CT Chest ION (Navigational)

Updated 05/01/24
Reviewed 05/14/25

Indications - pre navigational biopsy of a lung nodule, mass, lesion or opacity and should be ordered as ION protocol by Pulmonology.

Use CT Chest without Contrast charge.

GENERAL SCAN NOTES

The patient's arms must be over his/her head.

Remove any metal from the imaging field of view.

Have the patient cough a few times to clear secretions. This reduces incidence of small lung nodules.

Topogram - lung apices through diaphragm (obtained during end inspiration).

Craniocaudal scan coverage - lung apices through adrenal glands (obtained during end inspiration).

Adjust FOV (field of view) on topogram to smallest without cropping anatomy.

Scan parameters are the same as routine chest protocol.

IV Contrast: not given for this protocol.

For **GE scanners**, it is essential for the 1st recon thickness on the scanner to match the 1st recon thickness in this protocol book for the prescribed Noise Index to be valid. The 1st recon should generally be the thickest recon in the protocol.

SIEMENS PARAMETERS & RECONS

	Scan Mode	kV	mAs	Care Dose	Care kV & Lvl	Pitch	Acq	Coll	Rot Time	Scan Time
Sensation 16	spiral	120	100	on	NA	1.15	16	0.75	0.5	10.9
Go Up 32	spiral	130	51	on	on 80	1.50	32	0.7	0.8	7.1
Sensation 64	spiral	120	100	on	NA	1.40	64	0.6	0.5	5.6
Definition 64	spiral	120	110	on	on	1.20	64	0.6	0.5	6.5
Go Top 64	spiral	120	62	on	on 80	1.20	64	0.6	0.33	2.1
Drive 128	spiral	120	66	on	on	1.20	128	0.6	0.5	3.3
Force 192	spiral	110	51	on	on	1.20	192	0.5	0.5	2.6

Name of Series	Thick	Interval	Kernel	Window	IR Lvl	Recon Direction	
AX LUNG	3.0	3.0	Br57 / B70f	lung	3	head/feet	
AX SOFT	3.0	3.0	Br40 / B41f	mediastinum	3	head/feet	
COR SOFT	3.0	3.0	Br40 / B41f	mediastinum	3	front/back	
SAG SOFT	3.0	3.0	Br40 / B41f	mediastinum	3	left/right	
TLC INSP	**0.75**	**0.5**	**Br40 / B41f**	**mediastinum**	**3**	**head/feet**	**ION specific recon.**
AX MIPS	8.0	3.0	Br40 / B41f	lung	3	head/feet	

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GE PARAMETERS & RECONS

	Scan Type	SFOV	kV	mA Range	Noise Index	Smart mA	Slice Thick	Beam Coll	Pitch	Speed	Rot Time	Dose Red	ASIR	Scan Time
LS 16	helical	large	120	100-440	16.36	on	2.5	20	1.375	27.50	0.5	NA	NA	5.5
Opt 540	helical	large	120	100-440	16.36	on	2.5	20	1.375	27.50	0.5	NA	NA	5.5
LS VCT 64	helical	large body	120	100-650	18.38	on	2.5	40	1.375	55.00	0.4	50	50	2.2
Disc VCT 64	helical	large body	120	100-650	18.38	on	2.5	40	1.375	55.00	0.4	NA	NA	2.2

Name of Series	Thickness	Interval	Recon Algorithm	Window Width/Level	Recon Direction	
AX LUNG	**2.5**	**2.5**	**lung**	**1600/-600**	**head/feet**	**Must be first recon.**
AX SOFT	2.5	2.5	std full	400/40	head/feet	
COR SOFT	2.5	2.5	std full	400/40	front/back	
SAG SOFT	2.5	2.5	std full	400/40	left/right	
TLC INSP	**0.75**	**0.5**	**std full**	**400/40**	**head/feet**	**ION specific recon.**
AX MIPS	8.0	3.0	std full	1600/-600	head/feet	

PHILIPS PARAMETERS & RECONS

	Scan Mode	kV	Avg mAs	Dose Index	3D Dose	Pitch	Detect	Colli	Rot Time	Scan Time
Incisive 128	helical	120	92	19	on	1.00	64	0.625	0.75	5.6

Name of Series	Thick	Interval	Filter	Window	iDose	Recon Direction	
AX LUNG	3.0	3.0	YA	lung	3	head/feet	
AX SOFT	3.0	3.0	B	mediastinum	3	head/feet	
COR SOFT	3.0	3.0	B	mediastinum	3	front/back	
SAG SOFT	3.0	3.0	B	mediastinum	3	left/right	
TLC INSP	**0.75**	**0.5**	**B**	**mediastinum**	**3**	**head/feet**	**ION specific recon.**
AX MIPS	8.0	2.0	B	lung	3	head/feet	

ION Protocol Parameters

Table A-1 Minimum radiation dose (CTDIvol; unit mGy)

Recon. Method / Patient Size	Small-Average (BMI ≤25)	Larger (BMI>25)
Using non-iterative reconstruction	6	10
Using iterative reconstruction	3	5

Table A-2 Scanner Settings

Parameter	Rationale	Recommended Values
kVp	Reduced artifacts in the lung apexes	110 – 140 kV
Pitch	Reduced motion artifacts from breathing or cardiac cycle	≥ 1.0
Rotation time	Fastest rotation time reduces motion artifacts	NA
Slice spacing	Ensure high resolution to identify peripheral airways	0.5 mm – 0.8 mm
Slice thickness	Zero or slight overlap	0.5 mm – 1.0 mm
Field of View	Minimize the field of view to the lungs	≤ 32 cm
Iterative reconstruction	Low to medium strengths are compatible; defer to department specific lung imaging protocols	NA

Table A-3 Scanner Settings, Reconstruction Kernel

Parameter	Rationale	Recommended Values			
Reconstruction kernel	Multiple reconstruction kernels are compatible; medium sharpness is ideal	Siemens™	Philips™	GE™	Toshiba[3]
		B31f	C 0	Standard Body	FC05

Information taken from - PlanPoint Software IFU Appendix - PN554076

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