

Digital Reference Object Analysis Sheet - Version 05/29/2013

You may record your answers directly on this form or by filling out the accompanying Excel spreadsheet. The numbers on each line indicate the corresponding rows and columns of the Excel spreadsheet.

1 Basic Information

Fill out the basic information for the test. Include a brief description of the workstation and its hardware, the software being tested, and the makes and models of the primary scanners that supply the images viewed on the workstation used for this test.

ROW	Item	Value
6	Name of Institution	
7	Name of person testing software	
8	Email or Phone contact	
9	Date of test	
10	Workstation used for test (Serial #)	
11	Description of hardware (Hardware Version)	
12	Make and model of monitor	
13	Software Manufacturer	
14	Name of software being tested	
15	Version of software	
16	DRO Version Being Tested	

Load the DRO into your viewing software. Using an axial view, advance to **slice 40**, which contains the two test voxels and both test patterns as shown in Figure 1. Record the type of SUV that you are measuring (or 'Unknown') and the number of decimal places that the software reports for the SUV value. Record the type of ROI that your software uses (2D or 3D). Record the ROI measurement units and indicate if it is a diameter, an area, a volume, etc..

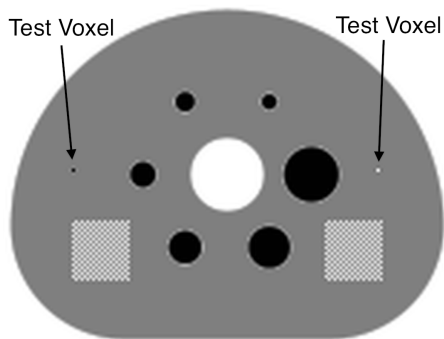


Figure 1: You should see both the hot and cold test voxels and the two square test patterns in slice 40. (Display artifacts may be present in this document.)

ROW	Item	Value
20	SUV Type (BW, LBM, BSA)	
21	Number of decimal places	
22	ROI Type (2D, 3D)	
23	Recording ROI Area or Diameter?	

2 ROI Analysis of the DRO

For each of the following six ROIs (shown in Figure 2), record the maximum, minimum, mean, standard deviation for the voxel SUV values. Also record either the diameter or area of each ROI (if recording area, record the volume for ROI 6). If your software does not allow you to create circular ROIs or specify the exact diameter, create an ROI as close as possible to circular with the specified dimensions.

- (1) Draw a circular ROI with an area of 490 mm^2 (diameter=25 mm), concentric with the smallest hot sphere.
- (2) Draw a circular ROI with an area of 490 mm^2 (diameter 25 mm), concentric with largest hot sphere.
- (3) Draw a circular ROI with an area of 490 mm^2 (diameter 25 mm), concentric with the hot test voxel.
- (4) Draw a circular ROI with an area of 490 mm^2 (diameter 25 mm), concentric with the cold test voxel.
- (5) Draw a circular ROI with an area of 490 mm^2 (diameter 25 mm), centered within the single plane test pattern nearest the hot test voxel.
- (6) Draw a spherical (3D) ROI with a volume of $8,181 \text{ mm}^3$ (diameter 25 mm), centered within the 3D block test pattern nearest the cold test voxel.

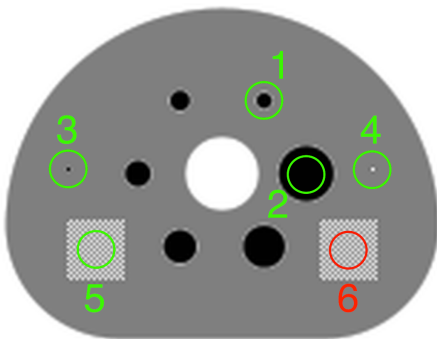


Figure 2: ROIs for the DRO analysis. The cross-section of the sphere in the 3D test pattern (on the right) is shown in red.

COL:		C	D	E	F	G
ROW	ROI	Max	Min	Mean	STD	Diam or Area
28	ROI 1					
29	ROI 2					
30	ROI 3					
31	ROI 4					
32	ROI 5					
33	ROI 6					

3 Imaging Software Zoom Characteristics

Zoom in on the smallest hot sphere until it fills as much of the screen as possible as shown in Figure 3(a). Repeat this for the largest hot sphere. Note any anomalies or enter 'None'. If the anomalies are too complex to describe, enter 'Complex'. If possible, take a screenshot of any anomalies encountered.

36 Zoom Anomalies:

Scroll through the entire DRO volume (axial, coronal, and sagittal). Report any anomalies that you find or enter 'None'. If the anomalies are too complex to describe, enter 'Complex'. If possible, take a screenshot of any anomalies encountered.

Other Anomalies:

39 Axial:

40 Coronal:

41 Sagittal:



(a) Zoomed view of the smallest hot sphere (sphere 1). Slight spatial distortions and slight ringing artifacts are apparent. A complex ringing perpendicular to the sphere wall and a horizontal/vertical streaking has been observed on some displays.



(b) Zoomed view of the largest hot sphere (sphere 6). Ringing artifacts are apparent outside the wall of the sphere, and the top and bottom of the sphere wall appear to be truncated. A complex ringing perpendicular to the sphere wall has been observed on some displays.

Figure 3: Zoomed-in views as described in Section 3.

4 Imaging Software Fusion Characteristics

Use image fusion to fuse the emission and transmission DRO as shown in Figure 4. Scroll through the image volume (axial, coronal, and sagittal) and report any anomalies that you encounter or enter 'None'. If the anomalies are too complex to describe, enter 'Complex'. If possible, take a screenshot of any anomalies encountered.

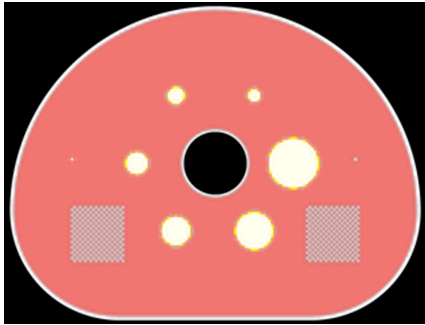


Figure 4: Image fusion of the emission and transmission DROs

Fusion Anomalies:

45 Axial:

46 Coronal:

47 Sagittal:

5 User Feedback

We appreciate any feedback that you have to offer in improving these tests. If you have any comments or suggestions about the design of the test, the layout, submission process, etc., please let us know or write 'None'.

51 Feedback:

6 Submit the Report

Email the completed Excel spreadsheet or pdf document and any screenshots taken to jkoudelik@rsna.org with subject line **DRO report**. Include your name and the name of your institution in the body of the email.

Contact the Imaging Research Laboratory at the University of Washington with any questions or comments:

email: petctdro@uw.edu

Phone: 206-543-0517

Fax: 206-543-8356
