

Table of contents
-------------------

\\USER

2019\_MBC\_PROTOCOLS\_VE11C

SB.2002.60 MR DEVELOPMENT - RS

SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016

localizer	*
gre_field_mapping	*
t1_fl2d_sag	*
t2_tse_tra_p2	*
t1_mp2rage	*
ep2d_se_ap	*
t2s_megre	*
ep2d_se_pa	*
ep2d_fid_basic_bold_p2_task	*
ep2d_se_ap	*
ep2d_se_pa	*
ep2d_fid_basic_bold_p2_rest	*
cmrr_ep2d_se_ap	*
cmrr_ep2d_se_apinvrope	*
cmrr_mbep2d_diff	*
pasl_3d_tra	*
csi_slaser	*

\\USER\2019_MBC_PROTOCOLS_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\localizer *
TA: 0:10 PM: REF Voxel size: 0.5×0.5×7.0 mmPAT: Off Rel. SNR: 1.00 : fl

**Properties**

Prio recon	On
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

**Contrast - Dynamic**

Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

**Resolution - Common**

FoV read	250 mm
FoV phase	100.0 %
Slice thickness	7.0 mm
Base resolution	256
Phase resolution	91 %
Phase partial Fourier	Off
Interpolation	On

**Routine**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	---
Phase oversampling	0 %
FoV read	250 mm
FoV phase	100.0 %
Slice thickness	7.0 mm
TR	7.5 ms
TE	3.69 ms
Averages	2
Concatenations	3
Filter	Prescan Normalize, Elliptical filter
Coil elements	HE1-4

**Resolution - iPAT**

PAT mode	None
----------	------

**Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	On

**Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	1
Dist. factor	20 %
Position	L0.0 A20.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	250 mm
FoV phase	100.0 %
Slice thickness	7.0 mm
TR	7.5 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	3

**Contrast - Common**

TR	7.5 ms
TE	3.69 ms
TD	0 ms
MTC	Off
Magn. preparation	None
Flip angle	20 deg
Fat suppr.	None
Water suppr.	None
SWI	Off

**Contrast - Dynamic**

Averages	2
Averaging mode	Short term

**Geometry - AutoAlign**

Slice group	1
Position	L0.0 A20.0 H0.0 mm

**Geometry - AutoAlign**

Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Position	L0.0 A20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Position	L0.0 A20.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	---
Initial Position	L0.0 A20.0 H0.0
L	0.0 mm
A	20.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Saturation**

Saturation mode	Standard
Fat suppr.	None
Water suppr.	None
Special sat.	None

**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Tune up
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Slice-sel.

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High

**System - Tx/Rx**

Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	7.5 ms
Concatenations	3
Segments	1

**Physio - Cardiac**

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	250 mm
FoV phase	100.0 %
Phase resolution	91 %

**Physio - PACE**

Resp. control	Off
Concatenations	3

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Liver registration	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Soft Tissue**

Wash - In	Off
Wash - Out	Off
TTP	Off
PEI	Off
MIP - time	Off
Measurements	1

**Inline - Composing**

Distortion Corr.	Off
------------------	-----

**Inline - MapIt**

Save original images	On
MapIt	None
Flip angle	20 deg
Measurements	1
Contrasts	1
TR	7.5 ms
TE	3.69 ms

**Sequence - Part 1**

Introduction	Off
Dimension	2D
Phase stabilisation	Off
Asymmetric echo	Allowed
Contrasts	1
Flow comp.	No

**Sequence - Part 1**

Multi-slice mode	Sequential
Bandwidth	320 Hz/Px

**Sequence - Part 2**

Segments	1
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Fast
Excitation	Slice-sel.
RF spoiling	On

**Sequence - Assistant**

Mode	Off
Allowed delay	0 s

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\gre\_field\_mapping \***

TA: 0:26 PM: REF Voxel size: 3.0×3.0×6.0 mmRel. SNR: 1.00 : fm\_r

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slice group	1
Slices	18
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	200.0 ms
TE 1	4.92 ms
TE 2	7.38 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	HE1-4

### Contrast - Common

TR	200.0 ms
TE 1	4.92 ms
TE 2	7.38 ms
MTC	Off
Flip angle	60 deg
Fat suppr.	None

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Phase
Measurements	1
Multiple series	Off

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

### Resolution - Filter Image

Image Filter	Off
--------------	-----

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slice group	1
Slices	18
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	200.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	None
Special sat.	None

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

### System - Adjustments

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off

**System - Adjustments**

Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	90.00 deg
R >> L	192 mm
A >> P	192 mm
F >> H	134 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
--------------	----------

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Sequence - Part 1**

Introduction	Off
Dimension	2D
Asymmetric echo	Off
Contrasts	2
Flow comp.	Yes
Multi-slice mode	Interleaved
Bandwidth	290 Hz/Px

**Sequence - Part 2**

RF pulse type	Normal
Gradient mode	Fast
RF spoiling	On

**Sequence - Assistant**

Mode	Off
------	-----

# \\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\t1\_fl2d\_sag \*

TA: 0:17 PM: REF Voxel size: 1.4×1.4×6.0 mmPAT: Off Rel. SNR: 1.00 : fl

## Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	12
Dist. factor	30 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Phase oversampling	30 %
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	100.0 ms
TE	2.46 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize, Elliptical filter
Coil elements	HE1-4

## Contrast - Common

TR	100.0 ms
TE	2.46 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	None
Water suppr.	None
SWI	Off

## Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

## Resolution - Common

FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
Base resolution	160
Phase resolution	80 %
Phase partial Fourier	Off
Interpolation	Off

## Resolution - iPAT

PAT mode	None
----------	------

## Resolution - Filter Image

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	On

## Geometry - Common

Slice group	1
Slices	12
Dist. factor	30 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	100.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

## Geometry - Saturation

Saturation mode	Standard
Fat suppr.	None
Water suppr.	None
Special sat.	None

## System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	Head > Basis
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Tune up
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Slice-sel.

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	100.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	220 mm
FoV phase	100.0 %
Phase resolution	80 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Liver registration	Off
Save original images	On

**Inline - MIP**

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

**Inline - MIP**

Save original images	On
----------------------	----

**Inline - Soft Tissue**

Wash - In	Off
Wash - Out	Off
TTP	Off
PEI	Off
MIP - time	Off
Measurements	1

**Inline - Composing**

Distortion Corr.	Off
------------------	-----

**Inline - MapIt**

Save original images	On
MapIt	None
Flip angle	70 deg
Measurements	1
Contrasts	1
TR	100.0 ms
TE	2.46 ms

**Sequence - Part 1**

Introduction	Off
Dimension	2D
Phase stabilisation	Off
Asymmetric echo	Allowed
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Bandwidth	320 Hz/Px

**Sequence - Part 2**

Segments	1
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Performance
Excitation	Slice-sel.
RF spoiling	On

**Sequence - Assistant**

Mode	TR
Max. TR	550.0 ms
Allowed delay	60 s



**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\t2\_tse\_tra\_p2 \***

TA: 0:14 PM: REF Voxel size: 0.9×0.9×6.0 mmPAT: 2 Rel. SNR: 1.00 : tse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Resolution - iPAT

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	38
Reference scan mode	Integrated

### Resolution - Filter Image

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

### Routine

Slice group	1
Slices	12
Dist. factor	30 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
AutoAlign	Head > Brain
Phase oversampling	30 %
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	2000.0 ms
TE	26.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	HE1-4

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slice group	1
Slices	12
Dist. factor	30 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
TR	2000.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Contrast - Common

TR	2000.0 ms
TE	26.0 ms
MTC	Off
Magn. preparation	None
Flip angle	150 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

### Resolution - Common

FoV read	220 mm
FoV phase	100.0 %
Slice thickness	6.0 mm
Base resolution	128
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	On

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	Head > Brain
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Tune up
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
--------------	----------

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2000.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	220 mm
FoV phase	100.0 %
Phase resolution	100 %
Trajectory	Cartesian

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	8.82 ms
Bandwidth	219 Hz/Px

**Sequence - Part 2**

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Normal
Gradient mode	Normal
Hyperecho	Off
WARP	Off
Red. EC sensitivity	Off
Turbo factor	17

**Sequence - Assistant**

Mode	TR
Max. TR	7500.0 ms
Allowed delay	60 s

\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\t1\_mp2rage \*

TA: 0:24 PM: REF Voxel size: 1.1×1.1×5.0 mmPAT: 1.0 Rel. SNR: 1.00 : WIP\_cmp

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slab group	1
Slabs	1
Dist. factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	40
FoV read	256 mm
FoV phase	93.8 %
Slice thickness	5.00 mm
TR	2600.0 ms
TE	2.82 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	HE1-4

### Contrast - Common

TR	2600.0 ms
TE	2.82 ms
Magn. preparation	Non-sel. IR
TI 1	600 ms
TI 2	2000 ms
Flip angle 1	5 deg
Flip angle 2	5 deg
Fat suppr.	None
Water suppr.	None

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	1
Multiple series	Each measurement

### Resolution - Common

FoV read	256 mm
FoV phase	93.8 %
Slice thickness	5.00 mm
Base resolution	224
Phase resolution	100 %
Slice resolution	100 %

### Resolution - Common

Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	Off

### Resolution - iPAT

PAT mode	None
----------	------

### Resolution - Filter Image

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slab group	1
Slabs	1
Dist. factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice oversampling	0.0 %
Slices per slab	40
FoV read	256 mm
FoV phase	93.8 %
Slice thickness	5.00 mm
TR	2600.0 ms
Multi-slice mode	Single shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab group	1
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P

**System - Miscellaneous**

Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Performance
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	240 mm
F >> H	256 mm
R >> L	200 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	Low
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2600.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. preparation	Non-sel. IR
TI 1	600 ms
TI 2	2000 ms
Fat suppr.	None
Dark blood	Off
FoV read	256 mm
FoV phase	93.8 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Composing**

Distortion Corr.	Off
------------------	-----

**Inline - MapIt**

Save original images	On
MapIt	T1 map
Flip angle 1	5 deg
Flip angle 2	5 deg
Measurements	1
Contrasts	1
TR	2600.0 ms
TE	2.82 ms

**Sequence - Part 1**

Introduction	Off
Dimension	3D
Elliptical scanning	Off
Reordering	Linear
Asymmetric echo	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Single shot
Echo spacing	6.6 ms
Bandwidth	240 Hz/Px

**Sequence - Part 2**

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On
Incr. Gradient spoiling	Off
Turbo factor	40

**Sequence - Special**

Sparse Sampling	On
US	4.6 x
Samples/TR	175
Density	0.50
Jitter Radius	1.2
Reference Scan	External
No. Ref-Lines	32
Centric	Off
Virtual Coils	Off
No. Iterations	20
CSM RO Resolution	0
Regularisation INV1	0.00100
Regularisation INV2	0.00040
Uniform	On
Denoised UNI	On
FLAWS	Off
FLAWS-hc	Off
FLAWS-hc inv.	Off
Division image	Off
Synthetic TI 0	410 ms
Synthetic TI 1	1100 ms
Denoise Lambda	1
Scaling	0 10^
Echo Averaging	Off

**Sequence - Special**

FID Monitoring	Off
----------------	-----

**Sequence - Assistant**

Mode	Off
------	-----

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_se\_ap \***

TA: 0:12 PM: REF Voxel size: 1.5×1.5×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	EPI/separate

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	On
Elliptical filter	Off

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
TE	60.0 ms
Averages	1
Concatenations	1
Filter	Raw filter, Prescan Normalize
Coil elements	HE1-4

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	-0.01 deg
Initial Orientation	Transversal

### Contrast - Common

TR	3000 ms
TE	60.0 ms
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	On

### Resolution - iPAT

Accel. mode	GRAPPA
-------------	--------

### Geometry - Saturation

Fat suppr.	Fat sat.
Fat sat. mode	Strong
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	-0.01 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Diff - Neuro**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Optimization	None
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**

\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\t2s\_megre \*

TA: 0:24 PM: FIX Voxel size: 3.6×3.6×5.0 mmPAT: 3 Rel. SNR: 1.00 : fl\_r

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slab group	1
Slabs	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	F >> H
AutoAlign	---
Phase oversampling	10 %
Slice oversampling	0.0 %
Slices per slab	30
FoV read	230 mm
FoV phase	90.6 %
Slice thickness	5.00 mm
TR	25.0 ms
TE 1	10.00 ms
TE 2	15.00 ms
TE 3	20.00 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize, Elliptical filter
Coil elements	HE1-4

### Contrast - Common

TR	25.0 ms
TE 1	10.00 ms
TE 2	15.00 ms
TE 3	20.00 ms
MTC	Off
Magn. preparation	None
Flip angle	15 deg
Fat suppr.	None
Water suppr.	None
SWI	Off

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	1
Multiple series	Each measurement

### Resolution - Common

FoV read	230 mm
FoV phase	90.6 %

### Resolution - Common

Slice thickness	5.00 mm
Base resolution	64
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	Off

### Resolution - iPAT

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	24
Accel. factor 3D	1
Reference scan mode	Integrated

### Resolution - Filter Image

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	On
Normalize	Off
B1 filter	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	On

### Geometry - Common

Slab group	1
Slabs	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	F >> H
Slice oversampling	0.0 %
Slices per slab	30
FoV read	230 mm
FoV phase	90.6 %
Slice thickness	5.00 mm
TR	25.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab group	1
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	F >> H
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Coronal

### Geometry - Saturation

Saturation mode	Standard
-----------------	----------



**Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Special sat.	None

**System - Miscellaneous**

Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Coronal
Rotation	90.00 deg
F >> H	209 mm
R >> L	230 mm
A >> P	150 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Slab-sel.

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	Low
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	25.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	230 mm
FoV phase	90.6 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Liver registration	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Soft Tissue**

Wash - In	Off
Wash - Out	Off
TTP	Off
PEI	Off
MIP - time	Off
Measurements	1

**Inline - Composing**

Distortion Corr.	Off
------------------	-----

**Inline - MapIt**

Noise threshold	15
Save original images	On
MapIt	R2* map
Flip angle	15 deg
Measurements	1
Contrasts	3
TR	25.0 ms
TE 1	10.00 ms
TE 2	15.00 ms
TE 3	20.00 ms

**Sequence - Part 1**

Introduction	Off
Dimension	3D
Elliptical scanning	On
Phase stabilisation	Off
Asymmetric echo	Off
Contrasts	3
Flow comp. 1	Yes
Readout mode	Monopolar
Multi-slice mode	Interleaved
Bandwidth 1	310 Hz/Px
Bandwidth 2	310 Hz/Px
Bandwidth 3	310 Hz/Px

**Sequence - Part 2**

Segments	1
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slab-sel.
RF spoiling	On

**Sequence - Assistant**

Mode	Off
Allowed delay	0 s

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_se\_pa \***

TA: 0:12 PM: REF Voxel size: 1.5×1.5×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	EPI/separate

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	On
Elliptical filter	Off

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
TE	60.0 ms
Averages	1
Concatenations	1
Filter	Raw filter, Prescan Normalize
Coil elements	HE1-4

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

### Contrast - Common

TR	3000 ms
TE	60.0 ms
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	On

### Resolution - iPAT

Accel. mode	GRAPPA
-------------	--------

### Geometry - Saturation

Fat suppr.	Fat sat.
Fat sat. mode	Strong
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	180.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Diff - Neuro**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Optimization	None
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**

\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_fid\_basic\_bold\_p2\_task \*

TA: 0:20 PM: REF Voxel size: 3.0×3.0×4.0 mmPAT: 2 Rel. SNR: 1.00 : epfid

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	2800 ms
TE	30.0 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	HE1-4

### Contrast - Common

TR	2800 ms
TE	30.0 ms
MTC	Off
Flip angle	90 deg
Fat suppr.	Fat sat.

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Delay in TR	1000 ms
Multiple series	Off

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

### Resolution - iPAT

Accel. mode	GRAPPA
Accel. factor PE	2

### Resolution - iPAT

Ref. lines PE	24
Reference scan mode	EPI/separate

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off
Hamming	Off

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	2800 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	Fat sat.
Special sat.	None

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2800 ms
Concatenations	1

**Perf**

GBP	Off
PBP	Off
TTP	Off
relCBV	Off
relCBF	Off
relMTT	Off
relCBVCorr	Off
Measurements	4

**Sequence - Part 1**

Introduction	Off
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_se\_ap \***

TA: 0:12 PM: REF Voxel size: 1.5×1.5×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
TE	60.0 ms
Averages	1
Concatenations	1
Filter	Raw filter, Prescan Normalize
Coil elements	HE1-4

### Contrast - Common

TR	3000 ms
TE	60.0 ms
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	On

### Resolution - iPAT

Accel. mode	GRAPPA
-------------	--------

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	EPI/separate

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	On
Elliptical filter	Off

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	-0.01 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	Fat sat.
Fat sat. mode	Strong
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	-0.01 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Diff - Neuro**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Optimization	None
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**



# \\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_se\_pa \*

TA: 0:12 PM: REF Voxel size: 1.5×1.5×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

## Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

## Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	EPI/separate

## Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

## Resolution - Filter Rawdata

Raw filter	On
Elliptical filter	Off

## Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
TE	60.0 ms
Averages	1
Concatenations	1
Filter	Raw filter, Prescan Normalize
Coil elements	HE1-4

## Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

## Contrast - Common

TR	3000 ms
TE	60.0 ms
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong

## Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms

## Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	On

## Resolution - iPAT

Accel. mode	GRAPPA
-------------	--------

## Geometry - Saturation

Fat suppr.	Fat sat.
Fat sat. mode	Strong
Special sat.	None

## Geometry - Navigator

## System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	180.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Diff - Neuro**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	Slice
Diff. directions	1
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Optimization	None
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**

\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\ep2d\_fid\_basic\_bold\_p2\_rest \*

TA: 0:31 PM: REF Voxel size: 3.0×3.0×4.0 mmPAT: 2 Rel. SNR: 1.00 : epfid

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Resolution - iPAT

Ref. lines PE	24
Reference scan mode	EPI/separate

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off
Hamming	Off

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	2800 ms
TE	30.0 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	HE1-4

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
TR	2800 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Contrast - Common

TR	2800 ms
TE	30.0 ms
MTC	Off
Flip angle	90 deg
Fat suppr.	Fat sat.

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	8
Delay in TR	1000 ms
Multiple series	Off

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

### Resolution - iPAT

Accel. mode	GRAPPA
Accel. factor PE	2

### Geometry - Saturation

Fat suppr.	Fat sat.
Special sat.	None

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2800 ms
Concatenations	1

**Perf**

GBP	Off
PBP	Off
TTP	Off
relCBV	Off
relCBF	Off
relMTT	Off
relCBVCorr	Off
Measurements	8

**Sequence - Part 1**

Introduction	Off
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard

**Sequence - pTX Pulses**

\\USER\2019\_MBC\_PROTOCOLS\_VE11\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\cmrr\_ep2d\_se\_ap \*

TA: 0:12 PM: REF Voxel size: 3.0×3.0×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3000 ms
TE	60.00 ms
Multi-band accel. factor	1
Filter	Prescan Normalize
Coil elements	HE1-4

### Contrast - Common

TR	3000 ms
TE	60.00 ms
MTC	Off
Magn. preparation	None
Flip angle	90 deg
Refocus flip angle	180 deg
Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled

### Contrast - Dynamic

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms
Multiple series	Off

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

### Resolution - iPAT

PAT mode	GRAPPA
----------	--------

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	Single-shot

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Multi-band accel. factor	1

**Physio - PACE**

Resp. control	Off
Multi-band accel. factor	1

**Diff - Neuro**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

SENSE1 coil combine	On
Invert RO/PE polarity	Off
Disable freq. update	Off
Force equal slice timing	Off
FFT scale factor	1.00
Physio recording	Off

\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\cmrr\_ep2d\_se\_apinvrope \*

TA: 0:12 PM: REF Voxel size: 3.0×3.0×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	Single-shot

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Routine

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3000 ms
TE	60.00 ms
Multi-band accel. factor	1
Filter	Prescan Normalize
Coil elements	HE1-4

### Geometry - Common

Slice group	1
Slices	25
Dist. factor	25 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3000 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	1

### Contrast - Common

TR	3000 ms
TE	60.00 ms
MTC	Off
Magn. preparation	None
Flip angle	90 deg
Refocus flip angle	180 deg
Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Contrast - Dynamic

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Delay in TR	0 ms
Multiple series	Off

### Geometry - Saturation

Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled
Special sat.	None

### Geometry - Navigator

### Resolution - Common

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off

### Resolution - iPAT

PAT mode	GRAPPA
----------	--------

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	124 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3000 ms
Multi-band accel. factor	1

**Physio - PACE**

Resp. control	Off
Multi-band accel. factor	1

**Diff - Neuro**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>
b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	Off
Tensor	Off
Noise level	40

**Diff - Body**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Monopolar
Diff. weightings	1
b-value	0 s/mm <sup>2</sup>

**Diff - Body**

b-value	1
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
Exponential ADC Maps	Off
FA maps	Off
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	64
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

SENSE1 coil combine	On
Invert RO/PE polarity	On
Disable freq. update	Off
Force equal slice timing	Off
FFT scale factor	1.00
Physio recording	Off



\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\cmrr\_mbep2d\_diff \*

TA: 0:38 PM: REF Voxel size: 1.1×1.1×4.0 mmPAT: 2 Rel. SNR: 1.00 : epse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slice group	1
Slices	27
Dist. factor	30 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3800 ms
TE	81.00 ms
Multi-band accel. factor	1
Filter	Prescan Normalize
Coil elements	HE1-4

### Contrast - Common

TR	3800 ms
TE	81.00 ms
MTC	Off
Magn. preparation	None
Flip angle	90 deg
Refocus flip angle	180 deg
Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled

### Contrast - Dynamic

Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	1
Delay in TR	0 ms
Multiple series	Off

### Resolution - Common

FoV read	220 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

### Resolution - iPAT

PAT mode	GRAPPA
----------	--------

### Resolution - iPAT

Accel. factor PE	2
Ref. lines PE	40
Reference scan mode	Single-shot

### Resolution - Filter Image

Distortion Corr.	Off
Prescan Normalize	On
Dynamic Field Corr.	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slice group	1
Slices	27
Dist. factor	30 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	3800 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	1

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	Fat sat.
Grad. rev. fat suppr.	Enabled
Special sat.	None

### Geometry - Navigator

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off

**System - Miscellaneous**

AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	220 mm
R >> L	220 mm
F >> H	140 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	3800 ms
Multi-band accel. factor	1

**Physio - PACE**

Resp. control	Off
Multi-band accel. factor	1

**Diff - Neuro**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Bipolar
Diff. weightings	2
b-value 1	0 s/mm <sup>2</sup>
b-value 2	1000 s/mm <sup>2</sup>
b-value 1	1
b-value 2	1
Diff. weighted images	On
Trace weighted images	On
ADC maps	On
FA maps	On
Mosaic	On
Tensor	On
Noise level	40

**Diff - Body**

Diffusion mode	MDDW
Diff. directions	6
Diffusion Scheme	Bipolar

**Diff - Body**

Diff. weightings	2
b-value 1	0 s/mm <sup>2</sup>
b-value 2	1000 s/mm <sup>2</sup>
b-value 1	1
b-value 2	1
Diff. weighted images	On
Trace weighted images	On
ADC maps	On
Exponential ADC Maps	Off
FA maps	On
Invert Gray Scale	Off
Calculated Image	Off
b-Value >=	0 s/mm <sup>2</sup>
Noise level	40

**Diff - Composing**

Distortion Corr.	Off
------------------	-----

**Sequence - Part 1**

Introduction	Off
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.78 ms
Bandwidth	1446 Hz/Px

**Sequence - Part 2**

EPI factor	192
RF pulse type	Normal
Gradient mode	Performance
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

SENSE1 coil combine	On
Invert RO/PE polarity	Off
Force Maxwell corr.	Off
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
FFT scale factor	1.00
Physio recording	Off

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\pasl\_3d\_tra \***

TA: 0:20 PM: ISO Voxel size: 1.9×1.9×4.5 mmRel. SNR: 1.00 : tgse

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slab group	1
Slabs	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	16
FoV read	240 mm
FoV phase	100.0 %
Slice thickness	4.50 mm
TR	2000 ms
TE	20.26 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion Corr.(2D), Prescan Normalize
Coil elements	HE1-4

### Contrast - Common

TR	2000 ms
TE	20.26 ms
Flip angle	180 deg
Fat suppr.	Fat sat.

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	2
Delay in TR	0 ms
Multiple series	Off

### Contrast - ASL

Perfusion mode	FAIR QII
Suppression Mode	GRAY-WHITE
Bolus Duration	800 ms
Inversion Time	1000 ms
Averaging mode	CONSTANT
Inversion Array Size	1

### Resolution - Common

FoV read	240 mm
FoV phase	100.0 %
Slice thickness	4.50 mm
Base resolution	64
Phase resolution	97 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	On

### Resolution - Filter Image

Distortion Corr.	On
Mode	2D
Prescan Normalize	On

### Resolution - Filter Rawdata

Raw filter	On
Elliptical filter	Off
Hamming	Off

### Geometry - Common

Slab group	1
Slabs	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
Slice oversampling	0.0 %
Slices per slab	16
FoV read	240 mm
FoV phase	100.0 %
Slice thickness	4.50 mm
TR	2000 ms
Multi-slice mode	Interleaved
Series	Ascending
Concatenations	1

### Geometry - AutoAlign

Slab group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	P >> A
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

### Geometry - Saturation

Fat suppr.	Fat sat.
Special sat.	None

### System - Miscellaneous

Positioning mode	ISO
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L

**System - Miscellaneous**

Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - All

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	-180.00 deg
A >> P	240 mm
R >> L	240 mm
F >> H	72 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
--------------	----------

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Correction factor	1
Gain	Low
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2000 ms
Concatenations	1
Segments	2

**Sequence - Part 1**

Introduction	Off
Dimension	3D
Reordering	Centric
Multi-slice mode	Interleaved
Echo spacing	0.49 ms
Bandwidth	2442 Hz/Px

**Sequence - Part 2**

EPI factor	31
Segments	2
RF pulse type	Normal
Gradient mode	Performance
Turbo factor	16

**\\USER\2019\_MBC\_PROTOCOLS\_VE11C\SB.2002.60 MR DEVELOPMENT - RS\SB.2002.60 MR DEVELOPMENT - PROTOCOLQC - 016\csi\_slaser \***

TA: 0:37 PM: REF Voxel size: 20.0×20.0×20.0 mmRel. SNR: 1.00 : csi\_slaser

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Position	Isocenter
Orientation	Transversal
Rotation	0 deg
Slices	1
Vol A >> P	100 mm
Vol R >> L	80 mm
FoV A >> P	160 mm
FoV R >> L	160 mm
Thickness F >> H	20 mm
TR	1200 ms
TE	50 ms
Averages	1
Filter	Prescan Normalize, Hamming
Coil elements	HE1-4

### Contrast

TR	1200 ms
TE	50 ms
Averages	1
Averaging mode	Long term
Flip angle	65 deg
Water suppr.	Weak water suppr.
Water suppr. BW	50 Hz
Measurements	1

### Resolution - Common

FoV R >> L	160 mm
FoV A >> P	160 mm
Thickness F >> H	20 mm
Scan res. R >> L	8
Scan res. A >> P	8
Interpol. res. R >> L	8
Interpol. res. A >> P	8
Hamming	On
Width	50
Prescan Normalize	On
Vector size	256

### Geometry - Common

Position	Isocenter
Orientation	Transversal
Rotation	0 deg
FoV R >> L	160 mm
FoV A >> P	160 mm

### Geometry - Common

Thickness F >> H	20 mm
Vol R >> L	80 mm
Vol A >> P	100 mm
Sat. region	1
Thickness	40 mm
Position	L61.0 P0.0 H0.0 mm
Orientation	Sagittal
Sat. delta frequ.	-3.40 ppm
Sat. region	2
Thickness	40 mm
Position	R61.0 P0.0 H0.0 mm
Orientation	Sagittal
Sat. delta frequ.	-3.40 ppm
Sat. region	3
Thickness	40 mm
Position	L0.0 P61.0 H0.0 mm
Orientation	Coronal
Sat. delta frequ.	-3.40 ppm
Sat. region	4
Thickness	40 mm
Position	L0.0 A61.0 H0.0 mm
Orientation	Coronal
Sat. delta frequ.	-3.40 ppm

### Geometry - AutoAlign

Slice group	1
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

### System - Miscellaneous

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
AutoAlign	Head > Brain
Coil Select Mode	Off - All

### System - Adjustments

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Adj. water suppr.	On
Adjust with body coil	Off
Confirm freq. adjustment	On
Only after freq. change	On
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	90.00 deg
R >> L	80 mm
A >> P	100 mm
F >> H	20 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
--------------	----------

**System - Tx/Rx**

Frequency 1H	123.237840 MHz
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Sequence - Common**

Preparation scans	2
Dimension	2D
Delta frequency	-2.70 ppm
Phase encoding	Weighted
Bandwidth	2000 Hz
Acquisition duration	128 ms
Remove oversampling	Off