NeuroQuant
Scanner Parameters

V3.1, Rev 00

February 2021

Attention NeuroQuant Users:

1. NeuroQuant software requires the use of image series acquired with specified protocols as listed below.
2. Deviation from recommended protocols can result in reduced quality of NeuroQuant output.
3. Noisy scan, motion and other imaging artifacts may negatively affect results.
4. NeuroQuant requires all scan data to be in raw DICOM format. DICOM data must not be compressed in any way (e.g., no JPEG compression).
5. The software provides a data filtering mechanism, which filters scans based on parameters prior to initiating processing.
6. Do not change scan parameters.
7. MRI software updates may alter saved protocols, verify after all updates.
8. If you plan on using parallel Imaging on a 1.5T MRI scanner we will need to validate the series prior to your using it clinically. All data will be processed through NeuroQuant under research mode to avoid the standard dicom protocol checker. The raw image data noise, contrast and the segmentation results for three separate scans will be evaluated by experienced CorTechs data review team for acceptance. Please contact the support department to validate your series.

NeuroQuant / GE T1 Settings

FIELD STRENGTH	*1.5T*	*1.5T*	*3T*	*3T*
Mode	3D	*3D Parallel Imaging	3D	3D Parallel Imaging
Plane	Sagittal	Sagittal	Sagittal	Sagittal
Pulse Sequence	SPGR	SPGR	SPGR	SPGR
Gradient Mode	Zoom	Zoom	Zoom	Zoom
Imaging Options	EDR, IrP	EDR, IrP, ACC*	EDR, IrP	EDR, IrP, ACC
Frequency	192	192	192	192
Phase	192	192	192	192
Frequency Direction	S/I	S/I	S/I	S/I
FOV	24 – 25.6 cm	24 – 25.6 cm	24 – 25.6 cm	24 – 25.6 cm
Phase FOV	100%	100%	100%	100%
Slice Thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Spacing Between Slices	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Locs/Slab (Number of slices)	160-170	160-170	160-170	160-170
NEX	1	1	1	1
Percent Sampling	100 %	100 %	100 %	100 %
TE	M in Full	M in Full	M in Full	M in Full
Prep Time (TI)	500 ms	500 ms	600 ms	600 ms
Flip Angle	10°	10°	8°	8°
Shim	Auto	Auto	Auto	Auto
Bandwidth	~ 16 KHz	~ 16 KHz	~ 31 KHz	~ 31 KHz

Phased Array Uniformity Enhancement (PURE)	On	On	On	On
ASSET* Parallel Imaging Factor	None	*Lowest acceptable factor	None	1.8

NeuroQuant / GE T1 Settings

Notes

1. *ASSET (ACC_GEMS) Parallel imaging compatible with Discovery 750 3T, Signa 3T, and Signa HDxt 3T scanners. NeuroQuant 2.0 or greater required
2. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For further information see page one, item 8.
3. Ensure Surface Coil Intensity Correction (SCIC) is off
4. CUBE sequence is incompatible with NeuroQuant 3D T1 sequence
5. Do not add post processing filters
6. Do not use Zip512

NeuroQuant / Philips T1 Settings

FIELD STRENGTH	*1.5T*	**1.5T*	*3T*	*3T*
Mode	3D	3D Parallel Imaging	3D	3D Parallel Imaging
Plane	Sagittal	Sagittal	Sagittal	Sagittal
Technique	FFE	FFE	FFE	FFE
Contrast Enhancement	T1	T1	T1	T1
Fast Imaging Mode	TFE	TFE	TFE	TFE
FOV	240-256 mm	240-256 mm	240-256 mm	240-256 mm
RFOV	100%	100%	100%	100%
Matrix Scan	192	192	192	192
Stacks	1	1	1	1
Scan Percentage	100%	100%	100%	100%
Slices	160-170	160-170	160-170	160-170
Slice Thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Spacing Between Slices	1.2 mm	1.2 mm	1.2 mm	1.2 mm
TFE Shot Interval	2300 ms	2300 ms	2500 ms	2500 ms
Echoes	1	1	1	1
TE	4 ms	4 ms	Shortest	Shortest
TR	Shortest	Shortest	Shortest	Shortest
Flip Angle	8°	8°	9°	9°
TFE Prepulse Delay / TI	1000 ms	1000 ms	900 ms	900 ms
Water Fat shift	Maximum	Maximum	Maximum	Maximum
Gradient Mode	Default	Default	Maximum	Maximum
**SENSE Parallel Acceleration Factor*	None	*Lowest acceptable factor	None	1.8

NeuroQuant / Philips T1 Settings

Notes

1. 1.5T scan protocol is based on Philips Achieva scanner with software version 3.2.2
2. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For further information see page one, item 8.
3. SENSE Parallel imaging compatible with Achieva, Ingenia, and Intera **3T** scanners
4. CLEAR (Homogeneity Correction) must be **ON**
5. DICOM connection must be Classic
6. Do not add post processing filters

NeuroQuant / Siemens T1 Settings

FIELD STRENGTH	*1.5T*	*1.5T*	*3T*	*3T*
Mode	3D	3D Parallel Imaging	3D	3D Parallel Imaging
Plane	Sagittal	Sagittal	Sagittal	Sagittal
Sequence	MPRAGE	MPRAGE	MPRAGE	MPRAGE
FOV Phase	100%	100%	100%	100%
FOV Read	240-256 mm	240-256 mm	240-256 mm	240-256 mm
Base Resolution	192	192	192	192
Slice Thickness	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Spacing Between Slices	1.2 mm	1.2 mm	1.2 mm	1.2 mm
Phase Oversampling	0%	0%	0%	0%
Slice Oversampling	0%	0%	0%	0%
Slices per Slab	160-170	160-170	160-170	160-170
Averages	1	1	1	1
Concentrations	1	1	1	1
Gradient Mode	Fast	Fast	Fast	Fast
Mag. Preparation	Non-Sel. IR	Non-Sel. IR	Non-Sel. IR	Non-Sel. IR
RF Pulse Type	Fast	Fast	Fast	Fast
Excitation	Non-Sel. IR	Non-Sel. IR	Non-Sel. IR	Non-Sel. IR
TR	2400 ms	2400 ms	2300 ms	2300 ms
TE	Minimum	Minimum	Minimum	Minimum
TI	1000 ms	1000 ms	900 ms	900 ms
Flip Angle	8°	8°	9°	9°
Bandwidth	180 HZ/Pix	180 HZ/Pix	240 HZ/Pix	240 HZ/Pix
Filter	Non	Non	Non	Non

Parallel Technique iPAT	Off	Validation only	Off	On
Max Parallel Acceleration Factor	**N/A**	*Lowest acceptable factor	N/A	GRAPPA 2

NeuroQuant / Siemens T1 Settings

Notes

1. GRAPPA parallel imaging compatible with Verio, Trio Tim and Skyra 3T scanners only
2. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For further information see page one, item 8.
3. Pre-scan Normalize must be **ON**
4. Do not add post processing filters

NeuroQuant / Canon (Toshiba) T1 Settings

FIELD STRENGTH	**1.5T*	***3T*
Mode	3D	3D
Plane	Sagittal	Sagittal
Sequence Option	FFE3D	FFE3D
Sequence Option	Basic	Default
Matrix	192x192	192x192
FOV	24 cm	24 cm
Slice Thickness	1.2 mm	1.2 mm
Spacing Between Slices	1.2 mm	1.2 mm
RF Type	Fine	Normal
Gradient Type	Normal	Normal
TE	2.9 ms	3.2 ms
TR	7.1 ms	7.3 ms
IR Pulse	Non-Sel.	Non-Sel.
TI	800 ms	900 ms
Flip Angle	9°	9°
Bandwidth	217 HZ/pix	244 HZ/pix
No Wrap	1	1
Speeder	PE 1	PE 1
Number of Segments	2 / Sequential	1
Type of Shot Interval	1600 ms	2300 ms
IDC (Gradient Correction)	VMC	VMC
NAQ	1	1

NeuroQuant / Canon (Toshiba) T1 Settings

Notes

1. Settings are for Toshiba Titan MRI scanners
2. Do not add post processing filters

*1.5T settings only to be used with MPower v3.6 software or later. NeuroQuant 2.1 or greater required.

**3T settings only to be used with Mpower v3.5 software or later. NeuroQuant 2.0 or greater required.

NeuroQuant / Hitachi T1 Settings

FIELD STRENGTH	**1.2T**	**1.5T**	**3T**
Acquisition Type	3D	3D	3D
Plane	Sagittal	Sagittal	Sagittal
Mode	GEIR	GEIR	GEIR
Sequence	RSSG	RSSG	RSSG
FOV	240 – 256 mm	240 – 256 mm	240 – 256 mm
Acquisition Matrix	192 x 192	192 x 192	192 x 192
Slice Thickness	1.2 mm	1.2 mm	1.2 mm
Spacing Between Slices	1.2 mm	1.2 mm	1.2 mm
NSA	1	1	1
Slices Per Slab (# of Slices)	160 - 170	160 - 170	160 - 170
TR	8.7 ms	8.6 ms	7.2 ms
TE	4 ms	4 ms	2.9 ms
TI	550 ms	550 ms	900 ms
Flip Angle	12°	12°	10°
Bandwidth	53.2 KHz	58.2 KHz	92.6 KHz
Parallel Imaging RAPID Phase & Slice	1, 1	1, 1	1, 1
Filter Option VIVID	3	1	1

Notes

1. Gradient Correction should be **ON** for all magnetic field strengths & modes
2. Do not use post processing filters other than Vivid

NeuroQuant MS
Scanner Parameters

V3.1, Rev 00

February 2021

Attention NeuroQuant MS Users:

Prior to using NeuroQuant MS module, the same version of NeuroQuant (3D T1) and NeuroQuant MS (T2 FLAIR) scanner settings must be configured on your scanner(s).

NOTE: You do not need both the 2D and the 3D T2 FLAIR sequences to generate NeuroQuant MS reports. You need the NeuroQuant Sagittal 3D T1 and either the 2D or the 3D T2 FLAIR sequences.

If you plan on using parallel Imaging on a 1.5T MRI scanner we will need to validate the series prior to your using it clinically. All data will be processed through NeuroQuant under research mode to avoid the standard dicom protocol checker. The raw image data noise, contrast and the segmentation results for three separate scans will be evaluated by experienced CorTechs data review team for acceptance. Please contact the support department to validate your series.

NeuroQuant MS / GE T2 FLAIR Settings

FIELD STRENGTH	**1.5T**		**3T**	
Mode	2D	3D	2D	3D
Plane	Axial	Sagittal	Axial	Sagittal
Frequency	256	256	256	256
Phase	256	256	256	256
FOV	220 – 240	220 – 240	220 – 240	220 – 240
Slice Thickness	≤ 3 mm	1.2 mm	< 3 mm	1.2 mm
TE	127 ms	90 ms	147 ms	130 ms
TR	8,000 ms	6,900 ms	11,000 ms	6,000 ms
Flip Angle	90°	90°	90°	90°
TI	2,000 ms	2,030 ms	2,250 ms	1,854
Bandwidth	195 Hz/px or 50 KHz	122 Hz/px or 31 KHz	122 Hz/px or 31 KHz	122 Hz/px or 31 KHz
ASSET Parallel Imaging Factor	NONE	*Lowest factor acceptable	2	2

Notes

1. ASSET parallel imaging compatible with Discovery 750 3T, Signa 3T, and Signa HDxt 3T scanners only
2. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For further information see page one, item 8.
3. Variable flip angle flag should be off
4. Variable Bandwidth should be off
5. Do not use post processing filters
6. ZIP512 not supported

NeuroQuant MS / Philips T2 FLAIR Settings

FIELD STRENGTH	1.5T		3T	
Mode	2D	3D	2D	3D
Plane	Axial	Sagittal	Axial	Sagittal
Gradient Mode	Default	Default	Default	Default
Fast Imaging Mode	Default	Default	FSE	FSE
In Plane Pixel Resolution	1.0 mm x 1.0 mm	1.0 mm x 1.0 mm	1.0 mm x 1.0 mm	1.0 mm x 1.0 mm
Percent Phase FOV	100%	100%	100%	100%
FOV	22 – 25.6 cm	22 – 25.6 cm	22 – 25.6 cm	22 – 25.6 cm
Slice Thickness	≤ 3 mm	2.4 mm	≤ 3 mm	1.2 mm
TE	120 ms	296 ms	90 ms	274 ms
TR	6,000 ms	8,000 ms	9,000 ms	4,800 ms
Inversion Time/TI	2,000 ms	2,400 ms	2,500 ms	1,650 ms
Flip Angle	90°	90°	90°	90°
SENSE Parallel Imaging Factor	1	*Lowest factor acceptable	1.6	≤ 2

Notes

1. 1.5T scan protocol is based on Philips Achieva scanner with software version 3.2.2
2. SENSE Parallel imaging compatible with Achieva, Ingenia 3T, and Intera 3T scanners only
3. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For further information see page one, item
4. Do not use post processing filters
5. ZIP512 not supported

NeuroQuant MS / Siemens T2 FLAIR Settings

FIELD STRENGTH	**1.5T**		**3T**	
Mode	2D	3D	2D	3D
Plane	Axial	Sagittal	Axial	Sagittal
Matrix Scan	256	256	256	256
Base Resolution	256	256	256	256
Phase Resolution	100%	100%	100%	100%
FOV	22 – 25.6	22 – 25.6	22 – 25.6	22 – 25.6
Slice Thickness	≤ 3 mm	1.2 mm	< 3 mm	1.2 mm
Averages	1	1	1	1
Magn. Preparation	Slice-sel IR	Slice-sel IR	Slice-sel IR	Slice-sel IR
TE	111 ms	358 ms	90 ms	392 ms
TR	9,000 ms	5,000 ms	9,000 ms	5,000 ms
Inversion Time/TI	2,500 ms	1,800 ms	2,500 ms	1,800 ms
Flip Angle	150°	120°	150°	120°
Bandwidth	130 Hz/px or 33 KHz	592 Hz/px or 152 KHz	222 Hz/px or 57 KHz	780 Hz/px or 32 KHz
GRAPPA Parallel Imaging Factor	NONE	*Lowest acceptable factor	2	2

Notes

1. GRAPPA parallel imaging compatible with Verio 3T, Trio Tim 3T and Skyra 3T scanners only
2. *In order to use parallel imaging with a 1.5T MRI sequence, it must be validated by the Cortechs team. Lower PI factors produce better results. For more information see page one, item 8.
3. Do not use post processing filters
4. ZIP512 not supported

NeuroQuant MS / Canon (Toshiba) T2 FLAIR Settings

FIELD STRENGTH	1.5T		3T	
Mode	2D	3D	2D	3D
Plane	Axial	Sagittal	Axial	Sagittal
Sequence	FSE2D+13	FASE3D+5.5	FSE2D+12	FASE3D+5.5
Sequence Option	Basic	MPV T2	Basic	MPV T2
In Plane Pixel Resolution	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm
FOV	22 – 25.6 cm	22 – 25.6 cm	22 – 25.6 cm	22 – 25.6 cm
Slice Thickness	3 mm	1.2 mm	3 mm	1.2 mm
Gradient Type	SLT	N/A	Normal	N/A
RF Type	Normal	N/A	Low SAR	N/A
TE	104 ms	352 ms	96 ms	401.5 ms
TR	10,000 ms	7,000 ms	9,000 ms	6,000 ms
TI	2,500 ms	2,200 ms	2,500ms	2,000 ms
Flip Angle	90°	90°	90°	90°
FLOP	180°	180°	140°	180°
IR Pulse	Robust	Robust	Standard	Robust
No Wrap	1	SE 1.2	None	SE 1.2
Speeder	PE 1	PE 2 SE 2	PE 2	PE 2 SE 2
Number of Shots	N/A	1	N/A	1
Bandwidth	139.5 Hz/pix	651 Hz/pix	195.3 Hz/pix	651 Hz/pix

Notes

1. Fat Suppression should be off
2. IDC (Gradient Correction) – set to VMC
3. Do not use post processing filters
4. ZIP512 not supported

NeuroQuant MS / Hitachi T2 FLAIR Settings

FIELD STRENGTH	1.2T		1.5T		3T	
Mode	2D	3D	2D	3D	2D	3D
Plane	Axial	Sagittal	Axial	Sagittal	Axial	Sagittal
Sequence	opFIR	isoFSE	opFIR	isoFSE	FIR	isoFSE
In Plane Pixel Resolution	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm	1 mm x 1 mm
FOV	22 cm	24 – 26 cm	22 cm	24– 26 cm	22 cm	24 – 26 cm
Slice Thickness	≤ 3 mm	1.5 acquired / 1 recon	≤ 3 mm	1.2 acquired / 1 recon	≤ 3 mm	1.2 acquired / 1 recon
TE	132 ms	390 ms	132 ms	390 ms	116 ms	438 ms
TR	9,130 ms	5,500 ms	9,660 ms	6,000 ms	10,000 ms	10,000 ms
TI	2,400 ms	1,800 ms	2,500 ms	1,860 ms	2,300 ms	2,600 ms
Flip Angle	90°	90°	90°	90°	90°	90°
Flip Rapid Phase	1	2	1.2	2	1.1	2
Rapid Slice	N/A	1.4	N/A	1.7	N/A	2.5
Rapid Mode	N/A	RCM	RCM	RCM	RCM	RCM
Vivid Filter	3	1	3	2	3	1
Bandwidth	56 KHz	96.2 KHz	65 KHz	91 KHz	80 KHz	108.7 KHz

Notes

1. Percent Phase FOV should be 100%
2. Gradient Correction should be On
3. Do not use post processing filters other than Vivid
4. ZIP512 not supported