

CTB-01082

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Product: Selenia Dimensions/
3Dimensions

Subsystem: AWS

Subject: Explanation of Chest Wall Band Artifact Seen on Flat Field Images
for Selenia Dimensions/3Dimensions Systems

Purpose

To provide information on the chest wall band artifact that may be seen on Selenia Dimensions and 3Dimensions Systems.

Scope

This information applies to Selenia Dimensions, 3Dimensions systems.

Customer Technical Bulletin (cont.)

Discussion

It has been observed in the field on Flat Field images a band along the chest wall (Figure 1).

The cause of this issue is believed to be a change in intensity of off-focal radiation due to a change in x-ray tube heat (loading). The band is created by the shadow of the chest wall collimator blade in the low level off-focal radiation field.

As the x-ray tube temperature rises with usage, a slight change of signal count over the band region relative to the surrounding region is seen.

When the tube loading state is notably different from the state during gain calibration, this band may become visible since the change in signal count is not completely compensated by the gain calibration.

Due to the uniform nature of the flat field phantom, this band can be observed when the image is displayed with a narrow window. However, this difference in signal count is not visible during patient imaging

Hologic is aware of this image artifact during QC and is working to develop a long-term solution. Extreme window and level settings can make this band more apparent during QC. However, per the QC manual, the window should be set to 500 (Figure 2) to provide a better indication of the artifacts that may appear in a processed breast image.

Customer Technical Bulletin (cont.)

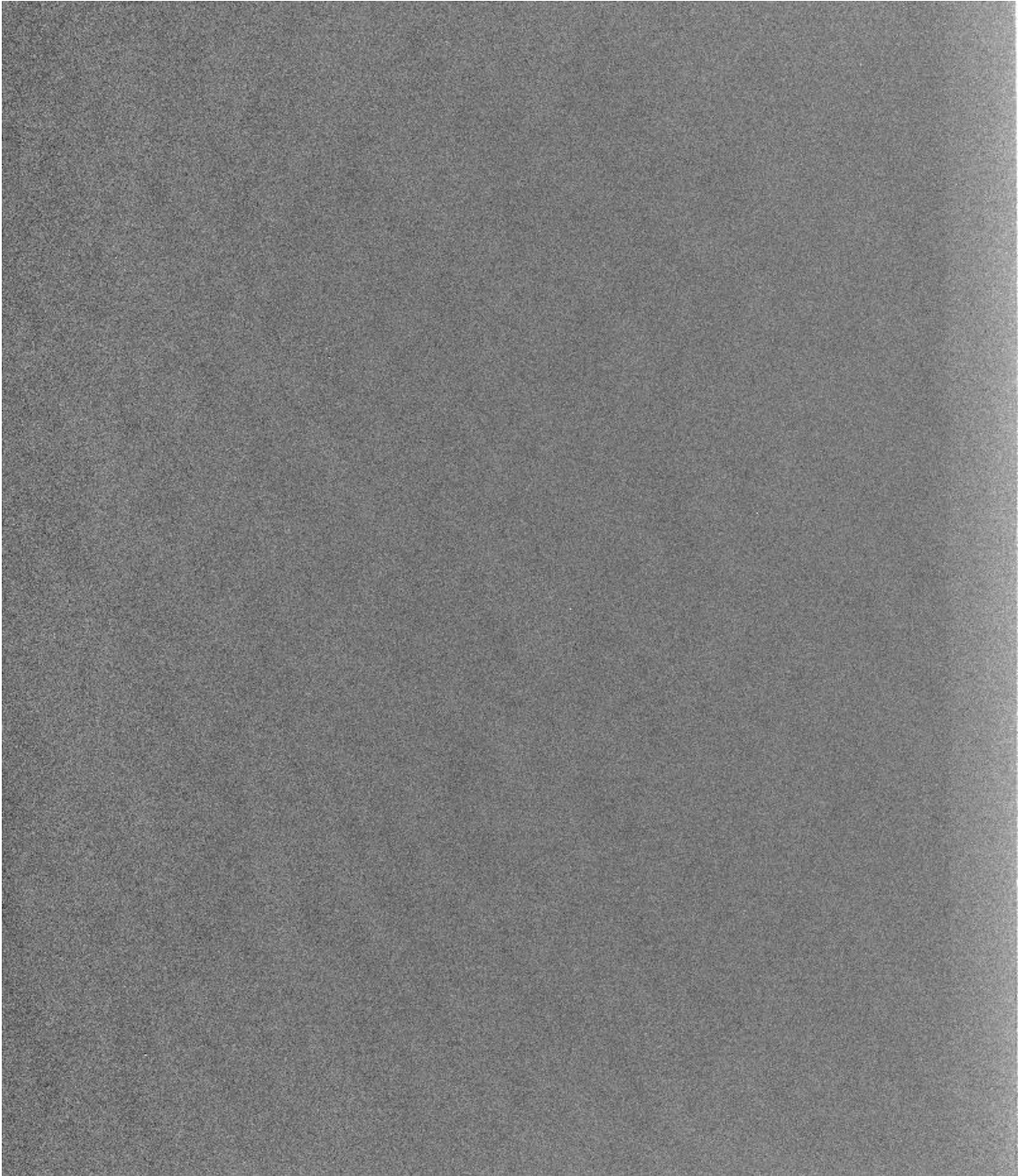


Figure 1 – Example of Chest Wall Band Artifact

Customer Technical Bulletin (cont.)

Quality Control Manual for Selenia Dimensions and 3Dimensions Systems


Chapter 3: Quality Control Activities for the Medical Physicist

3.3.6 Data Analysis and Interpretation

DICOM Printer Artifact Evaluation

1. Review the printed film of the artificial flat field sent to the printer from a single system following the instructions above or from the printer's Quality Control menu.
2. Any artifacts that appear on the printed film are created by the printer alone since the artificial test pattern used contains pixels of a single value across the entire pattern.

System Artifact Evaluation

1. Select the first Flat Field Conv thumbnail image in the Procedure screen on the Acquisition Workstation to display on the Preview screen.
2. Select the Actual Pixels button  to bring the image into full resolution. Examine the entire image for artifacts; use the magnification tool if necessary.



Note

Acquiring an image for artifact evaluation using the Flat Field view sets the image window to 500 and the image level to the exposure index automatically. Artifact evaluation must be performed under these predefined settings.

Figure 2 – QC Manual Excerpt for Windowing during Artifact Evaluation