This file provides information about the T1 Mapping image sets in the folders QIBA_T1_v11_GE and QIBA_T1_v11_Siemens.

This data set provides noise-free images similar to those of version 6, but sets varying T1 tissue are supplied.

Two sets of images are provided. DICOM part 10 format images are in the DICOM directory. XML files are in the XML directory. The XML images allow the values for the DICOM tags to be altered using a text editor, and new DICOM images can then be generated using dcm4che's tool called "xml2dcm," available at http://www.dcm4che.org/confluence/display/d2/dcm4che2+DICOM+Toolkit.

The fixed parameters used to generate this data are:

Repetition Time = 5 msecs
Assumed equilibrium magnetization (in tissue) = 50000
Assumed T1 (in blood vessel) = 1440 msecs
Assumed equilibrium magnetization (in blood vessel) = 50000

The T1 in tissue varies in these data sets. The T1 values used are {200, 500, 2000, 5000} msecs.

The signal intensity images were generated for the following different flip angles: 3, 6, 9, 15, 24, 35 degrees. The files in the zip folder have the following flip angles:

filename	flip angle (in degrees)
fa3	3
fa6	6
fa9	9
fa15	15
fa24	24
fa35	35

The JSim model T1_S0_model_20110902.proj was used to generate the signal intensity images. This model can be downloaded from a link provided on the QIBA page of our website. A link to download the JSim software is also provided.

The signal intensity for the T1 mapping images was calculated using Equation 1 in the paper
Comparison of three physiologically-based pharmacokinetic models for the prediction of contrast agent distribution measured by dynamic MR imaging, Barboriak DP, MacFall JR, Viglianti BL, Dewhirst MW. J Magn Reson Imaging. 2008 Jun;27(6):1388-98.

The data in the test image is organized as follows: The top 50*70 pixels in the image represent the tissue. The vascular region of interest is the bottom 50*10 pixels strip of the image.

In each manufacturer's T1 Mapping folder are four folders, one for each T1 tissue value ("T1_tissue_<t1>").