

Updating Protocol Parameters on MR750 3T Scanner (March 19, 2010)

While great efforts have been made to establish protocols on the new MR750 3T scanner that match the scan parameters from the old system, the following modifications may be necessary if you use:

1. EPI with slice thickness less than 2.9mm.

Due to concerns of Peripheral Nerve Stimulation (PNS), the default spatial-spectrum pulse used in the GE product EPI sequence limits the minimum slice thickness to 2.9mm; whereas on the old HDx system the minimum slice thickness was 2.4mm. We strongly recommend using GE default settings and prescribing slices thicker than 2.9mm. However, if it is critical to use slices thinner than 2.9mm, there is a work-around (with tradeoffs).

- **Work-around:** You can turn on fatsat, which disables the spatial-spectrum pulse and then allows you to prescribe slices of arbitrary thickness.
- **Tradeoffs:** There is a known occasional artifact when using fatsat in EPI fMRI. Occasionally you will get localized spots of reduced temporal SNR that are consistent in location for every slice. Such artifacts may not be visible in the raw images. Since the artifact is focal and consistent through slices, it can be easily excluded from fMRI analysis once identified. GE is aware of this issue and is expected to provide a fix soon. The Functional Biomedical Informatics Research Network (fBIRN) is currently using the fatsat option for its multi-site studies.

2. DTI with slice thickness less than 2.9mm.

DTI also limits the minimum slice thickness to 2.9mm for the same reason as for EPI (See above). If you prefer to use slices thinner than 2.9mm, please use the work-around below:

- **Work-around:** You can turn on fatsat, which will then allow you to prescribe slices of any thickness. No artifact has yet been reported in DTI due to fatsat.
- **Tradeoffs:** You may have a slightly reduced spatial coverage (e.g. fewer slices in a fixed TR).

3. Any non-standard or proprietary sequences that are not provided by CFMRI (such as ADNI sequences)

It is your responsibility to make sure that an updated version of the sequence exists and to establish corresponding new protocols. CFMRI will help with the set-up of these sequences on the scanner. In addition, approval for installation of any non-product sequences must be obtained from CFMRI to ensure compatibility with other sequences on the system.