Phantom QA Results: 32 CH

Date:01/17/2017

Dartmouth Brain Imaging Center (DBIC)

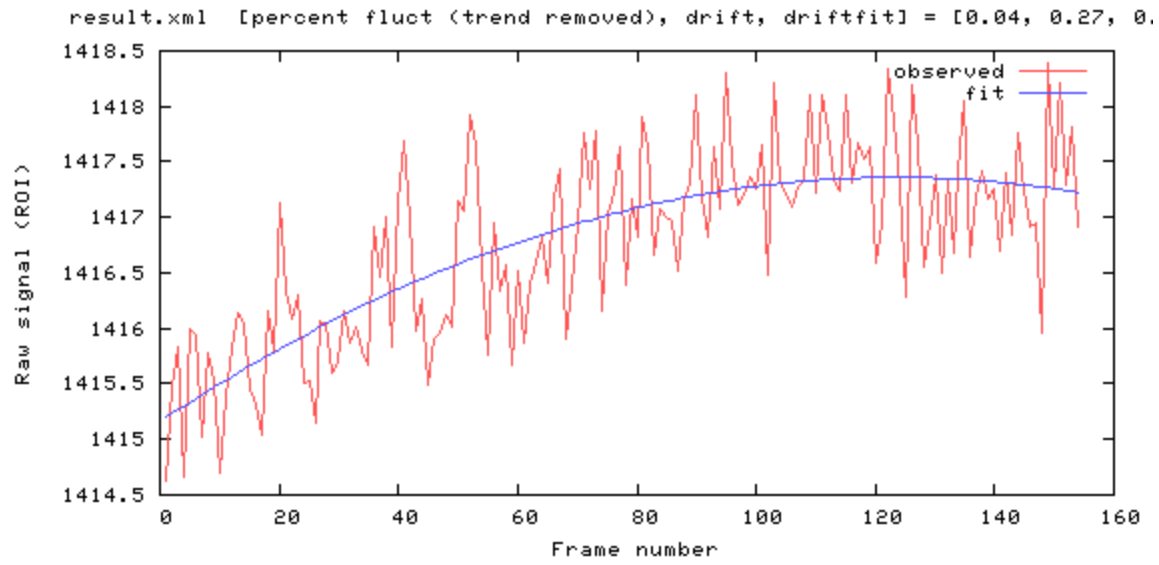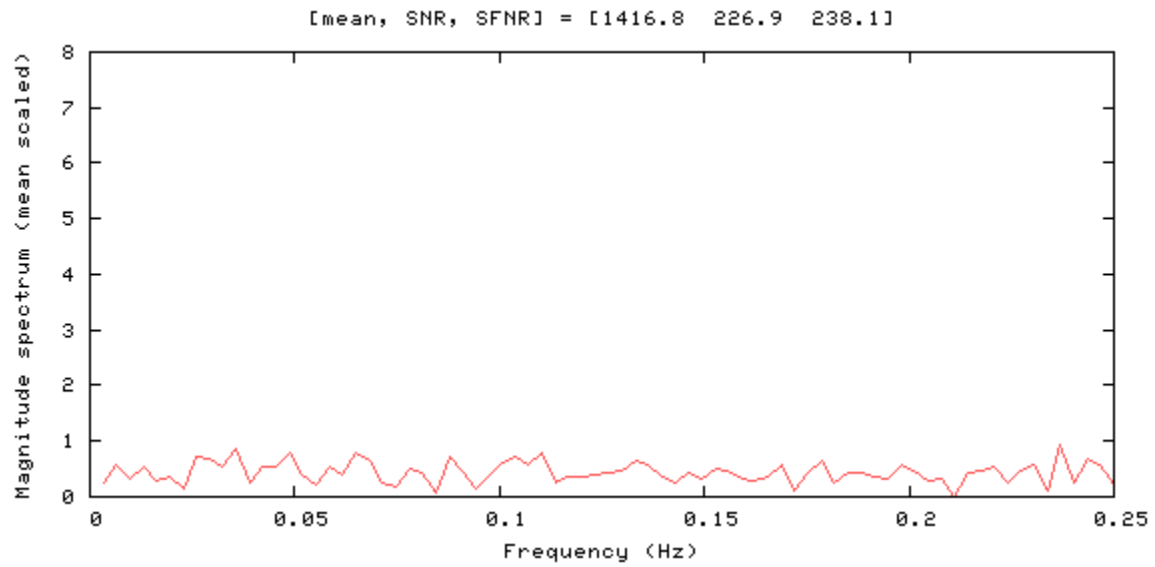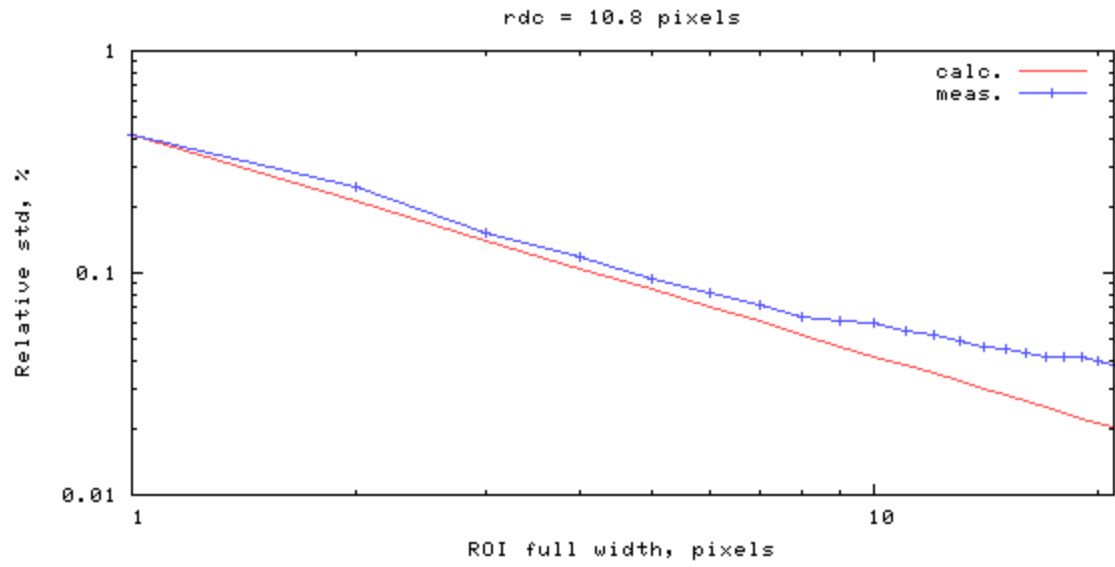| Measurement	Value	Comments
Signal-to-Noise Ratio (SNR) (fig 2)	226.9	Comparable with BWHM, MINN, STAN and UCLA (ref1)
Signal-to-Fluctuation-Noise ratio (SFNR) (fig 2)	238.1	Comparable with BWHM, MINN, STAN and UCLA (ref1)
Radius of Decorrelation (RDC) (fig 3)	10.8	High value of rdc indicates less scanner instability (ref1)
Drift (fig 1)	0.27	Better than the values reported in ref 1: Indicates stable performance over the time series.
Percent Fluctuation (fig 1)	0.04	Better than the values reported in ref 1: Indicates stable performance over the time series.
Fourier analysis of the residuals (fig 2)	<2	Better than the values reported in ref 1 . No abnormally elevated spikes. The system is mechanically stable.
Ghost Mean Percentage (fig 10)	2.15%	Better than the recommended level (3% <) in ref 2:

Table 1: Key measurements

result.xml [percent fluct (trend removed), drift, driftfit] = [0.04, 0.27, 0.

Figure 1

[mean, SNR, SFNR] = [1416.8 226.9 238.1]

Figure 2

rdc = 10.8 pixels

Relative std, %

calc.
meas.

ROI full width, pixels

Figure 3

Smoothness(FWHM) in mm - X: [min mean max] = [2.033 2.130 2.197]

Smoothness(FWHM) in mm

Timepoint

Figure 4

Smoothness(FWHM) in mm - Y: [min mean max] = [2.396 2.463 2.529]
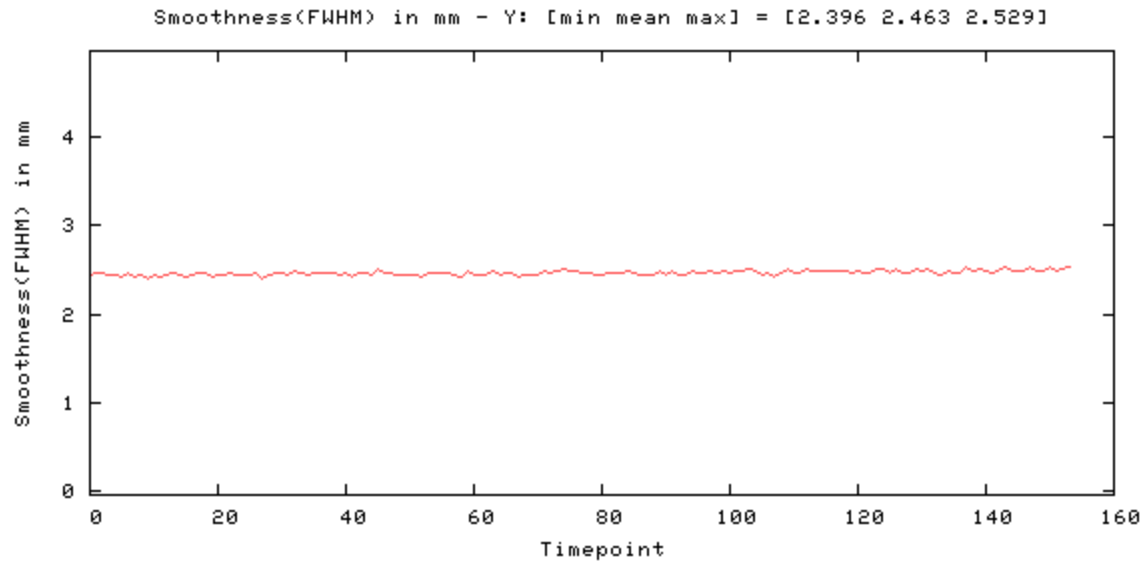
Figure 5

Smoothness(FWHM) in mm - Z: [min mean max] = [1.640 1.968 2.231]
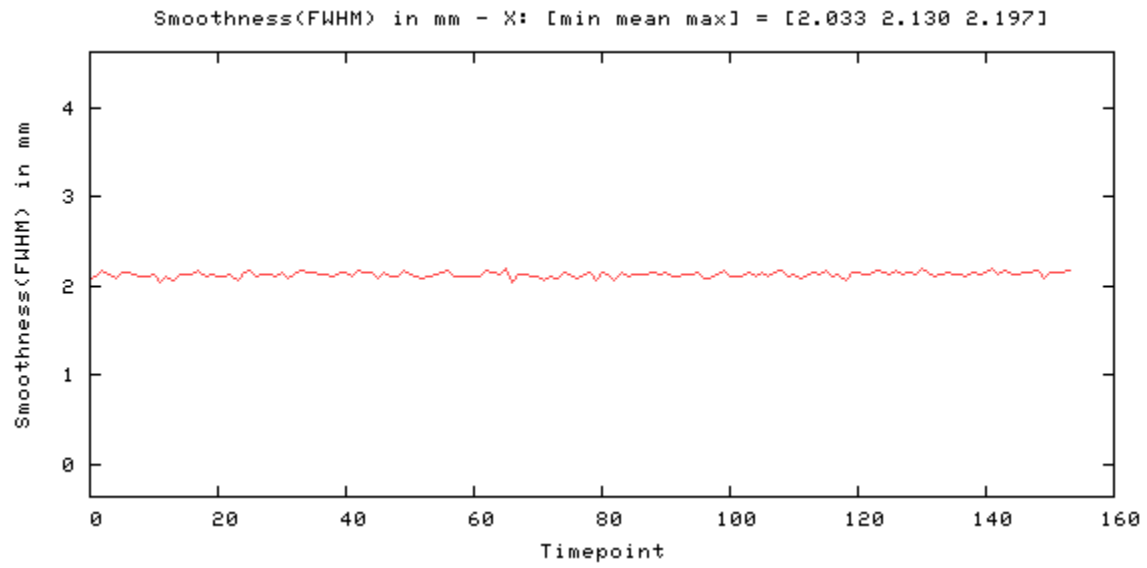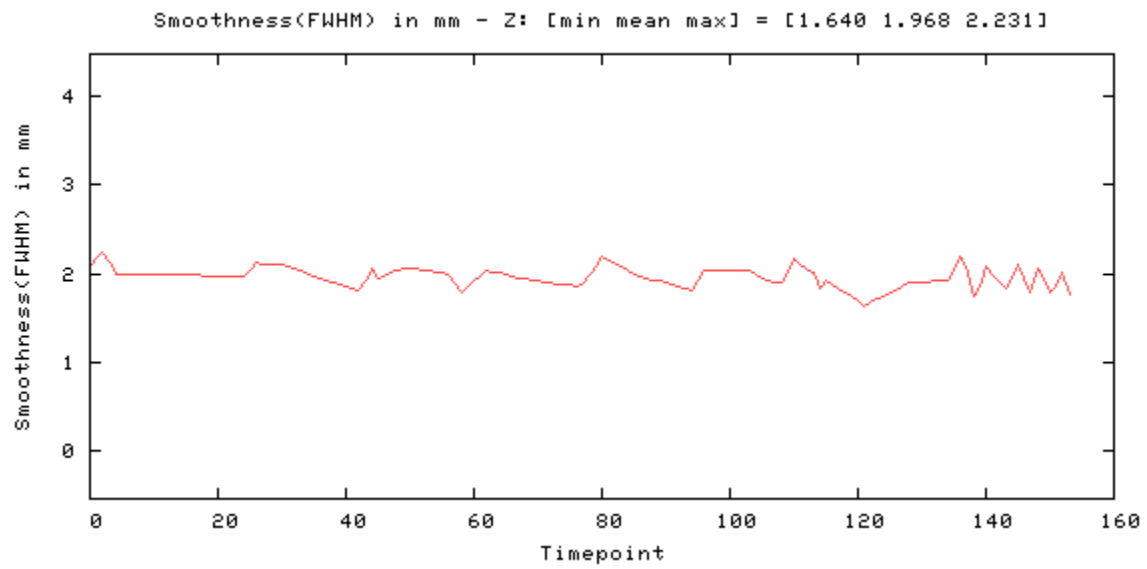
Figure 6

Figure 7

Figure 8

Center of Mass in mm – Z: [maxdisplacement drift] = [0.034 0.031]

Figure 9

Mean of ghost voxels as % of non-ghost [masked] mean
(ghostmean, brightghostmean) = (2.148, 5.656)
(lower is better)
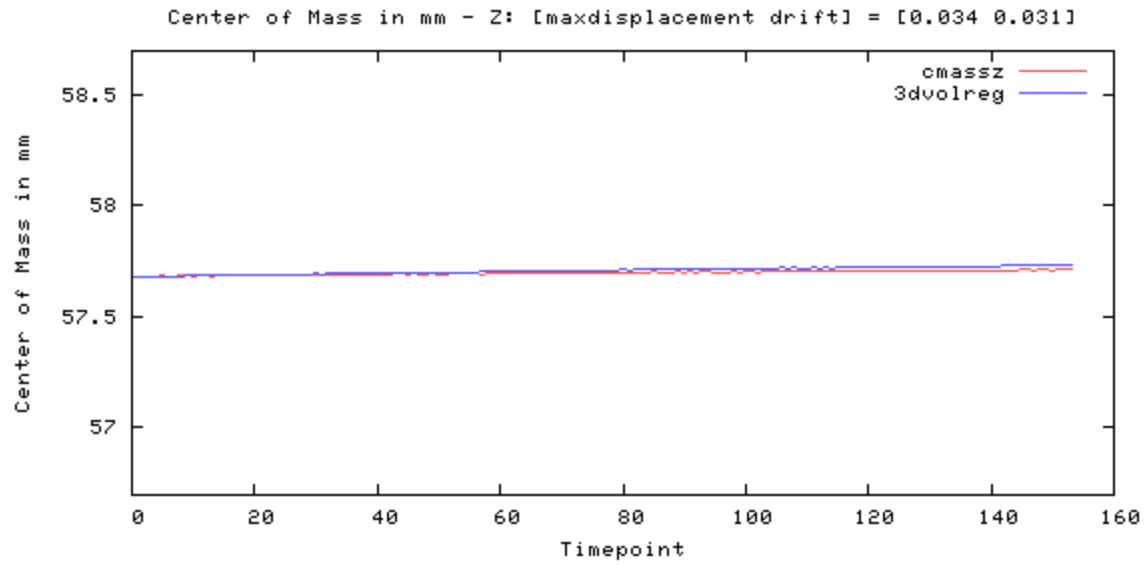

Figure 10

Odd-even difference image

-288   231
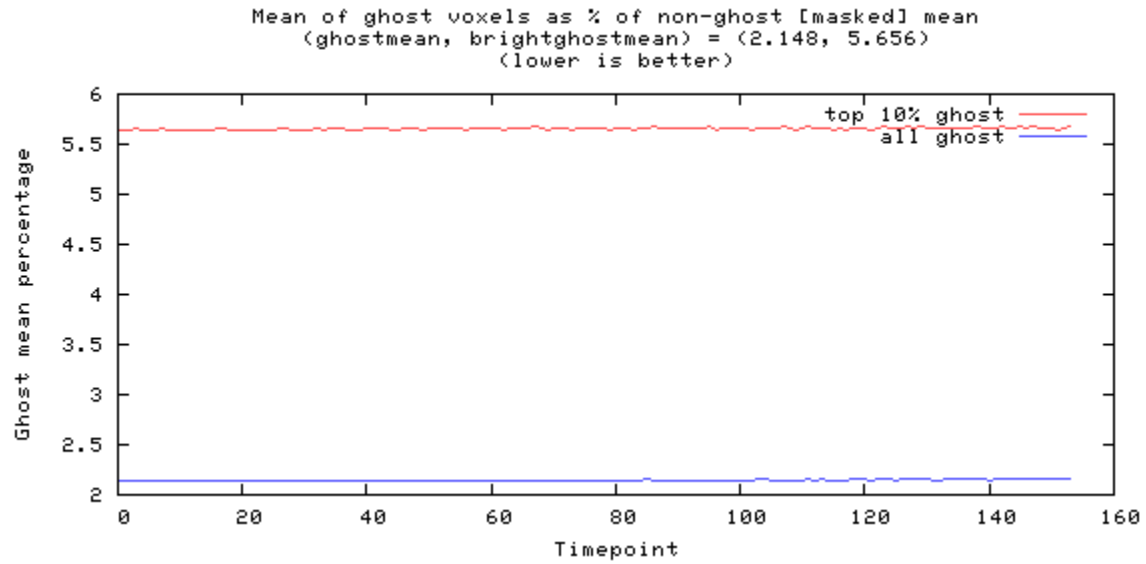
image min: -288, image max: 231

Figure 11

Mean image

0   2200.79
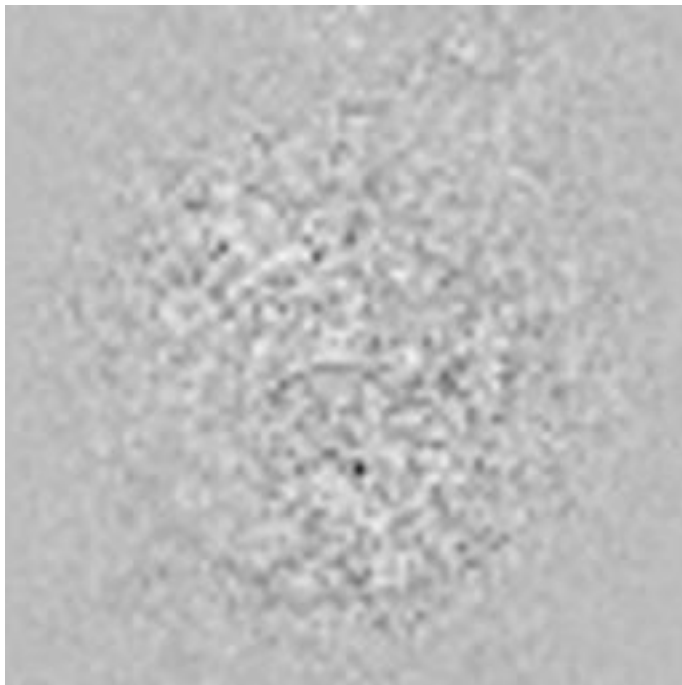
image min: 0, image max: 2201.45
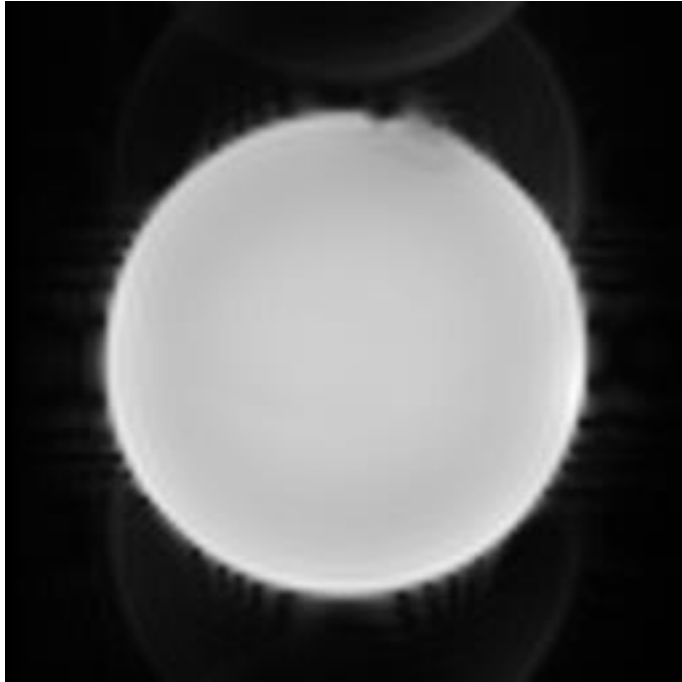

Figure 12

Standard Deviation image
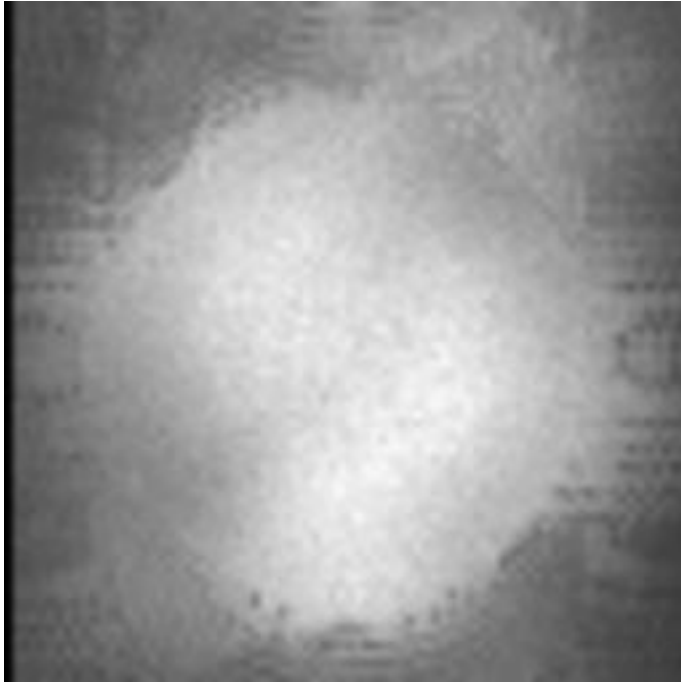
0   7.83334

image min: 0, image max: 7.83334
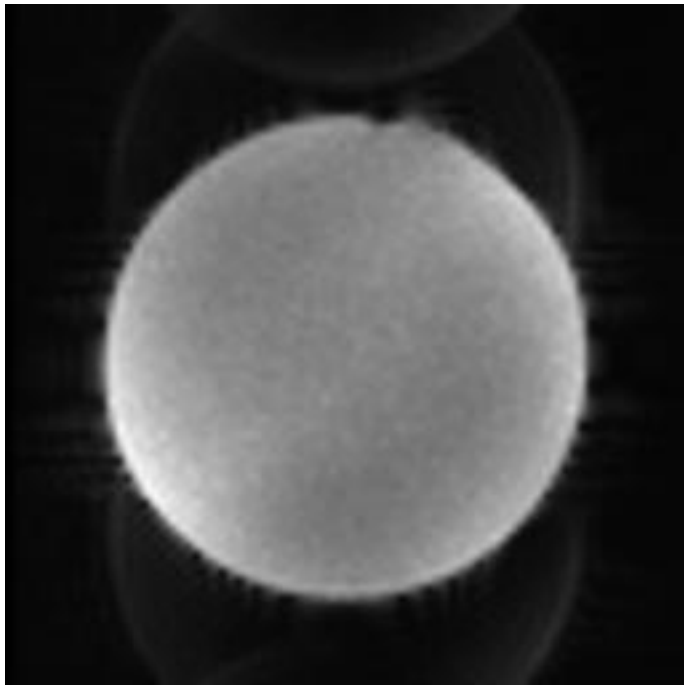

Figure 13

SFNR image

0   856.734

image min: 0, image max: 910.263

Figure 14

Acquisition parameters

dimensions	80x80x30x157
spacing	3mmx3mmx3.99mmx2000ms
gap	0mmx0mmx0.49mmx0ms
scanner	AWP66112
psdname	%SiemensSeq%\ep2d_bold
examnumber	22
studyid	QA
seriesnumber	5
runnumber	1
scanningsequence	EP
sequencevariant	SK
magneticfield	3
description	BOLD_p2
scandate	2017-01-17
scantime	09:13:09
tr	2000
te	35.000000
flipangle	90
prescribedslicespacing	3.99
frequencydirection	1
acquisitionmatrix	80 80
bandwidth	185.2
transmitcoilname	Body
institution	Dartmouth College - PBS
examdescription	dbic^QA
scanner	AWP66112
scannermanufacturer	SIEMENS
scannermodelname	Prisma
fieldofview	240 240
psdname	%SiemensSeq%\ep2d_bold
protocolname	BOLD_p2 (BOLD_p2)

institutionaddress	Maynard 3,Hanover,NH,US,03755
institutionaldepartment name	Department
scanoptions	FS
mracquisitiontype	2D
sequencename	*epfid2d1_80
angioflag	N
numaverages	1
imagingfrequency	123.252564
imagednucleus	1H
spacingbetweenslices	3.9899999901637
numphaseencodingsteps	79
echotrainlength	39
percentsampling	100
percentphasefieldofview	100
scannerserialnumber	66112
softwareversions	syngo MR E11
inplanephaseencoding direction	COL
variableflipangleflag	N
sar	0.05580742565152
dBdt	0
acquisitionnumber	1
instancenumber	1
samplesperpixel	1
photometricinterpretation	MONOCHROME2
rows	480
columns	480
bitsallocated	16
bitsstored	12
highbit	11
pixelbandwidth	2315
otherinfo	

sliceorder	2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,1,3,5,7,9,11,13,15,17,19,21,23,25,27,29

References:

1. Friedman L, Glover GH. Report on a multicenter fMRI quality assurance protocol. J Magn Reson
Imaging. 2006a; 23(6):827–839. [PubMed: 16649196]

2. Acceptance Testing and Quality Assurance Procedures for Magnetic Resonance Imaging
Facilities, AAPM Report No. 100

3. https://www.nitrc.org/projects/bxh_xcede_tools