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Axial & Lateral Resolution

Description and Reason For Testing

Resolution is the minimum reflector separation between two closely spaced objects which can be imaged separately along the axis of the beam, whereas lateral resolution defines the system's ability to image objects separately that lie perpendicular to the axis of the sound beam. If a system has poor resolution capabilities, small structures lying close to each other will appear as one image, causing improper interpretation of the ultrasound findings.

Axial Resolution depends on the transducer's center frequency, damping characteristics and pulse length. Generally, the higher the frequency the better the system's axial resolution.

Lateral Resolution depends on the beam width, focusing characteristics of the transducer, number of displayed scan lines and the system's sensitivity and gain settings.

Testing Procedure

Model 539 provides four scanning surfaces to evaluate axial-lateral resolution at four given depths. Target locations in the phantom are referenced from the center of the array at target point 5.

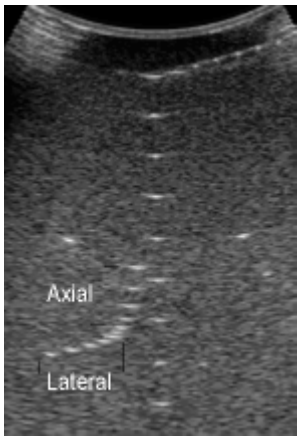
The line targets are spaced at 5.0, 4.0, 3.0, 2.0 and 1.0 mm intervals both axially and laterally. The last point of the axial array target group is also the first target point in the lateral array group.

1. Position the transducer over the axial-lateral resolution group of line targets on the phantom until a clear image is obtained. Freeze this image.

2. Examine the image to determine if all of the line targets within the group are clearly displayed as separate target points. Record the closest spaced target points which can be imaged (refer to specification drawing). Obtain a hard copy of the display.

3. Document all observations made on the quality assurance record.

4. Repeat the above procedure for the remaining three depths, using scanning surfaces #2, #3, and #4



Results

The system's ability to resolve the array targets at all four depths should remain consistent from week to week when using the same

instrument settings and Model 539 phantom. Compare the test results obtained from the baseline records. If the current image demonstrates changes in the system's ability to resolve these targets, corrective action should be considered.

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