

Lab Experiment # 11

Contrast Resolution, Spatial Resolution, Visibility of Detail and Noise.

Direct Radiography (DR)

Purpose

This experiment is designed to demonstrate the effect of changes in mAs on contrast resolution, noise and visibility of detail. In addition, the effect of SID and FSS on spatial resolution will be demonstrated.

Learning Objectives

After completing this lab, you should be able to:

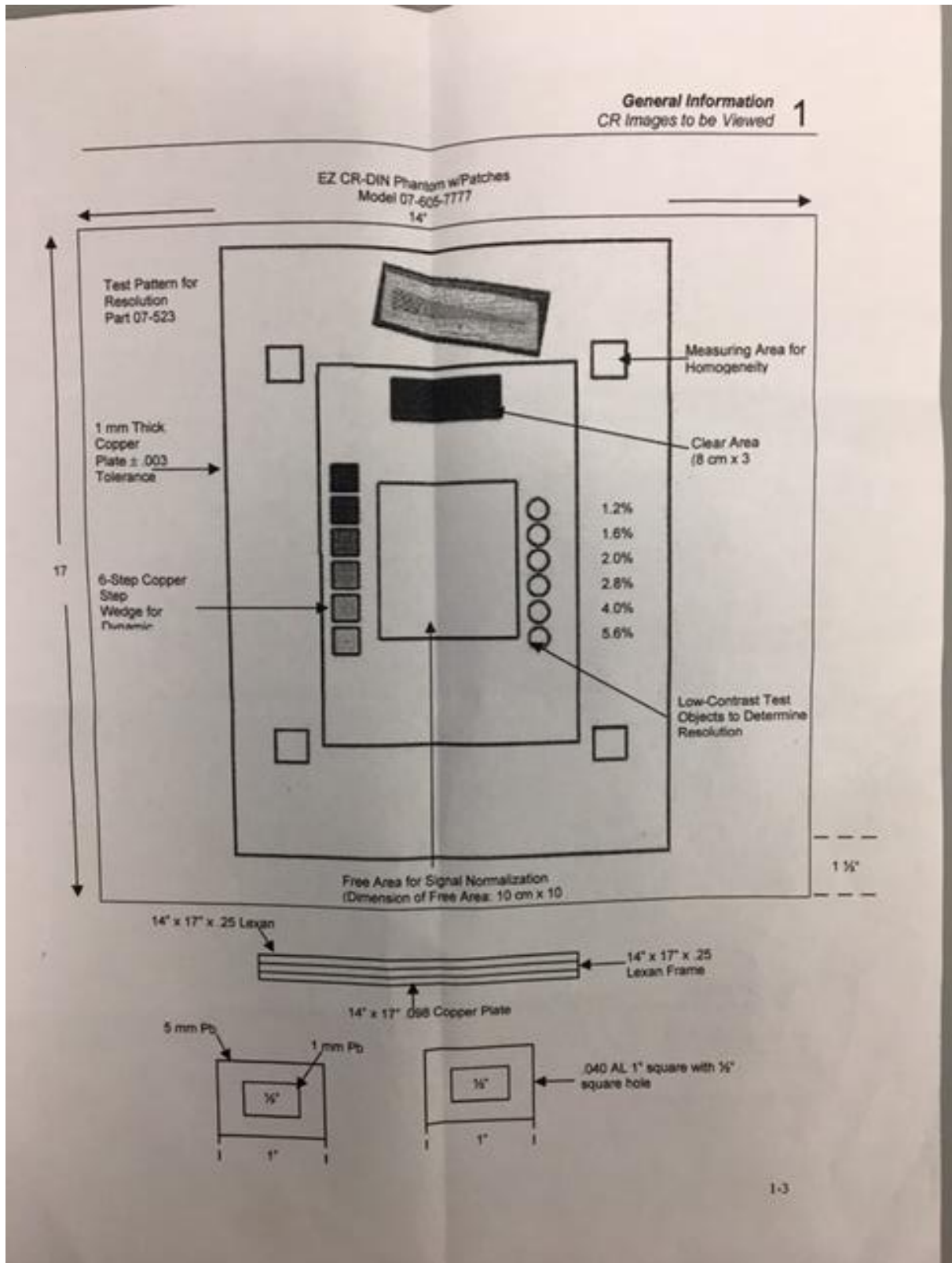
1. Use the laboratory equipment properly.
2. Set up the control console and ceiling tube mount correctly.
3. Function effectively in group work.
4. Perform the experiment independently.
5. Explain the effect of mAs on SNR.
6. Evaluate the effect of noise on the visibility of detail of a digital image.
7. Evaluate the effect of SID and FSS on spatial resolution of a digital image.
8. Predict the effect of the change in mAs on digital image quality and patient exposure.

Materials Needed

- 14 x 17 inch wireless digital (DR) image receptors.
- EZ CR-DIN Phantom

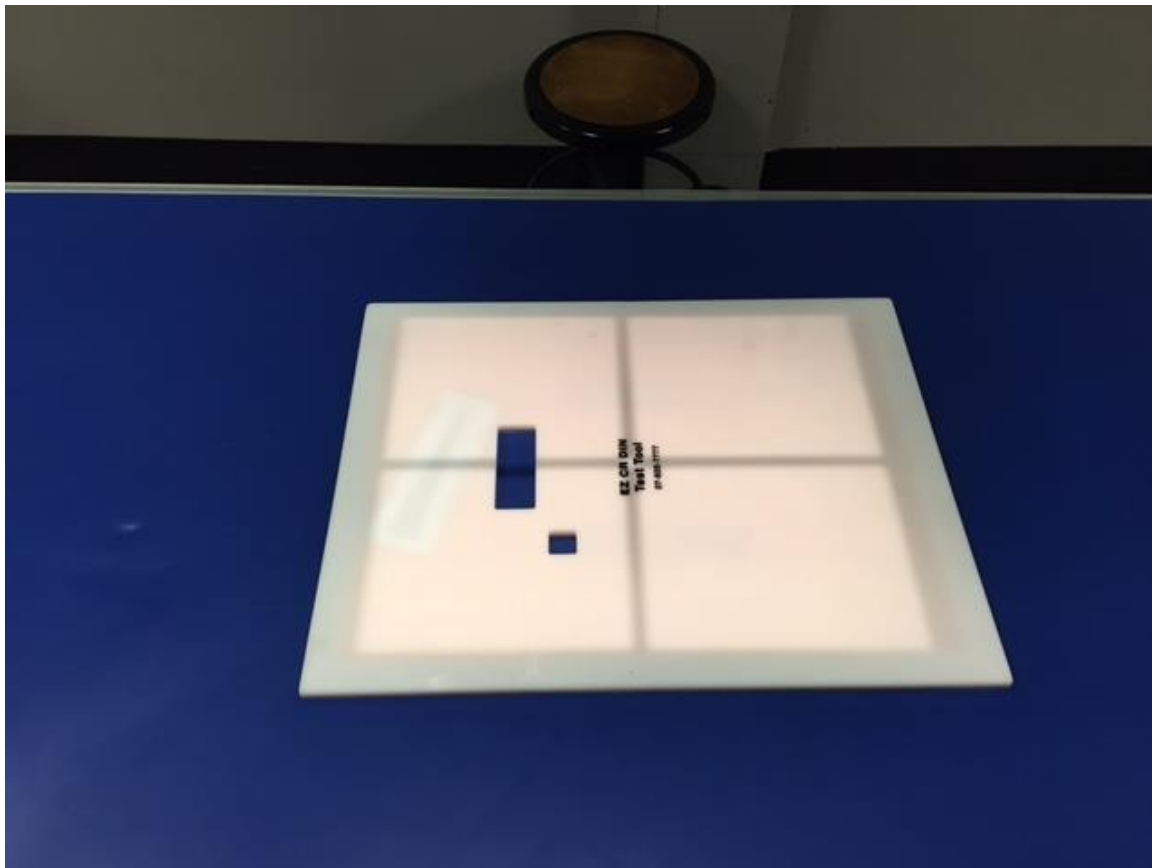
Procedure 1 Direct Radiography

EZ CR-DIN Phantom Radiograph



Instructions for Exposures 1 through 12.

1. When adding images to your new exam use system diagnostic menu and select six full range images.
2. Use the FPD in the table bucky and set the SID to 40 inches.
3. Direct the central ray **perpendicular** to the center of EZ phantom
4. The room, side and exposure number must be labeled on **all** radiographs.
5. Set the x-ray tube, mode of operation and focal spot size as indicated on **Worksheet** .
6. Make all the exposures using the settings indicated on **Worksheet** .
7. In the worksheet indicate overall image brightness, noise level of each image, visibility of detail and spatial resolution.



The wireless digital (FPD) image receptor can only be handled by an instructor!

Worksheet 1

FPD

Effect of mAs on Noise and Visibility of Detail

	kVp	Focal Spot	SID	mAs	EI TI DI
1	70	small	40"	10	
2	70	small	40"	5	
3	70	small	40"	2.5	
4	70	small	40"	1.25	
5	70	small	40"	0.5	
6	70	small	40"	10	
7	60	small	40"	10	
8	50	small	40"	10	

9	70	small	40"	10	
10	70	large	40"	10	
11	70	small	30"	8	
12	70	small	max	?	

Worksheet 1

TEI, EI, DI	Evaluate the overall brightness, contrast resolution, noise level, and visibility of detail of each image.
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Worksheet 2

TEI, EI, DI

Evaluate the spatial resolution and visibility of detail of each image.

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