

European Guidelines for quality assurance in breast cancer screening and diagnosis

2b.2.2.3.1 Image receptor homogeneity

It has been asked by several parties to provide examples of the output of the image receptor homogeneity test. Below examples of outcome of this test item for a DR system are given as 3D graphs. This is only an example, other representations of the data of the image receptor homogeneity test are also allowed (e.g. color maps).

The data shown is typical for most mammography DR systems with an image receptor size of approximately 240 mm x 300 mm. The mean pixel value map (figure 1) is flat due to the flatfield corrections which have been performed. For systems which do not perform flatfield corrections, like current CR systems, the mean pixel value map has a pattern similar to the SNR map due to the Heel effect. The SNR (figure 2) and variance (figure 3) maps have a similar shape for DR and CR systems.

The values in the maps below have been normalized to the average value in the reference region-of-interest.

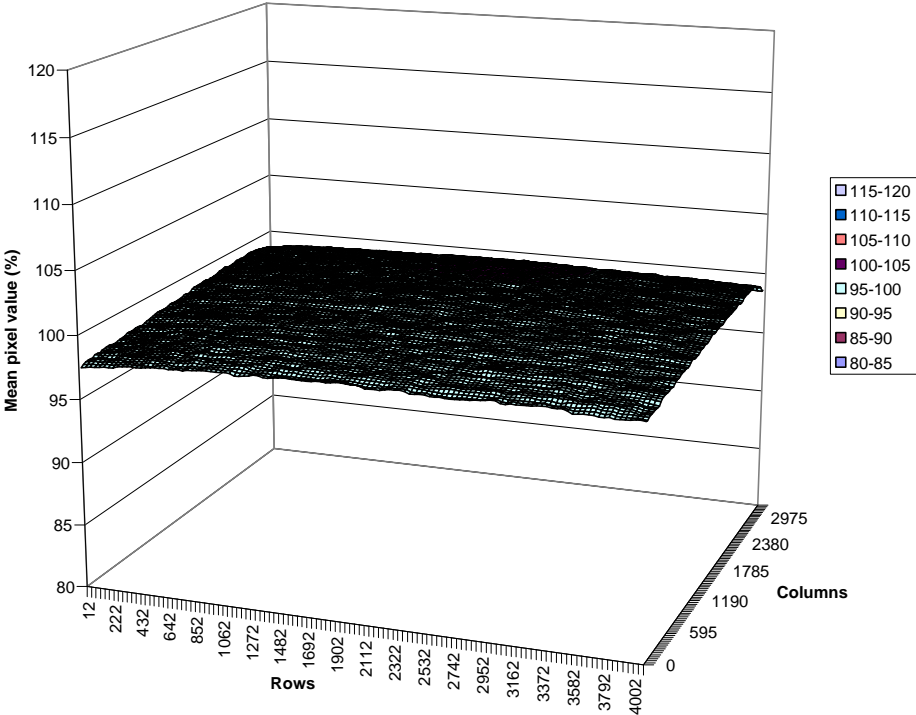


Figure 1: Example of a mean pixel value map of a flatfield corrected homogeneity image on a DR system (image size: approximately 240 mm x 300 mm). On uncorrected images a low frequency trend in pixel value is present due to the Heel effect. The shape of this trend is similar to the trend in SNR as shown in figure 2.

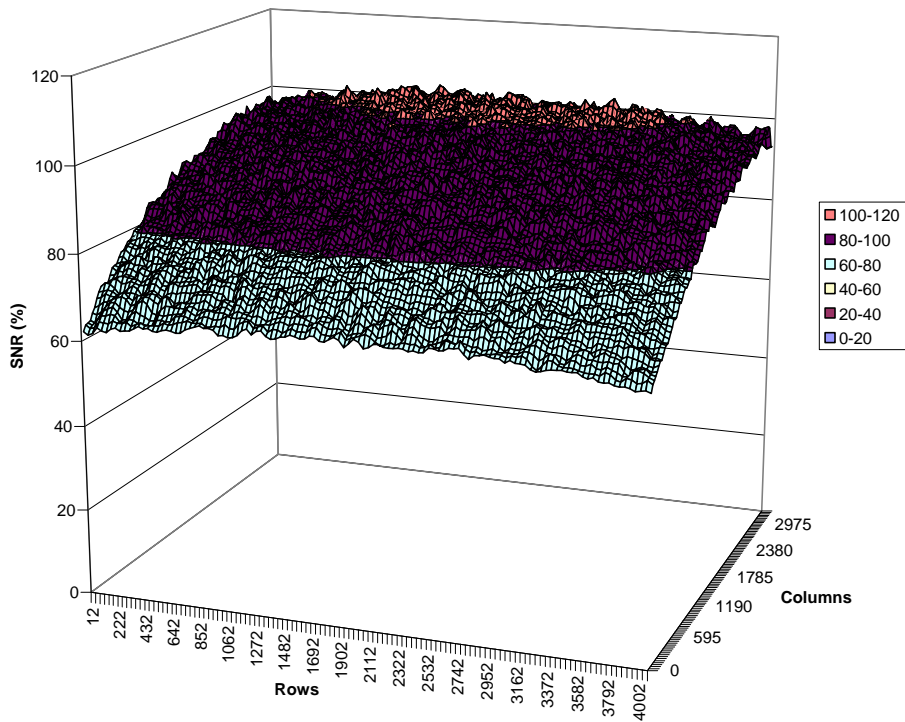


Figure 2: Example of a SNR map, this map is similar for DR and CR systems, the low frequency trend in the graph is caused by the Heel effect (image size: approximately 240 mm x 300 mm).

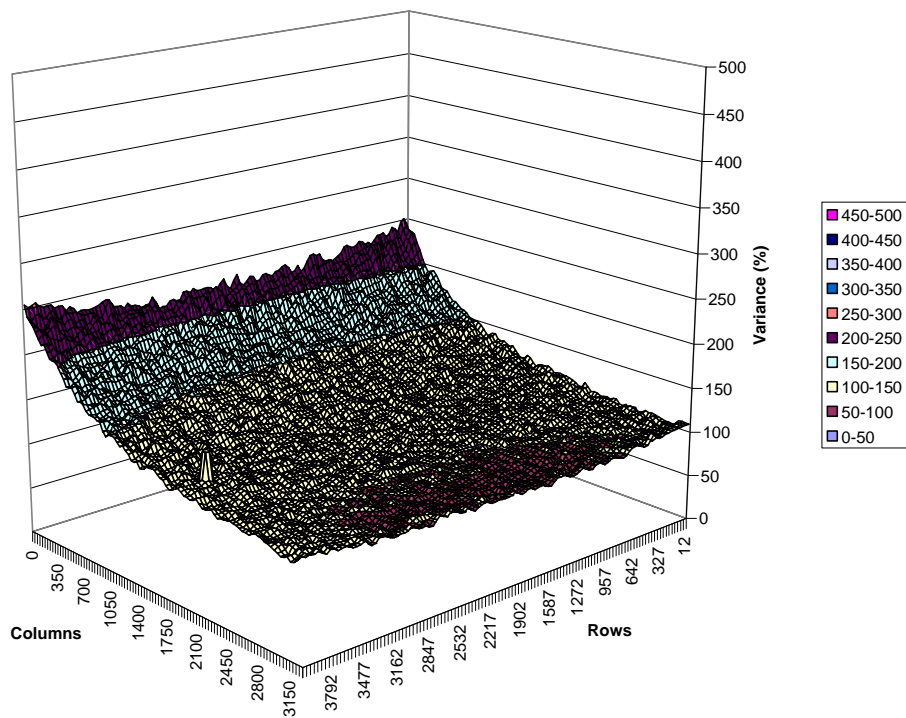


Figure 3: Example of a variance map, this map is similar for DR and CR systems, the low frequency trend in the graph is caused by the Heel effect (image size: approximately 240 mm x 300 mm).