linear Array Group Sector/Convex Array Group	2.0, 5.0, 14.0, 20.0 cm 2.5, 5.5, 15.0, 21.0 cm	Diameters	6.0, 8.0 mm
Axial-Lateral Resolution Group Depths (first axial target) Scan surface 1 Scan surface 2 Scan surface 4	2.5, 5.5, 15, 21.0 cm 7.0 cm 13, 19, 28.5, 31.5 cm	Interval Spacing (center to center)	2.0 cm
Interval Spacing	0.5, 1, 2, 3, 4 mm	Depth Scan surface 1	2.0 - 30.0 cm
Dead Zone Group		Gray Scale Target Structures	
Lateral Displacement	5.0 mm	Type	Echogenic, Cylindrical
Interval Spacing	1.0 mm	Diameters	10.0 mm
Depth	2.0 - 10.0 mm	Depth	5.0 cm
		Contrast relative to background material (dB)	+15, +6, +3, -3, -6, -15



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