

Mammography Research Set

Model 012A



DESIGNED TO ENCOMPASS THE FULL RANGE OF SIZE, GLANDULARITY AND THICKNESS ENCOUNTERED IN CLINICAL MAMMOGRAPHY

The CIRS Mammography Research Set includes tissue equivalent phantoms 4, 5 and 6 cm thick. Each phantom contains identical embedded details (see Figure 1). The glandular content of each phantom is 50%, 30%, and 20% respectively. Also included are phototimer compensation plates enabling a range of thickness from 0.5 cm to 7 cm with a glandular content of 30%, 50% and 70%.

One compensation plate contains embedded details for evaluation of image quality. A hand held microscope and heavy duty foam lined carry case are included.

CIRS resin material mimics the photon attenuation coefficients of a range of breast tissues. Average elemental composition of the human breast being mimicked is based in the individual elemental composition of adipose and glandular tissue reported by Hammerstein¹.

Attenuation coefficients are calculated by using the "mixture rule" and the Photon Mass Attenuation and Energy Absorption Coefficient Table of J.H. Hubbell².

Features

- Enable evaluation of image quality under varying degrees of thickness and glandularity
- Provides accurate reliable test for radiation dose
- Ensures consistent production of diagnostically useful images

References:

¹ Hammerstein R., Miller D., White D., et al; Absorbed Dose in Mammography; Radiology;130:485-491.

² Hubbell J.H.; International Journal of Radiation ISOT; Vol. 33:1269-1290; 1982.

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CIRS

Tissue Simulation & Phantom Technology

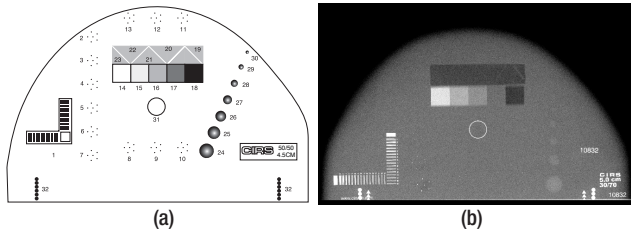


Figure 1. (a) Model 010A, 010B & 010C Target Map & (b) Model 010A Mammographic image

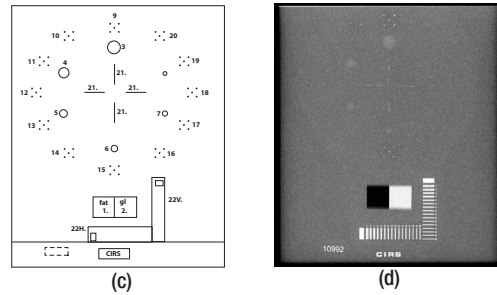


Figure 2. (a) Model 014F Target Map and (b) Model 014F Mammographic image

TEST OBJECTS

(MODEL 010A, 010B, 010C)

<p>1 LINE PAIR TEST TARGET 20 LP/MM</p>	<p>CACO, SPECKS GRAIN SIZE (MM)</p> <ol style="list-style-type: none"> 2. 0.130 3. 0.165 4. 0.196 5. 0.230 6. 0.275 7. 0.400 8. 0.230 9. 0.196 10. 0.165 11. 0.230 12. 0.196 13. 0.165 	<p>STEP WEDGE 1 CM THICK</p> <ol style="list-style-type: none"> 14. 100% gland 15. 70% gland 16. 50% gland 17. 30% gland 18. 100% adipose <p>NYLON FIBERS DIAMETER SIZE (MM)</p> <ol style="list-style-type: none"> 19. 1.25 20. 0.83 21. 0.71 22. 0.53 23. 0.30 	<p>HEMISPHERIC MASSES 75% GLANDULAR/ 25% ADIPOSE THICKNESS (MM) (Model 010B)</p> <p>55% GLANDULAR/ 45% ADIPOSE THICKNESS (MM) (Model 010A, 010C)</p> <ol style="list-style-type: none"> 24. 4.76 25. 3.16 26. 2.38 27. 1.98 28. 1.59 29. 1.19 30. 0.90
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EMBEDDED DETAIL FOR PHOTOTIMER COMPENSATION PLATE (MODEL 014F)

<p>CONTRAST STEP WEDGE (5 MM THICKNESS)</p> <ol style="list-style-type: none"> 1. Adipose tissue 2. Glandular tissue <p>HEMISPHERIC MASSES 75% GLANDULAR THICKNESS (MM)</p> <ol style="list-style-type: none"> 3. 3.16 4. 2.38 5. 1.98 6. 1.59 7. 1.19 8. 0.90 	<p>CACO, SPECKS GRAIN SIZE (MM)</p> <ol style="list-style-type: none"> 9. 0.39 10. 0.27 11. 0.23 12. 0.20 13. 0.16 14. 0.13 <p>ALUMINA (MM)</p> <ol style="list-style-type: none"> 15. 0.39 16. 0.27 17. 0.23 18. 0.20 19. 0.16 20. 0.13 	<p>FIBRIL</p> <ol style="list-style-type: none"> 21. Ø 25 Microns High Contrast 22. Line pair test Target 20 lp/mm
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MODEL 012A INCLUDES

QTY	PART NO.	COMPONENT DESCRIPTION
1	010A	Tissue-Equivalent Mammography Phantom, 5 cm thick 30% Gland/70% Adipose
1	010B	Tissue-Equivalent Mammography Phantom, 4 cm thick 50% Gland/50% Adipose
1	010C	Tissue-Equivalent Mammography Phantom, 6 cm thick 20% Gland/80% Adipose
2	ST10125-05-BR3070	10 x 12.5 x 0.5 cm Soft Tissue Equivalent Slab, 30% Gland/70% Adipose
2	ST10125-10-BR3070	10 x 12.5 x 1 cm Soft Tissue Equivalent Slab, 30% Gland/70% Adipose
2	ST10125-20-BR3070	10 x 12.5 x 2 cm Soft Tissue Equivalent Slab, 30% Gland/70% Adipose
2	ST10125-05-BR7030	10 x 12.5 x 0.5 cm Soft Tissue Equivalent Slab, 70% Gland/30% Adipose
2	ST10125-10-BR7030	10 x 12.5 x 1 cm Soft Tissue Equivalent Slab, 70% Gland/30% Adipose
2	ST10125-20-BR7030	10 x 12.5 x 2 cm Soft Tissue Equivalent Slab, 70% Gland/30% Adipose
2	ST10125-05-BR5050	10 x 12.5 x 0.5 cm Soft Tissue Equivalent Slab, 50% Gland/50% Adipose
2	ST10125-10-BR5050	10 x 12.5 x 1 cm Soft Tissue Equivalent Slab, 50% Gland/50% Adipose
1	ST10125-20-BR5050	10 x 12.5 x 2 cm Soft Tissue Equivalent Slab, 50% Gland/50% Adipose
1	014F	12.5 x 10 x 2 cm Mammographic Slab w/ Embedded Detail Plate, 50% Gland/50% Adipose
1	-	User Guide
1	-	48 Month Warranty

DIMENSIONS:	50.8 cm x 45.7 cm x 20.3 cm (20" x 18" x 8")
PHANTOM WEIGHT:	11 kg (24.15 lb)
MATERIALS:	Epoxy Resin

