

## **"Fetal MR on Philips Achieva 3T MR scanner with RF multi-transmit"**

Our 3T MR scanner is a standard commercially available 16-channel scanner equipped with radio-frequency multi-transmit which allows for patient-adaptive shimming of the B1 field. This allows for optimal shimming of the B1 field and minimizes SAR hot spots. The scanner always operates clinically, according to the manufacturer, in level 1 safe mode in terms of energy deposition and the calculated SAR values for all pulse sequences will not exceed the FDA limits.

After the usual localizer sequences, a B1 calibration scan of approximate one minute long will be run to allow for optimal B1 shimming for the rest of the examination. If the range of coverage changes significantly, the B1 shimming may have to be re-run for optimal B1 shimming.

Standard single shot T2W turbo spin echo (TSE) with parallel imaging to shorten the echo train length and single shot SSFP sequences are used routinely. For single shot TSE, typical slice thickness of 3 mm with 1 mm x 1 mm in-plane resolution is used with 0 to 1mm overlap. For SSFP imaging in general, volume B0 shimming together with shortest TR, is necessary to minimize dark band artifacts. For SSFP, we use a flip angle of 75 degrees with shortest TR/TE. To minimize TR/TE, we have 5 mm thick slices with overlap of 2 mm and in-plane resolution typically of 1.2 mm x 1.2 mm.