QIBA FDG-PET/CT Digital Reference Object Project
July 16 2011

The goal of the QIBA Digital reference Object (DRO) project is to construct a common reference DICOM PET/CT test image in the same format generated by each vendor's PET/CT scanner. This will then be read on PET/CT display stations to check SUV computation fidelity and region of interest analysis performance. This is motivated by the known vendor-specific variations in the standardized uptake value (SUV) calculations.

To date we have constructed a common reference test object as illustrated in Figure 1 below, showing a comparison with the measured NEMA NU-2 Image Quality phantom (without central 5 cm air cylinder).

Properties of the DRO include
- Parametrically defined
- Contrast, noise and smoothing are adjustable
- Paired anatomical (CT) and functional (PET) objects

There are five phases to the project, as listed below, and we are at the end of phase 2
1. Completion of extensions to DRO generation
2. DICOM validity testing
3. Vendor specific DRO generation
4. Testing DRO on multiple display stations with assistance of QIBA FDG-PET TC members
5. Communication of results to manufactures. Release of white paper on recommended path for DRO extensions and adoption by manufacturers.

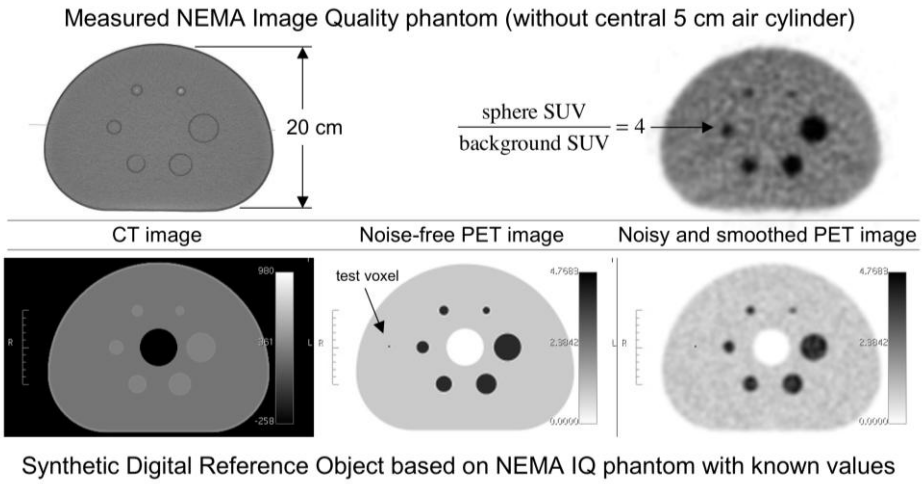

Figure 1: PET/CT Digital Reference Object for testing DICOM-based SUV measures Top: Measured NEMA image quality phantom. Bottom: Representations of the Digital Reference Object