CT Chest Pulmonx Zephyr (Endobronchial Valve)

Updated 06/08/24
Reviewed 05/14/25

Indications - pre procedural imaging prior to endobronchial valve placement and should be ordered as Pulmonx Zephyr 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 **maximum** 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	Can't scan this protocol on Sensation 16 due to thin slice limitations.									
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	**≤0.625**	**≤0.625**	**Br38f / B30f**	**mediastinum**	3	**head/feet**	**Pulmonx 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	10	1.375	13.75	0.5	NA	NA	10.9
Opt 540	helical	large	120	100-440	16.36	on	2.5	10	1.375	13.75	0.5	NA	NA	10.9
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	**≤0.625**	**≤0.625**	**standard**	**400/40**	**head/feet**	**Pulmonx 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	**≤0.625**	**≤0.625**	**B**	**mediastinum**	**3**	**head/feet**	**Pulmonx specific recon.**
AX MIPS	8.0	2.0	B	lung	3	head/feet	

CT Parameters

The following CT scan radiographic parameters have been optimized in order to provide appropriate inputs to the StratX® Lung Analysis Platform.

In order to produce quality output parameters displayed in the StratX Report, it is recommended to adhere as closely as possible to the ideal parameters detailed on page 2. If a scan can't be obtained with the ideal parameters, we have specified acceptable scan parameters on pages 3 and 4. Significant deviation from these parameters may result in reduced accuracy or an inability to analyze the CT scan.

For more specific information related to scan parameters or if your CT scanner manufacturer is not listed below, please contact us directly for support at **info@pulmonxstratxusa.com**.

General Information

1. Ensure all files are in standard .DICOM format
2. Only **SUPINE** position chest CT scans with **arms positioned above the head** are supported. Scans obtained in PRONE position can NOT be analyzed.
3. The CT scans must have a **slice thickness of 1.5mm or less** (smaller slices provide more information for fissure completeness).
4. The input image should NOT be reconstructed with a slice spacing larger than the slice thickness (**slice spacing should be less than or equal to slice thickness**, no gaps in the 3D volume are allowed).
5. The **complete lung** must be present on the CT scan. If parts of the lung are missing, the output parameters will be compromised.
6. Only **non-contrast TLC (inspiration) scans** are accepted for analysis.
7. Technologist should instruct the patient to take a **full inspiration breath** and hold. The scan should start once the patient has reached breath hold and relaxed their body.
8. Ensure the CT scan is not of poor quality (e.g., movement artifacts, artifacts due to metal, high noise levels due to dose level, etc.).
9. Please ensure the CT scan does NOT suffer from image artifacts such as streak artifacts from implants.
10. Scans taken from CT scanners with less than 16 detector rows are not recommended.
11. Any series containing less than 120 images will be automatically removed by the system.

Please note that CT scanners with less than 16 detector rows are not recommended.

Ideal Scan Parameters

Following these parameters will achieve the highest quality report possible

Highest Quality Report Parameters				
PARAMETERS	SIEMENS	PHILIPS	TOSHIBA	GE
Kernel Standard	B30	B	FC08	Standard
Tube Current	Regular Patient (<30 BMI): 80 mAs Large Patient (>30 BMI): 100 mAs ***No tube current modulation**			
KV	120			
Slice Thickness	0.625mm			
Reconstruction Interval (Slice Spacing)	≤0.625mm			
Pitch	Range: 0.5-1.2	Range: 0.5-1.2	Range: 0.5-1.0	Range: 0.5-1.375
Rotation or Gantry Speed (sec)	≤0.5			
Iterative Reconstruction	None			
Contrast	None			

Acceptable Scan Parameters

CT Scan Parameters WITHOUT Iterative Reconstruction

*No iterative reconstruction preferred

3-4mSv Dose				
PARAMETERS	SIEMENS	PHILIPS	TOSHIBA	GE
Tube Current	0mA - 900 mA ***No tube current modulation preferred**	20mA - 450 mA ***No tube current modulation preferred**	20mA – 600mA ***No tube current modulation preferred**	30mA – 770mA ***No tube current modulation preferred**
KV	120			
Dose Modulation	CareDose ON CarekV OFF	Z-Dom ON	SURE Exposure ON	Smart mA ON
Pitch	Range: 0.5-1.2	Range: 0.5-1.2	Range: 0.5-1.0	Range: 0.5-1.375
Rotation or Gantry Speed (sec)	≤0.5			
Kernel Standard	≤B45f	B, C	≤FC45	Bone, Standard
Slice Thickness	≤1.5mm ***Thinnest slice possible preferred**			
Slice Spacing	≤slice thickness			
Average mSv	<4.0			
Contrast	None			

Acceptable Scan Parameters

CT Scan Parameters WITH Iterative Reconstruction

*No iterative reconstruction preferred

1-2mSv Dose				
PARAMETERS	SIEMENS	PHILIPS	TOSHIBA	GE
Tube Current	0mA - 900 mA ***No tube current modulation preferred**	20mA - 450 mA ***No tube current modulation preferred**	20mA – 600mA ***No tube current modulation preferred**	30mA – 770mA ***No tube current modulation preferred**
KV	120			
Dose Modulation	CareDose ON CarekV OFF	V-Dom ON	SURE Exposure ON	Smart mA ON
Pitch	Range: 0.5-1.2	Range: 0.5-1.2	Range: 0.5-1.0	Range: 0.5-1.375
Rotation or Gantry Speed (sec)	≤0.5			
Iterative Reconstruction	Use SAFIRE, ADMIRE	Use IMR	Use ADIR 3D standard	Use VEO, ASiR
Iterative Strength	3	Routine 2	Standard	30-50
Kernel Standard	≤B45f	B, C	≤FC45	Bone, Standard
Slice Thickness	≤1.5mm ***Thinnest slice possible preferred**			
Slice Spacing	≤slice thickness			
Average mSv	<2.0			
Contrast	None			

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