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Phantom Selection Guide

Accurate. Simple. Versatile. Reliable.

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Phantom selection guide

	CT QA			
				
Product	AAPM CT Performance Phantom	Nested CT Dose Phantom Kit for Pediatric/Adult Head and Body	CT Dose Phantom Kit for Pediatric/Adult Head and Body	Interventional Triple-Modality 3D Abdominal Phantom
Model	76-410-4130-2	76-424-4156	76-419-4150	84-357
Application	CT performance evaluation	Computed Tomography Dose Index (CTDI)	Computed Tomography Dose Index (CTDI)	Mimic human tissue MRI, ultrasound, CT
Specifications				
Dimensions	21.59 cm x 39.37 cm (8.5 in Ø x 15.5 in D)	Adult body: 15.5 cm L x 32 cm Ø Adult head: 15.5 cm L x 16 cm Ø Pediatric head: 15 cm L x 10 cm Ø	Adult body: 32 in Ø Adult head: 16 in Ø Pediatric head: 10 in Ø	28 cm W x 12.5 cm D x 20 cm H (11 in W x 4.9 in D x 7.8 in H)
Weight	7.84 kg (17.25 lb)	Adult body: 11.3 kg (25 lb) Adult head: 2.3 kg (5 lb) Pediatric head: 1.3 kg (3 lb)	Adult body: 14.5 kg (32 lb) Adult head: 3.6 kg (8 lb) Pediatric head: 1.3 kg (2.85 lb)	5.5 kg (12 lb)
Components				
	• Water tank • Low-contrast extension • Alignment pin • Linearity and contrast insert • Resolution insert • Beam width insert • Bone ring – TLD plug – Stand	• Adult body part • Adult head/pediatric body part • Pediatric head part • 4 probe holes/part and center pediatric • Holes 90° apart • Holes 1 cm from edge • 5 acrylic rods/part to fill probe holes • Inside probe hole 1.31 cm	• Adult body part • Adult head/pediatric body part • Pediatric head part • 5 probe holes/part • Holes 90° apart • Holes 1 cm from edge • 5 acrylic rods/part to fill probe holes • Inside probe hole 1.31 cm	• Anthropomorphic • Simulated lungs • Simulated liver • Hepastic vessels • Ribs • Vertebra • Kidneys • Abdominal aorta • Inferior vena cava • Muscle fat • Interstitial tissues

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	Mammography QA				
					
Product	Single-Exposure High Contrast Resolution Phantom	Mammographic Accreditation Phantom	Tissue-Equivalent Mammography Phantom	CDMAM Phantom	Stereotactic Needle Biopsy Tissue-Equivalent Training Phantom
Model	18-216	18-220	18-222	18-227	18-228
Application	Mammo system QA	MQSA compliance	Mammo QA	Mammo image quality	Practice needle biopsy
Specifications					
Dimensions (WxDxH)	100 mm x 125 mm x 20 mm (3.93 in x 4.92 in x 0.78 in)	Overall: 10.15 cm x 10.8 cm x 4.4 cm (4 in x 4.25 in x 1.73 in) Acrylic base: 3.4 cm thick (1.375 in thick) Cover: 3 mm thick (0.128 in thick)	18.5 cm x 12.5 cm x 4.5 cm (7.28 in x 4.92 in x 1.77 in)	Plexiglas plates: 162.5 mm x 240 mm x 10 mm (6.4 in x 9.4 in x 0.39 in) Aluminum base: 162.5 mm x 240 mm x 0.5 mm (6.4 in x 9.4 in x 0.39 in)	10 cm L x 5 cm H (3.94 in L x 1.97 in H) Volume: 1500 cc
Weight	0.57 kg (1.3 lb)		1.0 kg (2.2 lb)	2.06 kg (4.54 lb)	0.91 kg (2 lb)
Material	BR-12 or BR-50/50	Acrylic/Wax	Epoxy		
Components					
	• Phantom contains a 17.5 micrometer-thick gold-nickle alloy bar pattern • Pattern segments from 5 lp to 20 lp/mm	• 4.4 cm thick phantom is made of a 7 mm wax block insert containing 16 sets of test objects	• 1 20 lp/mm target • 12 calcium carbonate specks • 5 step wedge (1 in thick) • 7 hemispheric masses • Optical Density is reference zone • Edge beam target for localization	• Consists of plexiglas plates, 16 rows and columns of discs within a row, disc diameter is constant with logarithmically increasing diameter • Analysis software included	• Compressible • Contains cysts, dense masses and calcifications • Mass attenuation of BR-12 • Accurately simulates needle resistance
Features or benefits					
	Meets MQSA Guidelines	Mammographic Accreditation Phantom	Simulates a 50 % grandular tissue composition	Designed to determine if mammo images are indicating objects with very low contrast and small diameter	Anthropomorphic shape allows accurate simulation of breast compression

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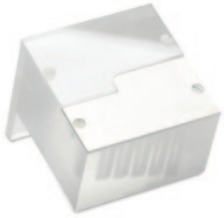
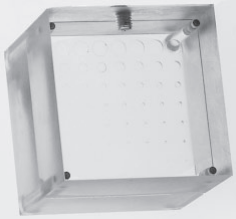
	Mammography QA				
					
Product	Triple-Modality Biopsy Training Phantom	Mammo-Cube Stereotactic Core Biopsy Phantom	Digital Stereotactic Breast Biopsy Accreditation Phantom	Contrast and Resolution Mammography Phantom	Contrast Detail Phantom for Mammography
Model	18-229	18-229-1313	18-250	18-251-2000	18-252
Application	X-ray, ultrasound quality assurance (MRI)	Practice needle biopsy	Digital biopsy image quality	Contrast dynamic range	Mammo image quality
Specifications					
Dimensions (WxDxH)	10 cm x 12 cm x 9 cm (3.94 in x 4.72 in x 3.54 in) Volume: 500 cc	6.5 cm x 7 cm x 4.5 cm (2.56 in x 2.76 in x 1.77 in)	Cast acrylic base block: 6.05 cm x 6.20 cm x 3.71 cm (2.38 in x 2.44 in x 1.46 in)	6.66 cm x 6.4 cm x 4.3 cm (2.62 in x 2.52 in x 1.69 in)	6.27 cm x 6.27 cm x 6.27 cm (2.47 in x 2.47 in x 2.47 in)
Weight	0.44 kg (1 lb)	0.14 kg (5 oz)	0.25 kg (8.7 oz)		0.58 kg (1.2 lb)
Material	Zerdine®	Proprietary gel			Plexiglas®
Components					
	• Targets: Dense masses 2 mm and 8 mm Ø for core biopsy • Cystic masses: 3 mm to 10 mm Ø for needle aspiration	• Embedded dense masses 5 mm to 12 mm Ø • Mass attenuation similar to BR-12	• Wax insert contains: 4 nylon fibers, 4 Al2O3 specs, and 4 masses	• Phantom body: Cast acrylic block with aluminum plate • Optional resolution test pattern: Gold nickle (equivalent to 25 microns of lead or 2.6 mm of aluminum) • Length of optional resolution test pattern: 25 mm • Width of optional resolution test pattern: 12.5 mm • Thickness of optional resolution test pattern: 0.175 mm	• 7 columns and 7 rows of varying size and subject contrast
Features or benefits					
	As recommended by ACR	Cost-effective teaching phantom	Accepted by ACR for use in stereotactic breast biopsy accreditation program	Use on digital and analog mammo imaging systems	Closely simulates scattering conditions of the breast

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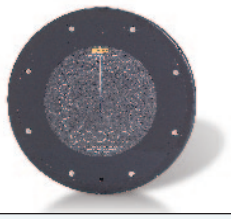
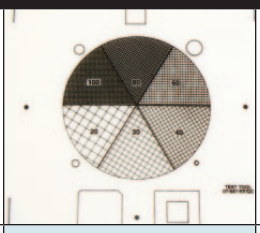
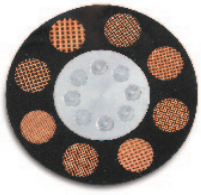
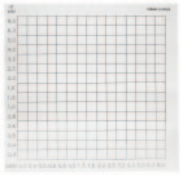
	Radiography/Fluoroscopy				
					
Product	Contrast Imaging Phantom	R/F QC Phantom	CDRH Fluoroscopic Phantom	CDRAD Contrast Detail and Conventional Radiography Phantom	Fluoroscopic Imaging Test Phantom
Model	07-643	07-647	07-649	07-652	07-653
Application	Image intensifier QC	Evaluates R/F image quality	Fluoro quality control	Digital Rad systems	Fluoro imaging test
Specifications					
Dimensions (WxDxH)	Outer Ø: 23 cm (9.05 in) Thickness: 1.28 cm (0.5 in)	17.78 cm x 17.17 cm x 1.42 cm (7 in x 7 in x 0.56 in)	17.8 cm x 17.8 cm x 19.3 cm (7 in x 7 in x 8 in)	26.4 cm x 26.4 cm x 0.76 cm (10.4 in x 10.4 in x 0.3 in)	Outside: 22.78 cm (8.97 in) Thickness: 1.28 cm (0.5 in)
Weight	1.26 kg (2.80 lb)	0.5 kg (1.1 lb)	9.55 kg (21 lb)	1.34 kg (3 lb)	1.86 kg (4.10 lb)
Measures					
	• Checks dynamic range of video system • All fluoro modes pulsed, nonpulsed, etc. • Check film range and density	• Image quality consistency • QC brightness control • 20#, 30#, 40#, 60#, 80#, and 100# mesh lp/in for evaluating high-contrast performance • 4 low contrast “masses” 2 mm, 4 mm, 6 mm, and 8 mm Ø • Density difference patch for contrast on film • 2 monitor adjust squares • 2 mm copper attenuator • Lines for alignment	• 8 low contrast test holes 0.375 in Ø, depth range 0.0063 in to 0.0068 in • 8 wire mesh range 12 lines to 60 lines per inch • In addition to test object above, phantom contains a lead stop plate, copper attenuation plate, 7 inch thick acrylic block and probe holder, base of phantom is 2 type-1100 aluminum plates each 2.3 mm thick	• Tablet with cylindrical holes of exact diameter and depth (tolerances 0.02 mm) • 225 squares; 15 rows; 15 columns • Variable holes/square • Optical density of the holes/spots are higher than uniform background • In horizontal direction, depth of holes increases logarithmically • Comparison of several observers possible	• Video level contrast, peak whites, black level, shading, or vignetting correction • Automatic brightness • Sweep linearity • Frequency response • Aperature correction
Features or benefits					
	Provides a quick check of R/F imaging system	Designed as a technologist QC tool For overall image quality of R/F system	Conforms to CDRH specifications recommended in AAPM Report #60	Optimized for evaluation of digital systems	Enables precise adjustment of critical fluoro parameters

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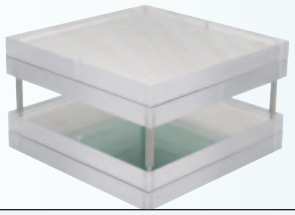
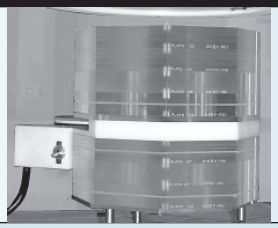
Phantom selection guide

	Radiography/Fluoroscopy		
			
Product	ATOM MAX Diagnostic Head Phantom	Diagnostic X-Ray Phantoms	NEMA® Cardiology Phantom
Model	76-606DX	76-215	07-680
Application	Phantom is a standard of reference for diagnostic radiology of the head	Patient equivalent acrylic	Cardiovascular benchmark phantom
Specifications			
Dimensions (WxDxH)	22.9 cm x 22.9 cm x 29.x cm (9 in x 9 in x 11.5 in) (phantom only)		
Weight	Phantom: 5 kg (11 lb) Stand: 3.2 kg (7 lb) Shipping: 13.2 kg (29 lb)		
Measures			
	• Phantom is constructed of proprietary tissue equivalent materials ATOM MAX is made of tissue simulating resins that mimic the x-ray attenuation properties of human tissue for both CT and therapy energy ranges (50 keV to 25 MeV) • It approximates the average male human head in both size and structure • Includes: detailed 3D anthropomorphic anatomy including brain, bone, larynx, trachea, sinus, nasal cavities, and teeth. The bones contain both cortical and trabecular separation. The teeth include distinct detine, enamel, and root structure including the nerve. The sinus cavities are fully open	Chest Phantom (76-211) • 25 cm x 25 cm x 2.54 cm acrylic • one sheet 25 cm x 25 cm x 1 mm • one sheet 25 cm x 25 cm x 2 mm type-1100 aluminum and spacers Abdomen/Lumbar Spine Phantom (76-212) • 5 sheets 25 cm x 25 cm x 2.54 cm • one sheet 25 cm x 25 cm x 5.08 cm clear acrylic to achieve a 17.78 cm thick phantom • To provide additional attenuation in the spinal region, a 7 cm x 25 cm x 4.5 mm thick aluminum alloy is included Skull, Extremity, and Make-Your-Own Phantom	• Visualized field size • Congruence of irradiated and visualized fields • Spatial resolution • Low contrast detectability • Visibility of moving structures • Dosimetry • Working thickness range • Motion unsharpness when used with available rotating target
Features or benefits			
	Ideal for dental cone beam CT and panoramic x-ray	Phantoms conform to AAPM Report #31 recommendation	Benchmark phantom designed with SCA&I/NEMA®

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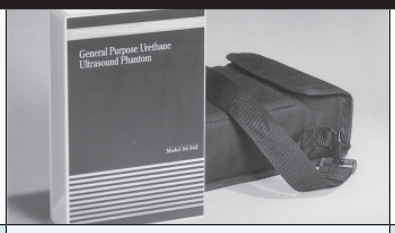
Phantom selection guide

	Ultrasound QA		
			
Product	Multipurpose Tissue/Cyst Ultra Sound Phantom	General Purpose Urethane Ultrasound Phantom	Near Field Ultrasound Phantom
Model	84-317	84-342	84-350
Application	Evaluate system and transducer performance	Qualitative assessment	Simulates human breast tissue
Specifications			
Material	Zerdine	Urethane matrix	Zerdine
Freezing point	32 °F (0 °C)		32 °F (0 °C)
Melting point	Above 212 °F (100 °C)		Above 212 °F (100 °C)
Attenuation coefficient	0.50 dB/cm/MHz ± 0.70 dB/cm/MHz	0.50 dB/cm/MHz ± 0.05 dB/cm/MHz at 5.0 MHz	0.50 dB/cm/MHz
Speed of sound	1540 m/s ± 6 m/s	1430 m/s ± 10 m/s at 20 °C	1540 m/s
Scanning membrane			Polyurethane
Scanning well depth		2 cm	1 cm
Scanning surfaces		3	
Misc. specifications	Scatter: Mimics healthy liver parenchyma Positional tolerance of wires: ± 0.10 mm of stated distance Diameter of cylindrical targets: ± 5 % of stated diameter Base material: Cork Storage temperature: 32 °F to 150 °F (0 °C to 66 °C)	Vertical plane target, horizontal plane target, axial resolution targets, lateral resolution targets, and anechoic targets	Vertical plane target, resolution targets, ring down target, volumetric test object, and spherical cysts
Dimensions (WxDxH)	20 cm x 21 cm x 8 cm (7.87 in x 8.26 in x 3.5 in)	17 cm x 25.5 cm x 7 cm (6.7 in x 10 in x 17.8 in)	15 cm x 8 cm (5.9 in x 3.15 in)
Weight	3.36 kg (7.4 lb)	5.45 kg (12 lb)	With case: 5.45 kg (12 lb)
Features or benefits			
	Complies with AIUM standard for Quality Assurance	Complies with AIUM standard for Quality Assurance	Complies with AIUM standard for Quality Assurance

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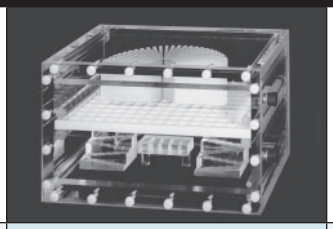
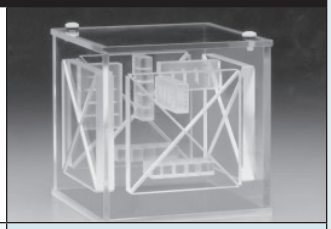
Phantom selection guide

	MRI QA			
				
Product	MRI Multipurpose Phantom	MRI Surface Coil Phantom	Uniformity/Linearity Phantom	3D Slice Thickness/ High Contrast Resolution Phantom
Model	76-903	76-904	76-907	76-908
Application	Monitor overall performance of MRI system	Acceptance testing and routine QA of surface coils	Evaluation of uniformity/ linearity performance of MRI system	3D image quality in all three planes without moving phantom
Specifications				
Dimensions (WxDxH)	9 in OD x 4.5 in T	Outer: 33.02 cm x 15.24 cm x 17.46 cm (13 in x 6 in x 6.875 in)	33.02 cm x 33.02 cm x 10.16 cm (13 in x 13 in x 4 in)	15.24 cm x 15.24 in x 12.70 cm (6 in W x 6 in D x 5 in T)
Weight	3.09 kg (6.82 lb)	3.61 kg (7.96 lb)	5.30 kg (11.68 lb)	1.56 kg (3.4 lb)
Measures				
	• Slice thickness • MTF evaluation • Spatial resolution • RF signal uniformity • Magnetic field homogeneity	• High spatial resolution • RF signal brightness profile • Slice thickness • Slice to slice gap • MTF evaluation • Magnetic field uniformity • Gradient linearity • Image artifacts	• Spatial linearity • Image artifact • Signal-to-noise • Resonance frequency • Quadrature error	• High-contrast resolution • Slice thickness • Gradient strength • Slice position/separation • Resonance frequency
Features or benefits				
	Tests many important factors of overall performance	Designed for acceptance testing and routine QC of surface coils	Conforms to AAPM specifications	Conforms to AAPM specifications

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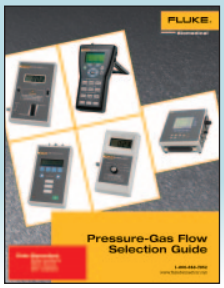
Therapy selection guide

	Non-Anthropomorphic		
			
Product	VeriDose® PMDC	Electron Density Phantom	Ct Simulation Phantom
Model	37-705	76-462	76-417
Application	Linac QC	Input to therapy planning system	Digitally reconstructed radiograph QC
Size of person/phantom	8 cm x 8 cm		15 cm x 15 cm cube
Material body		Water equivalent	Acrylic
Material lung		0.195 g/cc - 0.634 x 10^{23}/cc	
Material breast		0.991 g/cc - 3.261 x 10^{23}/cc	
Material bone		1.609 g/cc - 5.052 x 10^{23}/cc	
Material trabecular bone		1.161 g/cc - 3.73 x 10^{23}/cc	
Liver		1.071 g/cc - 3.516 x 10^{23}/cc	
Material muscle		1.062 g/cc - 3.483 x 10^{23}/cc	
Material adipose		0.967 g/cc - 3.18 x 10^{23}/cc	
Dosimetry holes		17 positions	
Detector type	5 diode		
Energy range	4 MV to 25 MV, 5 MeV to 25 MeV		
Detector configuration	1 CAX, 4 orthogonal at 8 cm off CAX		
Electrometer	5 channel		
Resolution			Spatial 1.5 mm, MTF 0.100 lp/mm
Parameters measured		Electron density	MRI, Spatial Res, Contrast Res., RLD, Linearity
Salient feature	5 channel dose monitor for linac QC as well as in-vivo measure-ments	Extremely valuable as a check for electron density calibration of the CT data	Complete check of the CT simulator

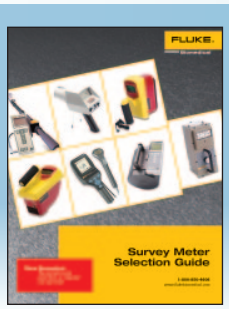
Publications

The following Fluke Biomedical selection guides are also available at www.flukebiomedical.com



Fluke Biomedical Pressure-Gas Flow Selection Guide

The Pressure-Gas Flow selection guide is an easy to read, tabled look at detailed applications, specifications, features and benefits. A picture of each product ensures correct identification.

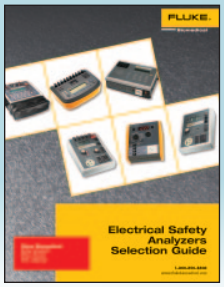


Fluke Biomedical Survey Meter Selection Guide

The Survey Meter selection guide is an easy to read, tabled look at detailed applications, specifications, features and benefits. A picture of each product ensures correct identification.

Fluke Biomedical Patient Simulator Selection Guide

The Patient Simulator selection guide is an easy to read, tabled look at detailed applications, specifications, features and benefits. A picture of each product ensures correct identification.



Fluke Biomedical Electrical Safety Analyzers Selection Guide

The Elecctrical Safety Analyzers selection guide is an easy to read, tabled look at detailed applications, specifications, features and benefits. A picture of each product ensures correct identification.

About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

Fluke Biomedical Regulatory Commitment

As a medical test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required

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Better products. More choices. One company.

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