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\\Studien\DMD\Test\CEST\gre_cest_MPI04_APTw_001_FA7_fatsat

TA: 3:14 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm³ Acc:: 2 Rel. SNR: 1.00

Properties

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

Routine

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
TE	2.00 ms
Averages	1
Concatenations	1
AutoAlign	---

Contrast - Common

TR	4.0 ms
TE	2.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

Contrast - Dynamic

Dynamic Mode	Standard
Measurements	30
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Contrast - Dynamic

Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s
Multiple Series	Off
Reordering	Spiral

Resolution - Common

FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
Base Resolution	112
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Reference Lines 3D	12
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %

Geometry - Common

Slice Thickness	5.0 mm
TR	4.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Geometry - AutoAlign

Slab Group	1
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L20.9 P37.6 H31.7
L	20.9 mm
P	37.6 mm
H	31.7 mm
Initial Orientation	T > C
T > C	19.50
> S	-1.40
Initial Rotation	90.00 deg

Geometry - Saturation

Saturation Mode	Standard
Special Saturation	None

Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	32 mm
Table Position	H
Inline Composing	Off

System - Miscellaneous

Coil Selection	Auto Coil Select
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Always
Assume Silicone	Off

System - Adjust Volume

! Position	L17.5 P40.9 H30.1 mm
! Orientation	T > C19.5 > S-1.2
! Rotation	-0.25 deg
! A >> P	133 mm
! R >> L	134 mm
! F >> H	47 mm
Reset	Off

System - pTx

B1 Shim	TrueForm
Excitation	Slab-sel.

System - pTx

LR Balancing	Off

System - Tx/Rx

Frequency 1H	123.263521 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	4.000

Physio - Signal

1st Signal/Mode	None
TR	4.0 ms
Segments	1
Concatenations	1

Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	82.1 %
Phase Resolution	100 %

Inline - Liver

Liver Registration	Off
Save Original Images	On

Inline - Subtraction

Subtract	Off
Measurements	30
StdDev	Off
Save Original Images	On

Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	30
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Inline - Soft Tissue

Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s

Inline - Composing

Inline Composing	Off

Inline - MapIt

MapIt	None
Flip Angle	7 deg
Measurements	30
Contrasts	1
TE	2.00 ms
TR	4.0 ms
Save Original Images	On

Sequence - Part 1

Sequence Name	MPI_434
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Optimized
Gradient Mode	Fast
Flow Compensation	None
Reordering	Spiral
Bandwidth	700 Hz/Px
Asymmetric Echo	Off
Define	Segments
Segments	1

Sequence - Part 2

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off
Acoustic noise reduction	Off

Sequence - Special

CEST	On
Pulse Type	Gauss
B1 definition	pure FA
No. of Pulses	36 n
Pulse Duration	49920 #s
Interpulse Delay	5 ms
Recover Time	2400 ms
Recover Time M0	2400 ms
No. of Locking Pulses	1 n
Lock Interpulse Delay	1 ms
B1	1.78 uT
Spoiling	only last
Fat Sat	On
Spiral Elong. E	0.5

Sequence - Special

AdjFreq	Off
Offset Distribution	APT
Suppressed M0	On
Offset	3.0 ppm
Freq Shift	0.0 ppm
Delta Freq	0.0 ppm
Scale Factor	10.0
Duration	1.0 ms
BWTP	9.6
EmpFactor	0.9
Samples	200.0

Sequence - Assistant

SAR Assistant	Off
Allowed Delay	0 s

\\Studien\DMD\Test\CEST\gre_cest_MPI04_WASABI

TA: 2:00 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm³ Acc:: 2 Rel. SNR: 1.00

Properties

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

Routine

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
TE	2.00 ms
Averages	1
Concatenations	1
AutoAlign	---

Contrast - Common

TR	4.0 ms
TE	2.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

Contrast - Dynamic

Dynamic Mode	Standard
Measurements	24
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Contrast - Dynamic

Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Multiple Series	Off
Reordering	Spiral

Resolution - Common

FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
Base Resolution	112
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Reference Lines 3D	12
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Geometry - AutoAlign

Slab Group	1
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L20.9 P37.6 H31.7
L	20.9 mm
P	37.6 mm
H	31.7 mm
Initial Orientation	T > C
T > C	19.50
> S	-1.40
Initial Rotation	90.00 deg

Geometry - Saturation

Saturation Mode	Standard
Special Saturation	None

Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	32 mm
Table Position	H
Inline Composing	Off

System - Miscellaneous

Coil Selection	Auto Coil Select
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Always
Assume Silicone	Off

System - Adjust Volume

! Position	L17.5 P40.9 H30.1 mm
! Orientation	T > C19.5 > S-1.2
! Rotation	-0.25 deg
! A >> P	133 mm
! R >> L	134 mm
! F >> H	47 mm
Reset	Off

System - pTx

B1 Shim	TrueForm
Excitation	Slab-sel.
LR Balancing	Off

System - Tx/Rx

Frequency 1H	123.263521 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	4.000

Physio - Signal

1st Signal/Mode	None
TR	4.0 ms
Segments	1
Concatenations	1

Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	82.1 %
Phase Resolution	100 %

Inline - Liver

Liver Registration	Off
Save Original Images	On

Inline - Subtraction

Subtract	Off
Measurements	24
StdDev	Off
Save Original Images	On

Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	24
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s
Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s

Inline - Soft Tissue

Pause after Meas. 23	0.0 s

Inline - Composing

Inline Composing	Off

Inline - MapIt

MapIt	None
Flip Angle	7 deg
Measurements	24
Contrasts	1
TE	2.00 ms
TR	4.0 ms
Save Original Images	On

Sequence - Part 1

Sequence Name	MPI_434
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Optimized
Gradient Mode	Fast
Flow Compensation	None
Reordering	Spiral
Bandwidth	700 Hz/Px
Asymmetric Echo	Off
Define	Segments
Segments	1

Sequence - Part 2

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off
Acoustic noise reduction	Off

Sequence - Special

CEST	On
Pulse Type	Rect
B1 definition	pure FA
No. of Pulses	1 n
Pulse Duration	5120 #s
Interpulse Delay	100 ms
Recover Time	2500 ms
Recover Time M0	12000 ms
No. of Locking Pulses	1 n
Lock Interpulse Delay	1 ms
B1	3.70 uT
Spoiling	only last
Fat Sat	On
Spiral Elong. E	0.5
AdjFreq	Off
Offset Distribution	Regular
Suppressed M0	On
Offset	1.8 ppm
Freq Shift	0.0 ppm
Delta Freq	0.0 ppm
Scale Factor	10.0
Duration	1.0 ms
BWTP	9.6
EmpFactor	0.9
Samples	200.0

Sequence - Assistant

SAR Assistant	Off
Allowed Delay	0 s

\\Studien\DMD\Test\CEST\gre_cest_MPI04_NOE_0.6µT

TA: 4:13 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm³ Acc:: 4 Rel. SNR: 1.00

Properties

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

Routine

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
TE	2.00 ms
Averages	1
Concatenations	1
AutoAlign	---

Contrast - Common

TR	4.0 ms
TE	2.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

Contrast - Dynamic

Dynamic Mode	Standard
Measurements	56
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Contrast - Dynamic

Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s
Pause after Meas. 30	0.0 s
Pause after Meas. 31	0.0 s
Pause after Meas. 32	0.0 s
Pause after Meas. 33	0.0 s
Pause after Meas. 34	0.0 s
Pause after Meas. 35	0.0 s
Pause after Meas. 36	0.0 s
Pause after Meas. 37	0.0 s
Pause after Meas. 38	0.0 s
Pause after Meas. 39	0.0 s
Pause after Meas. 40	0.0 s
Pause after Meas. 41	0.0 s
Pause after Meas. 42	0.0 s
Pause after Meas. 43	0.0 s
Pause after Meas. 44	0.0 s
Pause after Meas. 45	0.0 s
Pause after Meas. 46	0.0 s
Pause after Meas. 47	0.0 s
Pause after Meas. 48	0.0 s
Pause after Meas. 49	0.0 s
Pause after Meas. 50	0.0 s
Pause after Meas. 51	0.0 s
Pause after Meas. 52	0.0 s
Pause after Meas. 53	0.0 s
Pause after Meas. 54	0.0 s
Pause after Meas. 55	0.0 s
Multiple Series	Off
Reordering	Spiral

Resolution - Common

FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
Base Resolution	112
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	32

Resolution - Acceleration

Acceleration Factor 3D	2
Reference Lines 3D	12
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Geometry - AutoAlign

Slab Group	1
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L20.9 P37.6 H31.7
L	20.9 mm
P	37.6 mm
H	31.7 mm
Initial Orientation	T > C
T > C	19.50
> S	-1.40
Initial Rotation	90.00 deg

Geometry - Saturation

Saturation Mode	Standard
Special Saturation	None

Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	32 mm
Table Position	H
Inline Composing	Off

System - Miscellaneous

Coil Selection	Auto Coil Select
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combination	Adaptive Combine

System - Miscellaneous

Matrix Optimization	Off
Coil Focus	Flat

System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Always
Assume Silicone	Off

System - Adjust Volume

! Position	L17.5 P40.9 H30.1 mm
! Orientation	T > C19.5 > S-1.2
! Rotation	-0.25 deg
! A >> P	133 mm
! R >> L	134 mm
! F >> H	47 mm
Reset	Off

System - pTx

B1 Shim	TrueForm
Excitation	Slab-sel.
LR Balancing	Off

System - Tx/Rx

Frequency 1H	123.263521 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	4.000

Physio - Signal

1st Signal/Mode	None
TR	4.0 ms
Segments	1
Concatenations	1

Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	82.1 %
Phase Resolution	100 %

Inline - Liver

Liver Registration	Off
Save Original Images	On

Inline - Subtraction

Subtract	Off
Measurements	56
StdDev	Off
Save Original Images	On

Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off

Inline - MIP

Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	56
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s
Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s
Pause after Meas. 30	0.0 s
Pause after Meas. 31	0.0 s
Pause after Meas. 32	0.0 s
Pause after Meas. 33	0.0 s
Pause after Meas. 34	0.0 s
Pause after Meas. 35	0.0 s
Pause after Meas. 36	0.0 s
Pause after Meas. 37	0.0 s
Pause after Meas. 38	0.0 s
Pause after Meas. 39	0.0 s
Pause after Meas. 40	0.0 s
Pause after Meas. 41	0.0 s
Pause after Meas. 42	0.0 s
Pause after Meas. 43	0.0 s
Pause after Meas. 44	0.0 s
Pause after Meas. 45	0.0 s
Pause after Meas. 46	0.0 s
Pause after Meas. 47	0.0 s
Pause after Meas. 48	0.0 s
Pause after Meas. 49	0.0 s
Pause after Meas. 50	0.0 s
Pause after Meas. 51	0.0 s

Inline - Soft Tissue

Pause after Meas. 52	0.0 s
Pause after Meas. 53	0.0 s
Pause after Meas. 54	0.0 s
Pause after Meas. 55	0.0 s

Inline - Composing

Inline Composing	Off

Inline - MapIt

MapIt	None
Flip Angle	7 deg
Measurements	56
Contrasts	1
TE	2.00 ms
TR	4.0 ms
Save Original Images	On

Sequence - Part 1

Sequence Name	MPI_434
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Optimized
Gradient Mode	Fast
Flow Compensation	None
Reordering	Spiral
Bandwidth	700 Hz/Px
Asymmetric Echo	Off
Define	Segments
Segments	1

Sequence - Part 2

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off
Acoustic noise reduction	Off

Sequence - Special

CEST	On
Pulse Type	Gauss
B1 definition	pure FA
No. of Pulses	80 n
Pulse Duration	20480 #s
Interpulse Delay	20 ms
Recover Time	0 ms
Recover Time M0	12000 ms
No. of Locking Pulses	1 n
Lock Interpulse Delay	1 ms
B1	0.60 uT
Spoiling	only last
Fat Sat	On
Spiral Elong. E	0.5
AdjFreq	Off
Offset Distribution	NOE
Suppressed M0	On
Offset	3.0 ppm
Freq Shift	0.0 ppm
Delta Freq	0.0 ppm
Scale Factor	10.0
Duration	1.0 ms
BWTP	9.6
EmpFactor	0.9
Samples	200.0

Sequence - Assistant

SAR Assistant	Off
Allowed Delay	0 s

\\Studien\DMD\Test\CEST\gre_cest_MPI04_NOE_0.9µT

TA: 4:13 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm³ Acc:: 4 Rel. SNR: 1.00

Properties

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

Routine

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
TE	2.00 ms
Averages	1
Concatenations	1
AutoAlign	---

Contrast - Common

TR	4.0 ms
TE	2.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

Contrast - Dynamic

Dynamic Mode	Standard
Measurements	56
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Contrast - Dynamic

Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s
Pause after Meas. 30	0.0 s
Pause after Meas. 31	0.0 s
Pause after Meas. 32	0.0 s
Pause after Meas. 33	0.0 s
Pause after Meas. 34	0.0 s
Pause after Meas. 35	0.0 s
Pause after Meas. 36	0.0 s
Pause after Meas. 37	0.0 s
Pause after Meas. 38	0.0 s
Pause after Meas. 39	0.0 s
Pause after Meas. 40	0.0 s
Pause after Meas. 41	0.0 s
Pause after Meas. 42	0.0 s
Pause after Meas. 43	0.0 s
Pause after Meas. 44	0.0 s
Pause after Meas. 45	0.0 s
Pause after Meas. 46	0.0 s
Pause after Meas. 47	0.0 s
Pause after Meas. 48	0.0 s
Pause after Meas. 49	0.0 s
Pause after Meas. 50	0.0 s
Pause after Meas. 51	0.0 s
Pause after Meas. 52	0.0 s
Pause after Meas. 53	0.0 s
Pause after Meas. 54	0.0 s
Pause after Meas. 55	0.0 s
Multiple Series	Off
Reordering	Spiral

Resolution - Common

FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
Base Resolution	112
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	32

Resolution - Acceleration

Acceleration Factor 3D	2
Reference Lines 3D	12
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Geometry - AutoAlign

Slab Group	1
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L20.9 P37.6 H31.7
L	20.9 mm
P	37.6 mm
H	31.7 mm
Initial Orientation	T > C
T > C	19.50
> S	-1.40
Initial Rotation	90.00 deg

Geometry - Saturation

Saturation Mode	Standard
Special Saturation	None

Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	32 mm
Table Position	H
Inline Composing	Off

System - Miscellaneous

Coil Selection	Auto Coil Select
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combination	Adaptive Combine

System - Miscellaneous

Matrix Optimization	Off
Coil Focus	Flat

System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Always
Assume Silicone	Off

System - Adjust Volume

! Position	L17.5 P40.9 H30.1 mm
! Orientation	T > C19.5 > S-1.2
! Rotation	-0.25 deg
! A >> P	133 mm
! R >> L	134 mm
! F >> H	47 mm
Reset	Off

System - pTx

B1 Shim	TrueForm
Excitation	Slab-sel.
LR Balancing	Off

System - Tx/Rx

Frequency 1H	123.263521 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	4.000

Physio - Signal

1st Signal/Mode	None
TR	4.0 ms
Segments	1
Concatenations	1

Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	82.1 %
Phase Resolution	100 %

Inline - Liver

Liver Registration	Off
Save Original Images	On

Inline - Subtraction

Subtract	Off
Measurements	56
StdDev	Off
Save Original Images	On

Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off

Inline - MIP

Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	56
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s
Pause after Meas. 13	0.0 s
Pause after Meas. 14	0.0 s
Pause after Meas. 15	0.0 s
Pause after Meas. 16	0.0 s
Pause after Meas. 17	0.0 s
Pause after Meas. 18	0.0 s
Pause after Meas. 19	0.0 s
Pause after Meas. 20	0.0 s
Pause after Meas. 21	0.0 s
Pause after Meas. 22	0.0 s
Pause after Meas. 23	0.0 s
Pause after Meas. 24	0.0 s
Pause after Meas. 25	0.0 s
Pause after Meas. 26	0.0 s
Pause after Meas. 27	0.0 s
Pause after Meas. 28	0.0 s
Pause after Meas. 29	0.0 s
Pause after Meas. 30	0.0 s
Pause after Meas. 31	0.0 s
Pause after Meas. 32	0.0 s
Pause after Meas. 33	0.0 s
Pause after Meas. 34	0.0 s
Pause after Meas. 35	0.0 s
Pause after Meas. 36	0.0 s
Pause after Meas. 37	0.0 s
Pause after Meas. 38	0.0 s
Pause after Meas. 39	0.0 s
Pause after Meas. 40	0.0 s
Pause after Meas. 41	0.0 s
Pause after Meas. 42	0.0 s
Pause after Meas. 43	0.0 s
Pause after Meas. 44	0.0 s
Pause after Meas. 45	0.0 s
Pause after Meas. 46	0.0 s
Pause after Meas. 47	0.0 s
Pause after Meas. 48	0.0 s
Pause after Meas. 49	0.0 s
Pause after Meas. 50	0.0 s
Pause after Meas. 51	0.0 s

Inline - Soft Tissue

Pause after Meas. 52	0.0 s
Pause after Meas. 53	0.0 s
Pause after Meas. 54	0.0 s
Pause after Meas. 55	0.0 s

Inline - Composing

Inline Composing	Off

Inline - MapIt

MapIt	None
Flip Angle	7 deg
Measurements	56
Contrasts	1
TE	2.00 ms
TR	4.0 ms
Save Original Images	On

Sequence - Part 1

Sequence Name	MPI_434
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Optimized
Gradient Mode	Fast
Flow Compensation	None
Reordering	Spiral
Bandwidth	700 Hz/Px
Asymmetric Echo	Off
Define	Segments
Segments	1

Sequence - Part 2

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off
Acoustic noise reduction	Off

Sequence - Special

CEST	On
Pulse Type	Gauss
B1 definition	pure FA
No. of Pulses	80 n
Pulse Duration	20480 #s
Interpulse Delay	20 ms
Recover Time	0 ms
Recover Time M0	12000 ms
No. of Locking Pulses	1 n
Lock Interpulse Delay	1 ms
B1	0.90 uT
Spoiling	only last
Fat Sat	On
Spiral Elong. E	0.5
AdjFreq	Off
Offset Distribution	NOE
Suppressed M0	On
Offset	3.0 ppm
Freq Shift	0.0 ppm
Delta Freq	0.0 ppm
Scale Factor	10.0
Duration	1.0 ms
BWTP	9.6
EmpFactor	0.9
Samples	200.0

Sequence - Assistant

SAR Assistant	Off
Allowed Delay	0 s

\\Studien\DMD\Test\CEST\gre_cest_MPI04_SATREC

TA: 1:15 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm³ Acc:: 2 Rel. SNR: 1.00

Properties

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

Routine

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
TE	2.00 ms
Averages	1
Concatenations	1
AutoAlign	---

Contrast - Common

TR	4.0 ms
TE	2.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

Contrast - Dynamic

Dynamic Mode	Standard
Measurements	14
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s

Contrast - Dynamic

Pause after Meas. 13	0.0 s
Multiple Series	Off
Reordering	Spiral

Resolution - Common

FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
Base Resolution	112
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Reference Lines 3D	12
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
Slices per Slab	12
Phase Oversampling	0 %
Slice Oversampling	16.7 %
FoV Read	220 mm
FoV Phase	82.1 %
Slice Thickness	5.0 mm
TR	4.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Geometry - AutoAlign

Slab Group	1
Position	L20.9 P37.6 H31.7 mm
Orientation	T > C19.5 > S-1.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L20.9 P37.6 H31.7
L	20.9 mm
P	37.6 mm
H	31.7 mm

Geometry - AutoAlign

Initial Orientation	T > C
T > C	19.50
> S	-1.40
Initial Rotation	90.00 deg

Geometry - Saturation

Saturation Mode	Standard
Special Saturation	None

Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	32 mm
Table Position	H
Inline Composing	Off

System - Miscellaneous

Coil Selection	Auto Coil Select
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Always
Assume Silicone	Off

System - Adjust Volume

! Position	L17.5 P40.9 H30.1 mm
! Orientation	T > C19.5 > S-1.2
! Rotation	-0.25 deg
! A >> P	133 mm
! R >> L	134 mm
! F >> H	47 mm
Reset	Off

System - pTx

B1 Shim	TrueForm
Excitation	Slab-sel.
LR Balancing	Off

System - Tx/Rx

Frequency 1H	123.263521 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	4.000

Physio - Signal

1st Signal/Mode	None
TR	4.0 ms
Segments	1
Concatenations	1

Physio - Cardiac

Tagging	None

Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	82.1 %
Phase Resolution	100 %

Inline - Liver

Liver Registration	Off
Save Original Images	On

Inline - Subtraction

Subtract	Off
Measurements	14
StdDev	Off
Save Original Images	On

Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	14
Pause after Meas. 1	0.0 s
Pause after Meas. 2	0.0 s
Pause after Meas. 3	0.0 s
Pause after Meas. 4	0.0 s
Pause after Meas. 5	0.0 s
Pause after Meas. 6	0.0 s
Pause after Meas. 7	0.0 s
Pause after Meas. 8	0.0 s
Pause after Meas. 9	0.0 s
Pause after Meas. 10	0.0 s
Pause after Meas. 11	0.0 s
Pause after Meas. 12	0.0 s
Pause after Meas. 13	0.0 s

Inline - Composing

Inline Composing	Off

Inline - MapIt

MapIt	None
Flip Angle	7 deg
Measurements	14
Contrasts	1
TE	2.00 ms
TR	4.0 ms
Save Original Images	On

Sequence - Part 1

Sequence Name	MPI_434

Sequence - Part 1

Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Optimized
Gradient Mode	Fast
Flow Compensation	None
Reordering	Spiral
Bandwidth	700 Hz/Px
Asymmetric Echo	Off
Define	Segments
Segments	1

Sequence - Part 2

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off
Acoustic noise reduction	Off

Sequence - Special

CEST	On
Pulse Type	SATREC
B1 definition	pure FA
No. of Pulses	1 n
Pulse Duration	7680 #s
Interpulse Delay	100 ms
Recover Time	0 ms
Recover Time M0	12000 ms
No. of Locking Pulses	1 n
Lock Interpulse Delay	1 ms
B1	5.00 uT
Spoiling	only last
Fat Sat	On
Spiral Elong. E	0.5
AdjFreq	Off
Offset Distribution	Single
Suppressed M0	On
Offset	0.0 ppm
Freq Shift	0.0 ppm
Delta Freq	0.0 ppm
Scale Factor	10.0
Duration	1.0 ms
BWTP	9.6
EmpFactor	0.9
Samples	200.0

Sequence - Assistant

SAR Assistant	Off
Allowed Delay	0 s