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TimTX TrueForm

MR at 3T

Competition product descriptions, comparison and specifications contained in this document are based on interpretation of available data at the time this material was being prepared (September 2011) and may require independent verification. Specifications have been obtained from competition brochures, websites and other independent published sources.

Answers for life.

Why is TimTX TrueForm changing MR imaging at 3T?

What are the challenges imaging at 3T?

B1 inhomogeneities have historically been a challenge at 3 Tesla. At high field strengths, such as 3T, the wave length of the RF transmission approaches the dimension of the human anatomy. This can create destructive excitation field interference and consequently non-uniform flip angles in the imaging volume. Signal shading and, even more critical, contrast variations in the imaging volume can become an issue (Figure 1).

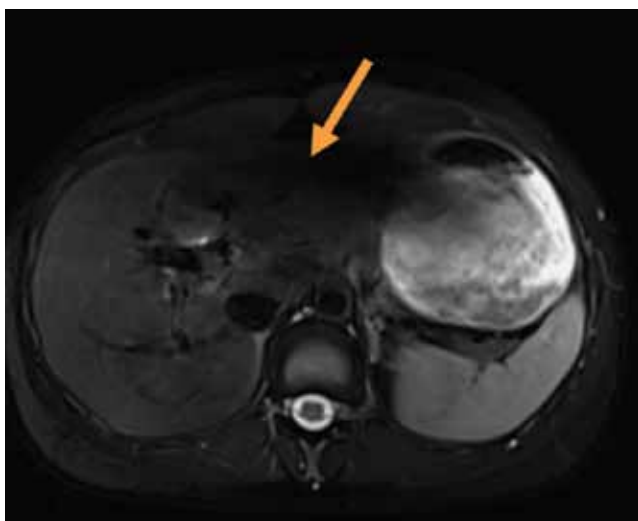


Figure 1: Signal shading at 3T due to B1 inhomogeneities.

How does TimTX TrueForm help with B1 homogeneity?

TimTX TrueForm™ is Siemens' solution for B1 homogenization, which offers the functionality of a 2-channel Transmit Array (Figure 2). Conventional excitation (RF) can have a standard deviation of B1 distribution of up to 25%. With TimTX TrueForm excitation (RF), the standard deviation of B1 distribution is typically halved, i.e., B1 homogeneity is doubled.

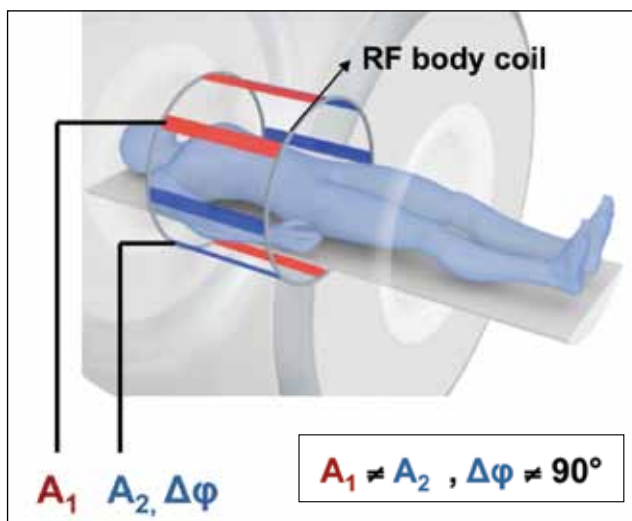


Figure 2: Different transmission settings for amplitude (A_1 and A_2) and phase ($\Delta\phi$) of the 2 feed ports of the RF body coil = 2-channel B1 Shimming.

“TrueForm Design has made 3T MR imaging clinical routine.”

Markus Lentschig, MR and PET/CT Imaging Center,
Bremen Mitte, Germany

Homogeneity with TimTX TrueForm

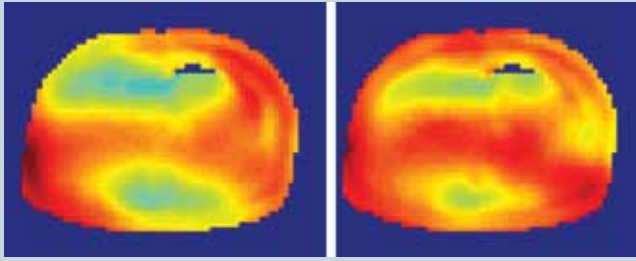


Figure 3: B1 homogeneity is improved with TimTX TrueForm (less blue areas). B1 Field Plots. Left, conventional; right, TimTX TrueForm.

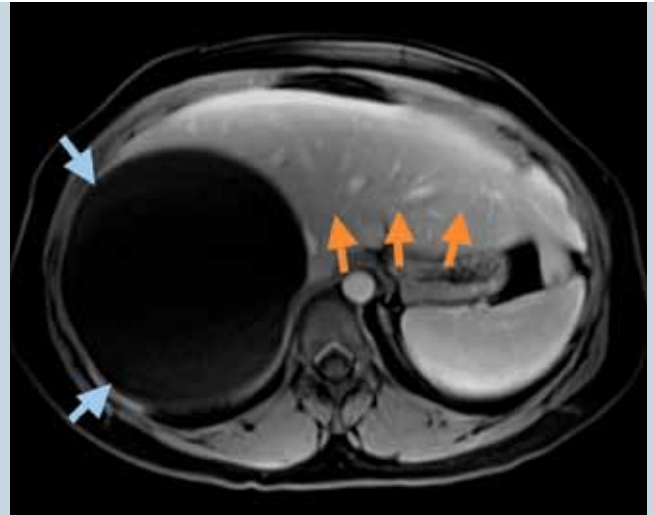


Figure 4: This image provides a clinical example showing large fluid collections (blue arrows) which present a challenge for abdominal imaging at 3T. TimTX TrueForm enables homogeneous results throughout the imaging volume, facilitating visualization in critical regions (orange arrows).

How does TimTX TrueForm compare with Philips Multi Transmit?

Figures 5A and 5B demonstrate the technology behind Siemens TimTX TrueForm and Philips Multi Transmit. Both approaches provide equivalent solutions leading to the same functionality.

However, TimTX TrueForm does not require patient-specific adjustments. Siemens anatomy-specific settings eliminate the need for extensive calibration and can provide a time savings of greater than one minute compared to patient-specific implementations required by Philips Multi Transmit.

Summary

TimTX TrueForm is a solution for B1 homogenization. Siemens was the first to the market to introduce this technology in 2007. TimTX TrueForm delivers B1 shimming with 2-channel TX array functionality. Anatomy-specific settings save time, enhancing productivity. TimTX TrueForm has more than 500 installations worldwide and is standard on all of Siemens MAGNETOM® Verio and Skyra MRI systems.

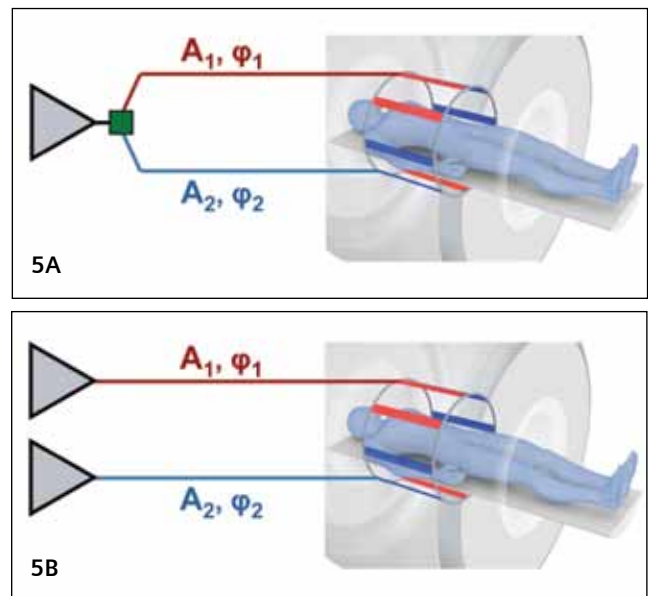


Figure 5A: TimTX TrueForm — Independent settings of amplitude and phase with 1 source and splitter. Figure 5B: Philips Multi Transmit — Independent settings of amplitude and phase with 2 sources.

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