The ultrasound system development process includes various image quality assessment and verification stages. At these stages, a combination of water tank and phantom measurements and extensive clinical evaluations are used to make sure that the image quality objectives are met. Assessing the performance of an ultrasound system requires understanding the relationships between the characteristics of the system, such as the point spread function, and the quality of images. Also required is defining quantifiable measures for each image quality aspect. Among the measured and evaluated image quality aspects are the detail resolution, contrast resolution and penetration. Image quality aspects will be defined in terms of the system characteristics and measures that can be used to quantify them. Water tank and phantom measurements used to assess system performance will also be described.

Educational Objectives:

1. Review a simplified block diagram of an ultrasound imaging system.
2. Understand how the characteristics, in particular the point-spread function of an imaging system determine the image quality.
3. Learn various techniques used to assess the performance of an ultrasound imaging system during the product development process.