

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Human Protocol\localizer

TA: 9.2 [s] PAT: Off Voxel size: 2.2x1.1x10.0 [mm] Rel. SNR: 1.00 SIEMENS: gre

Routine

Slice group 1	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Slice group 2	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Slice group 3	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	R >> L
Rotation	0 [deg]
Phase oversampling	0 [%]
FoV read	280 [mm]
FoV phase	100.0 [%]
Slice thickness	10 [mm]
TR	20 [ms]
TE	5 [ms]
Averages	1
Concatenations	3
Filter	Elliptical filter
Coil elements	HEA;HEP

Contrast

TD	0 [ms]
MTC	Off
Magn. preparation	None
Flip angle	40 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	50 [%]
Phase partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	On
Interpolation	On
PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Sequential
Series	Interleaved

Saturation mode Standard
Special sat. None

System

Body	Off
HEP	On
HEA	On
Save uncombined	Off
Scan at current TP	On
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Shim mode	Tune up
Adjust with body coil	On
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	Isocenter
Orientation	Transversal
Rotation	0 [deg]
R >> L	350 [mm]
A >> P	263 [mm]
F >> H	350 [mm]

Physio

1st Signal/Mode	None
Segments	1
Tagging	None
Dark blood	Off
Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1
Wash - In	0
Wash - Out	0
TTP	0
PEI	0
MIP - time	0

Sequence

Introduction	On
Dimension	2D
Phase stabilisation	Off
Averaging mode	Short term
Asymmetric echo	Off
Contrasts	1
Bandwidth	180 [Hz/Px]
Flow comp.	No
Allowed delay	0 [s]
RF pulse type	Fast
Gradient mode	Normal

SIEMENS MAGNETOM TrioTim syngo MR 2006T

Excitation
RF spoiling

Slice-sel.
On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Human Protocol\MPRAGE

TA: 9:14 PAT: Off Voxel size: 1.0x1.0x1.2 [mm] Rel. SNR: 1.00 USER: tfl_ADNI

Routine

Slab group 1	
Slabs	1
Dist. factor	50 [%]
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Phase oversampling	0 [%]
Slice oversampling	0 [%]
Slices per slab	160
FoV read	256 [mm]
FoV phase	93.8 [%]
Slice thickness	1.2 [mm]
TR	2300 [ms]
TE	2.86 [ms]
Averages	1
Concatenations	1
Filter	None
Coil elements	HEA;HEP

Contrast

Magn. preparation	Non-sel. IR
TI	900 [ms]
Flip angle	9 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	100 [%]
Slice resolution	100 [%]
Phase partial Fourier	Off
Slice partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	Off
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Single shot
Series	Interleaved

System

Body	Off
HEP	On
HEA	On
SP4	Off
SP2	Off
SP8	Off
SP6	Off
SP3	Off
SP1	Off
SP7	Off

SP5

Save uncombined	Off
Scan at current TP	Off
Scan region position	H
Scan region position	0 [mm]
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Rotation	0 [deg]
F >> H	256 [mm]
A >> P	240 [mm]
R >> L	192 [mm]

Physio

1st Signal/Mode	None
Dark blood	Off
Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Sequence

Introduction	On
Dimension	3D
Elliptical scanning	Off
Averaging mode	Long term
Asymmetric echo	Off
Bandwidth	240 [Hz/Px]
Flow comp.	No
Echo spacing	7.1 [ms]

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Human Protocol\MPRAGE Repeat

TA: 9:14 PAT: Off Voxel size: 1.0x1.0x1.2 [mm] Rel. SNR: 1.00 USER: tfi_ADNI

Routine

Slab group 1	
Slabs	1
Dist. factor	50 [%]
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Phase oversampling	0 [%]
Slice oversampling	0 [%]
Slices per slab	160
FoV read	256 [mm]
FoV phase	93.8 [%]
Slice thickness	1.2 [mm]
TR	2300 [ms]
TE	2.86 [ms]
Averages	1
Concatenations	1
Filter	None
Coil elements	HEA;HEP

Contrast

Magn. preparation	Non-sel. IR
TI	900 [ms]
Flip angle	9 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	100 [%]
Slice resolution	100 [%]
Phase partial Fourier	Off
Slice partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	Off
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Single shot
Series	Interleaved

System

Body	Off
HEP	On
HEA	On
SP4	Off
SP2	Off
SP8	Off
SP6	Off
SP3	Off
SP1	Off
SP7	Off

SP5

Off

Save uncombined	Off
Scan at current TP	Off
Scan region position	H
Scan region position	0 [mm]
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Rotation	0 [deg]
F >> H	256 [mm]
A >> P	240 [mm]
R >> L	192 [mm]

Physio

1st Signal/Mode	None
Dark blood	Off
Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Sequence

Introduction	On
Dimension	3D
Elliptical scanning	Off
Averaging mode	Long term
Asymmetric echo	Off
Bandwidth	240 [Hz/Px]
Flow comp.	No
Echo spacing	7.1 [ms]

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNIMAIN-PHASE\Human Protocol\B1-calibration Head

TA: 0:42 PAT: Off Voxel size: 2.3x2.3x2.5 [mm] Rel. SNR: 1.00 USER: gre_ADNI

Routine

Slab group 1	
Slabs	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Phase oversampling	0 [%]
Slice oversampling	0 [%]
Slices per slab	96
FoV read	300 [mm]
FoV phase	100.0 [%]
Slice thickness	2.5 [mm]
TR	3.3 [ms]
TE	1.08 [ms]
Averages	1
Concatenations	1
Filter	None
Coil elements	HEA;HEP

Contrast

MTC	Off
Magn. preparation	None
Flip angle	2 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	128
Phase resolution	100 [%]
Slice resolution	100 [%]
Phase partial Fourier	Off
Slice partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	Off
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Interleaved
Series	Interleaved

Saturation mode	Standard
Special sat.	None

System

Body	Off
HEP	On
HEA	On
SP4	Off
SP2	Off
SP8	Off
SP6	Off

SP3	Off
SP1	Off
SP7	Off
SP5	Off

Save uncombined	Off
Scan at current TP	Off
Scan region position	H
Scan region position	0 [mm]
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	Isocenter
Orientation	Sagittal
Rotation	0 [deg]
F >> H	300 [mm]
A >> P	300 [mm]
R >> L	240 [mm]

Physio

1st Signal/Mode	None
Segments	1

Tagging	None
Dark blood	Off

Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Wash - In	0
Wash - Out	0
TTP	0
PEI	0
MIP - time	0

Sequence

Introduction	On
Dimension	3D
Elliptical scanning	Off
Phase stabilisation	Off
Averaging mode	Long term
Asymmetric echo	Off
Contrasts	1
Bandwidth	980 [Hz/Px]
Flow comp.	No

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.

SIEMENS MAGNETOM TrioTim syngo MR 2006T

| RF spoiling

On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Human Protocol\B1-calibration Body

TA: 0:42 PAT: Off Voxel size: 2.3x2.3x2.5 [mm] Rel. SNR: 1.00 USER: gre_ADNI

Routine

Slab group 1	
Slabs	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Phase oversampling	0 [%]
Slice oversampling	0 [%]
Slices per slab	96
FoV read	300 [mm]
FoV phase	100.0 [%]
Slice thickness	2.5 [mm]
TR	3.3 [ms]
TE	1.08 [ms]
Averages	1
Concatenations	1
Filter	None
Coil elements	BC

Contrast

MTC	Off
Magn. preparation	None
Flip angle	2 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	128
Phase resolution	100 [%]
Slice resolution	100 [%]
Phase partial Fourier	Off
Slice partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	Off
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Interleaved
Series	Interleaved

Saturation mode	Standard
Special sat.	None

System

Body	On
HEP	Off
HEA	Off
SP4	Off
SP2	Off
SP8	Off
SP6	Off

SP3	Off
SP1	Off
SP7	Off
SP5	Off

Save uncombined	Off
Scan at current TP	Off
Scan region position	H
Scan region position	0 [mm]
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	Isocenter
Orientation	Sagittal
Rotation	0 [deg]
F >> H	300 [mm]
A >> P	300 [mm]
R >> L	240 [mm]

Physio

1st Signal/Mode	None
Segments	1

Tagging	None
Dark blood	Off

Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Wash - In	0
Wash - Out	0
TTP	0
PEI	0
MIP - time	0

Sequence

Introduction	On
Dimension	3D
Elliptical scanning	Off
Phase stabilisation	Off
Averaging mode	Long term
Asymmetric echo	Off
Contrasts	1
Bandwidth	980 [Hz/Px]
Flow comp.	No

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.

SIEMENS MAGNETOM TrioTim syngo MR 2006T

| RF spoiling

On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Human Protocol\Axial PD-T2 TSE

TA: 5:08 PAT: Off Voxel size: 0.9x0.9x3.0 [mm] Rel. SNR: 1.00 SIEMENS: tse

Routine

Slice group 1	
Slices	48
Dist. factor	0 [%]
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Transversal
Phase enc. dir.	R >> L
Rotation	90 [deg]
Phase oversampling	0 [%]
FoV read	240 [mm]
FoV phase	89.1 [%]
Slice thickness	3 [mm]
TR	3000 [ms]
TE[1]	12 [ms]
TE[2]	98 [ms]
Averages	1
Concatenations	3
Filter	Prescan Normalize, Elliptical filter
Coil elements	HEA;HEP

Contrast

TD	0 [ms]
MTC	Off
Magn. preparation	None
Flip angle	150 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Fat sat. mode	Strong
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	100 [%]
Phase partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	On
Unfiltered images	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	On
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Interleaved
Series	Interleaved

Special sat.	None

System

Body	Off
HEA	On
HEP	On

Save uncombined	Off
Scan at current TP	On
MSMA	S - C - T

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Transversal
Rotation	90 [deg]
A >> P	240 [mm]
R >> L	214 [mm]
F >> H	144 [mm]

Physio

1st Signal/Mode	None

Dark blood	Off

Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Sequence

Introduction	On
Dimension	2D
Compensate T2 decay	Off
Averaging mode	Long term
Contrasts	2
Bandwidth	181 [Hz/Px]
Flow comp.	No
Allowed delay	30 [s]
Echo spacing	12.3 [ms]

Turbo factor	7
RF pulse type	Low SAR
Gradient mode	Fast
Hyperecho	Off

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Phantom Protocol\QC Phantom Localizer

TA: 9.2 [s] PAT: Off Voxel size: 2.2x1.1x10.0 [mm] Rel. SNR: 1.00 SIEMENS: gre

Routine

Slice group 1	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Slice group 2	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Slice group 3	
Slices	1
Dist. factor	20 [%]
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	R >> L
Rotation	0 [deg]
Phase oversampling	0 [%]
FoV read	280 [mm]
FoV phase	100.0 [%]
Slice thickness	10 [mm]
TR	20 [ms]
TE	5 [ms]
Averages	1
Concatenations	3
Filter	Elliptical filter
Coil elements	HEA;HEP

Contrast

TD	0 [ms]
MTC	Off
Magn. preparation	None
Flip angle	40 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	50 [%]
Phase partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	On
Interpolation	On

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Sequential
Series	Interleaved

Saturation mode	Standard
Special sat.	None

System

Body	Off
HEP	On
HEA	On

Save uncombined	Off
Scan at current TP	On
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

Shim mode	Tune up
Adjust with body coil	On
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	Isocenter
Orientation	Transversal
Rotation	0 [deg]
R >> L	350 [mm]
A >> P	263 [mm]
F >> H	350 [mm]

Physio

1st Signal/Mode	None
Segments	1

Tagging	None
Dark blood	Off

Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Wash - In	0
Wash - Out	0
TTP	0
PEI	0
MIP - time	0

Sequence

Introduction	On
Dimension	2D
Phase stabilisation	Off
Averaging mode	Short term
Asymmetric echo	Off
Contrasts	1
Bandwidth	180 [Hz/Px]
Flow comp.	No
Allowed delay	0 [s]

RF pulse type	Fast
Gradient mode	Normal

SIEMENS MAGNETOM TrioTim syngo MR 2006T

Excitation
RF spoiling

Slice-sel.
On

SIEMENS MAGNETOM TrioTim syngo MR 2006T

\\USER\ADNI\MAIN-PHASE\Phantom Protocol\QC Phantom Sagittal MPRAGE
 TA: 9:14 PAT: Off Voxel size: 1.0x1.0x1.3 [mm] Rel. SNR: 1.00 USER: tfl_ADNI 12

Routine

Slab group 1	
Slabs	1
Dist. factor	50 [%]
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Phase enc. dir.	A >> P
Rotation	0 [deg]
Phase oversampling	0 [%]
Slice oversampling	0 [%]
Slices per slab	160
FoV read	256 [mm]
FoV phase	93.8 [%]
Slice thickness	1.3 [mm]
TR	2300 [ms]
TE	2.86 [ms]
Averages	1
Concatenations	1
Filter	None
Coil elements	HEA;HEP

Contrast

Magn. preparation	Non-sel. IR
TI	900 [ms]
Flip angle	9 [deg]
Reconstruction	Magnitude
Fat suppr.	None
Water suppr.	None
Measurements	1

Resolution

Base resolution	256
Phase resolution	100 [%]
Slice resolution	100 [%]
Phase partial Fourier	Off
Slice partial Fourier	Off
Filter 1	
Raw filter	Off
Filter 2	
Large FoV	Off
Filter 3	
Prescan Normalize	Off
Filter 4	
Normalize	Off
Filter 5	
Elliptical filter	Off
Interpolation	Off

PAT mode	None
Matrix Coil Mode	Auto (CP)

Geometry

Multi-slice mode	Single shot
Series	Interleaved

System

Body	Off
HEA	On
HEP	On

Save uncombined	Off
Scan at current TP	Off
Scan region position	H
Scan region position	0 [mm]
MSMA	S - C - T
Sagittal	R >> L

Coronal	A >> P
Transversal	F >> H

Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Silicone	Off
Ref. amplitude [1H]	Use Default Value [V]
Adjust volume	
Position	L0.0 A30.0 H0.0 [mm]
Orientation	Sagittal
Rotation	0 [deg]
F >> H	256 [mm]
A >> P	240 [mm]
R >> L	208 [mm]

Physio

1st Signal/Mode	None

Dark blood	Off

Resp. control	Off

Inline

Subtract	0
Std-Dev-Sag	0
Std-Dev-Cor	0
Std-Dev-Tra	0
Std-Dev-Time	0
MIP-Sag	0
MIP-Cor	0
MIP-Tra	0
MIP-Time	0
Save original images	1

Sequence

Introduction	On
Dimension	3D
Elliptical scanning	Off
Averaging mode	Long term
Asymmetric echo	Off
Bandwidth	240 [Hz/Px]
Flow comp.	No
Echo spacing	7.1 [ms]

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On