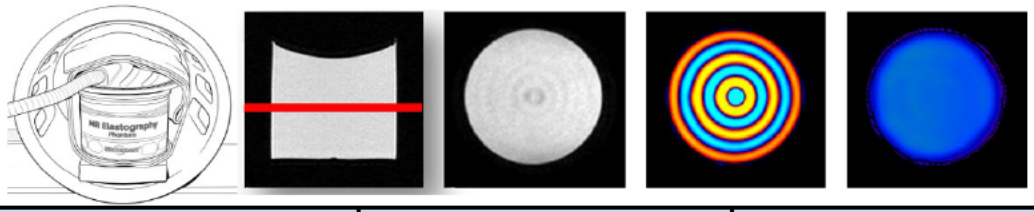
MR Elastography Phantom

Scanning Parameter Recommendations

- To set-up the phantom for scanning, refer to the illustrations in the MRE PHANTOM USER GUIDE included with each MRE Phantom.

- Use the following recommended MRE Phantom imaging parameters that are specific to your GE MR scanner.

GE - 2D MRE Phantom Parameter Recommendations			
Scanners and Sequences (Note 1)	**Scanner**	**Artist, Creator, Explorer, HDx, Optima MR450w, Voyager**	**Architect, Discovery MR750w, PET/MR, Pioneer, Premier**
	Field Strength	1.5T	3T
	Software versions (Verified)	DV22.1, DV24, DV25, DV26	DV22.1, DV24, DV25,
	Software versions (Compatible)		
	Pulse sequence	MR-Touch (GRE)	MR-Touch (EPI)
	Mode	2D	2D
	Options	Fast, ASSET, MultiPhase	ASSET, FC
Phantom Setup	Phantom Setup	See MRE PHANTOM USER GUIDE with Phantom Kit.	
	Coil (Note 2)	Head	
Slice Positing	Place one coronal slice at the center of the height of the phantom		
			
Information Input (Pretend Patient)	Position	feet-first, supine	feet-first, supine
	Weight	150 Lbs (68 kg)	150 Lbs (68 kg)
	Height	5 ft (1.5 m)	5 ft (1.5 m)
Coil	Coil (Note 2)	head	head
Imaging Parameters	Imaging Plane	coronal	coronal
	Number of slices	1	1
	Slice thickness (mm)/gap	10 mm / 0 mm	8 mm / 2 mm
	FOV (mm) / Phase FOV (100%) (Note 3)	20 cm/100%	20 cm/100%
	Matrix	256 × 64	32 × 32
	TE (msec)	min full TE (typically ~18.2)	min full (around 57.6 msec)

Imaging Parameters	TR (msec)	50	250
	Flip Angle (degree)	25	90 (default)
	NEX	1	1
	EPI shots	N/A	1
	Bandwidth (kHz)	31.25	250 (hard coded)
	Freq Encoding Dir	Superior-Inferior	Superior-Inferior
	Phase Acq. Order	N/A	N/A
	Delay After Acq.	N/A	N/A
	Acceleration (Note 4)	ASSET	ASSET
	Acceleration factor (Note 4)	1	2
	Number of breath holds	N/A	N/A
	Shimming Volume	Cover the whole phantom	Cover the whole phantom
	Spectrum Peaks	Peak with middle freq (there are 3 peaks)	Peak with middle freq (there are 3 peaks)
	Saturation Band	SI	SI
	Scan Time	about 28 sec (Note 2)	10 sec
MR-Touch Tab (Note 1)	Temporal Phases	4	4
	MEG Frequency (Hz)	75	90
	Driver Frequency (Hz)	60	60
	Driver Amplitude (%) (Note 6)	10	10
	Driver Cycle Per Trigger	3	15 (Cannot edit)
	MEG Direction	Z	Z
	MENC um/rad	28.5 typ (Cannot edit)	28.5 typ (Cannot edit)
Advanced Tab	Use resoundant	1	1
	MRE Gradient Amplitude (g/cm) (Note 5)	1.84	1.84

NOTES:

(1) Specific tab and parameters vary based on different software versions and MRE sequences; the generic MRE parameters for driver and motion encoding gradients are the guideline to those specific tab and parameters (MRE-related); overall, this recommendation is conservative so that it can be successfully performed at all software versions and scanners.

(2) Use of a multi-channel RX head coil is preferred. Alternatively, the Torso/Spine coils can be used.

(3) 20cm FOV is a good minimum value for phantom studies, smaller FOVs may reduce SNR or confidence and should be avoided. Larger FOV may be used and may be beneficial for correlation to in vivo scans. FOV should be kept consistent across all phantom scans or results will not be comparable though time.

(4) ASSET acceleration factor R = 1 is recommended for GRE, while R = 2 for EPI to allow shorter TE. R > 1 can be used generally, particularly for correlation to in vivo sequences. Larger FOVs may be desirable to avoid aliasing artifacts.

(5) Performance may vary based on gradient hardware performance and maximum gradient amplitude. 20mT/m is a good value for 10% acoustic amplitude in phantom; 4mT/m is good for 50% acoustic amplitude.

Questions - Questions regarding the Resoundant MRE Phantom Scanning Parameter Recommendations may be directed to:

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