Appendix A

To assess the stability of the PD map scaling with respect to the location of the external calibration object, we scanned the same subject multiple times with the external object located at different positions. The scanning protocol and the calibration object were those described in section Data acquisition. As we used a 64 channel receiver coil and the tube of water was 10 cm long, we could place the reference object in a limited number of positions close to the skull while preserving the subject's comfort. We performed two data acquisitions, placing the external calibration object on the left temple, and then placing it on the right one.

To estimate the multi-contrast PD map for each dataset we followed

the steps described in the.

Estimation of multi-contrast PD maps.

We observed the same PD value distribution in GM and WM voxel for both positions of the calibration objects, as shown on Fig. 7. WM and GM can be distinguished clearly, with peaks at about 70% (WM) and 83% (GM) for the calibration object placed on the right temple (red), and on the left one (blue).

To quantify the spatial distribution of the intensity changes across the position of the calibration object, we coregistered the two multi-contrast PD maps and computed the voxel-wise difference. The difference map was divided by the mean values of the two PD maps in order to obtain percentage variations. The PD value changes across position of the calibration object were smaller than 5% within the GM and WM tissue, and they ranged between −10% and 10% within CSF tissue.

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.neuroimage.2018.11.023.