

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 8.0 s PAT: Off Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.5 %
Slice thickness	0.8 mm
TR	2000 ms
TE	42.12 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Pause after meas. 3	0.0 s
Multiple series	Off

## Resolution

Base resolution	256
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm

Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	27 mm
F >> H	8 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	1148 Hz/Px
Echo spacing	0.8 ms
Turbo factor	9
EPI factor	32
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prepsans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 0:12 PAT: Off Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.5 %
Slice thickness	0.8 mm
TR	3000 ms
TE	42.12 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Pause after meas. 3	0.0 s
Multiple series	Off

## Resolution

Base resolution	256
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm

Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	27 mm
F >> H	8 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	1148 Hz/Px
Echo spacing	0.8 ms

Turbo factor	9
EPI factor	32
RF pulse type	Normal
Gradient mode	Fast

refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prepsans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.5 %
Slice thickness	0.8 mm
TR	3000 ms
TE	44.84 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	256
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	7/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	27 mm
F >> H	8 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Off
Contrasts	1
Bandwidth	1148 Hz/Px
Echo spacing	1 ms
Turbo factor	9
EPI factor	32
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.5 %
Slice thickness	0.8 mm
TR	3000 ms
TE	38.92 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	256
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	7/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	27 mm
F >> H	8 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	1148 Hz/Px
Echo spacing	0.8 ms
Turbo factor	9
EPI factor	32
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.5 %
Slice thickness	0.8 mm
TR	3000 ms
TE	35.72 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	256
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	27 mm
F >> H	8 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	1148 Hz/Px
Echo spacing	0.8 ms
Turbo factor	9
EPI factor	32
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	52.04 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	26 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	9
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	72000
Crusher Time	2000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	51.04 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off

Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	26 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms

Turbo factor	9
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast

refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	10240

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 6.0 s PAT: 2 Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	40.42 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On
PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	22
Accel. factor 3D	1
Ref. lines 3D	12
Reference scan mode	Separate
Raw filter	Off

## Geometry

Series	Interleaved
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## Sat. region 1

Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	26 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	12
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0



	Refocusing Duration	7680
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# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 6.0 s PAT: 2 Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	40.42 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On
PAT mode	mSENSE
Accel. factor PE	2
Ref. lines PE	22
Reference scan mode	Separate
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm

Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None
Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	26 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	12
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prepsans	0
Refocusing Duration	7680

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	210 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	48.48 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	210 mm
A >> P	26 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
-----------------	------

## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	9
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	7680

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.6x0.6x0.6 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	20.0 %
Slices per slab	10
FoV read	225 mm
FoV phase	12.2 %
Slice thickness	0.6 mm
TR	3000 ms
TE	49.44 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	225 mm
A >> P	28 mm
F >> H	6 mm

## Physio

1st Signal/Mode	None
-----------------	------

## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	9
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	7680

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_sp

TA: 3.0 s PAT: Off Voxel size: 0.6x0.6x1.0 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	25.0 %
Slices per slab	16
FoV read	225 mm
FoV phase	12.2 %
Slice thickness	1.0 mm
TR	3000 ms
TE	49.3 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	360
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	Off
Interpolation	On
PAT mode	None
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	24 mm
Position	L0.0 P54.0 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	225 mm
A >> P	28 mm
F >> H	16 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	816 Hz/Px
Echo spacing	1.1 ms
Turbo factor	20
EPI factor	44
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	50000
Crusher Time	1500
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0
Refocusing Duration	7680

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat

TA: 6.0 s PAT: 4 Voxel size: 0.7x0.7x1.0 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	25.0 %
Slices per slab	16
FoV read	205 mm
FoV phase	17.9 %
Slice thickness	1.0 mm
TR	3000 ms
TE	40.48 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	312
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On
PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	24
Accel. factor 3D	2
Ref. lines 3D	10
Reference scan mode	Separate
Raw filter	Off

## Geometry

Series	Interleaved
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## Sat. region 1

Thickness	28 mm
Position	L0.0 P54.7 H0.0
Orientation	Coronal
Special sat.	None

Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	205 mm
A >> P	37 mm
F >> H	16 mm

## Physio

1st Signal/Mode	None
-----------------	------

## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	890 Hz/Px
Echo spacing	1 ms
Turbo factor	10
EPI factor	56
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	30000
Crusher Time	1000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prep scans	0

	Refocusing Duration	7680
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# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat

TA: 6.0 s PAT: 2 Voxel size: 0.7x0.7x1.0 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	25.0 %
Slices per slab	16
FoV read	205 mm
FoV phase	17.9 %
Slice thickness	1.0 mm
TR	3000 ms
TE	40.48 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## Resolution

Base resolution	312
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On
PAT mode	mSENSE
Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	Separate
Raw filter	Off

## Geometry

Series	Interleaved
Sat. region 1	
Thickness	28 mm

Position	L0.0 P54.7 H0.0
Orientation	Coronal
Special sat.	None
Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	REF
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
Position	L0.0 P54.2 H10.8
Orientation	Transversal
Rotation	0.00 deg
R >> L	205 mm
A >> P	37 mm
F >> H	16 mm

## Physio

1st Signal/Mode	None
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## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	890 Hz/Px
Echo spacing	1 ms
Turbo factor	10
EPI factor	56
RF pulse type	Normal
Gradient mode	Fast
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	30000
Crusher Time	1000
phase encoding	ON
Maxwell compensation	Off
ICE program	single
prepsans	0
Refocusing Duration	7680



# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

\\USER\Feinberglab\Test\GRASE-3D\BP\_grase\_clean\_sat\_iso0\_8

TA: 0:12 PAT: 2 Voxel size: 0.8x0.8x0.8 mm Rel. SNR: 1.00 USER: BP\_grase\_clean\_sat

## Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	single

## Routine

Slab group 1	
Slabs	1
Dist. factor	0 %
Position	L0.0 P21.0 H59.0
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0.00 deg
Phase oversampling	0 %
Slice oversampling	16.7 %
Slices per slab	12
FoV read	120 mm
FoV phase	31.3 %
Slice thickness	0.8 mm
TR	3000 ms
TE	38.32 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	B4;M2,3;T1

## Contrast

Flip angle	180 deg
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	3
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Multiple series	Off

## Resolution

Base resolution	160
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On
PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	24
Accel. factor 3D	1
Ref. lines 3D	14
Reference scan mode	Separate
Raw filter	Off

## Geometry

## Series

## Interleaved

Sat. region 1	
Thickness	25 mm
Position	L0.0 P20.8 H0.0
Orientation	Coronal
Special sat.	None
Table position	H
Table position	0 mm
Inline Composing	Off

## System

T1	On
M2	On
B4	On
M3	On
V32	Off
Positioning mode	FIX
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Sum of Squares
AutoAlign	---
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
? Ref. amplitude 1H	0.000 V
Adjustment Tolerance	Auto
Adjust volume	
! Position	L0.0 P21.0 H59.0
! Orientation	Transversal
! Rotation	0.00 deg
! R >> L	205 mm
! A >> P	37 mm
! F >> H	16 mm

## Physio

1st Signal/Mode	None
-----------------	------

## Composing

## Sequence

Introduction	Off
Dimension	3D
Reordering	Centric
Asymmetric echo	Allowed
Contrasts	1
Bandwidth	1302 Hz/Px
Echo spacing	1 ms
Turbo factor	14
EPI factor	50
RF pulse type	Normal
Gradient mode	Fast*
refocussing type	sinc 2560
flip angle excit	90
Crusher Momentum	30000
Crusher Time	950
phase encoding	ON
Maxwell compensation	Off
ICE program	single

# SIEMENS MAGNETOM Investigational\_Device\_7T syngo MR B17

prepscans	0
Refocusing Duration	7680

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\\USER

Feinberglab

Test

GRASE-3D

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