

Place the Site Scanning Data Label here.

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1891 Preston White Drive, Reston VA 20191-4397

Computed Tomography (CT) Accreditation Program
CT PHANTOM SITE SCANNING DATA FORM

Please complete one copy of this data form for each CT Scanner being evaluated. Photocopy this blank form for additional scanners. Detailed instructions for scanning the CT phantom are attached. All information on this data sheet must be accurately specified. Please print or type. Please place your Phantom Data Form Label in the space above. Return completed form with phantom images.

1. CT Manufacturer: *check one*

- ELSC Elscint IMAT Imatron PICO Picker SHIM Shimadzu TOSE Toshiba
 GEMS General Electric PHMS Philips MARC Marconi SIEC Siemens OTHR Other _____

2. Model Name: _____

3. Site's Scanner ID Code: _____

4. Geometry: *choose one* []¹ Rotate/Rotate (3rd generation) []² Rotate/Stationary (4th generation)
[]³ Other: _____

5. Spiral/Helical Capability: []¹ No []² Yes

6. Multi-Slice Capability: []¹ No []² Yes

7. *Maximum* number of axial images able to be acquired simultaneously in one rotation (Nmax) : _____
(*Maximum* number of data channels along the z-axis)

8. Minimum Time for one Tube Rotation: _____ sec

9. Slice Thicknesses (in mm): *choose all that are available*

- ¹ 0.5 ⁵ 1.5 ⁹ 3.75 ¹³ 7.0 ¹⁷ 10
 ² 0.625 ⁶ 2.0 ¹⁰ 4.0 ¹⁴ 7.5 ⁹⁹ Other: _____
 ³ 1.0 ⁷ 2.5 ¹¹ 5.0 ¹⁵ 8.0 _____
 ⁴ 1.25 ⁸ 3.0 ¹² 6.0 ¹⁶ 9.0

10. Available beam energies in kVp:

- ¹ 80 kVp ² 90 kVp ³ 100 kVp ⁴ 110 kVp ⁵ 120 kVp
 ⁶ 130 kVp ⁷ 140 kVp ⁹⁹ Other _____

11. Type of Detectors: *choose one* []¹ Solid state []² Xenon gas

12. Types of Dose Reduction Options Available: _____

13. Serial number of ACR CT Accreditation phantom used for data collection: _____

Routine Examination Definitions

Adult Head: Head CT (such as for headaches or to exclude neoplasm, brain CT).

For the purpose of scanning the phantom, use the technique for scanning the cerebrum as the "Adult Head" CT exam.

High Resolution Chest: High Resolution CT (HRCT) of chest for evaluation of diffuse lung disease.

Adult Abdomen: Abdomen CT (such as for detection of possible liver metastases or lymphoma).

Pediatric Abdomen: Pediatric abdomen CT (such as for blunt trauma, acute abdominal pain, or infection). Assume a 5-year-old, patient.

Using Table 1, report the typical examination parameters used by your site on this scanner for each of the above CT examinations.

If your scanner does not perform all of these examinations, use the appropriate default protocol given by the manufacturer.

It is the joint responsibility of the supervising radiologist, lead technologist, and physicist to ensure that the values in Table 1 accurately reflect the site's routine clinical protocols and match the respective clinical images submitted for accreditation.

Table 1: Typical Image Acquisition Technical Parameters

	Adult Head (cerebrum portion)	High Resolution Chest	Adult Abdomen	Pediatric Abdomen (5 y.o.)
kVp				
mA				
Time per rotation (s)				
Scan FOV (cm or name)				
Display FOV (cm)				
Reconstruction Algorithm				
Axial (A) or Helical (H)				
Z-axis collimation (T, in mm) ¹				
# data channels <i>used</i> ¹ (N)				
A: Table Increment (mm) or H: Table Speed (mm/rot) (I) ¹				
Pitch ²				
Reconstructed Scan Width (mm)				
Reconstructed Scan Interval (mm)				
Dose Reduction Technique(s) ³				

¹ See definitions on page 3 of the Phantom Testing Instructions.

² Applies to helical scanning. Compute pitch according to the IEC definition: **Table Speed (mm/rotation) / N • T (mm) = I / N • T.**
For some scanners, this computed value may differ from the value given by the manufacturer.

³ If selectable, list selection, otherwise leave blank. Example: mA modulation based on patient attenuation.

Please refer to the corresponding section in the *Phantom Testing Instructions Manual* to complete the tables below.

Section 4 – Phantom and Scanner Alignment

High Resolution Chest technique

Parameter	Measured	Film Page: Box
<i>Internal or External</i> used (circle one)		
Module 1 BB alignment (axial image)	Pass or Fail	1:2
Module 4 BB alignment (axial image)	Pass or Fail	1:3

Section 5 – Module 1: CT Number Calibration and Slice Thickness

Adult Abdomen technique

Parameter	Measured			Film Page: Box
Location of center of Module 1	_____mm			
CT number calibration and scan width accuracy for adult abdomen slice width				
Polyethylene	Mean CT # = _____HU	Top	Bottom	1:4
Water	Mean CT # = _____HU	_____mm	_____mm	
Acrylic	Mean CT # = _____HU			
Bone	Mean CT # = _____HU			
Air	Mean CT # = _____HU			
Dependency of CT Number of water on scan width and kVp, and scan width accuracy				
	CT number of water	Top	Bottom	
Hi Res Chest = _____mm	Mean CT # = _____HU	_____mm	_____mm	1:5
≈ 3 mm = _____mm	Mean CT # = _____HU	_____mm	_____mm	1:6
≈ 5 mm = _____mm	Mean CT # = _____HU	_____mm	_____mm	1:7
≈ 7 mm = _____mm	Mean CT # = _____HU	_____mm	_____mm	1:8
kVp	CT number of water			
_____ kVp	Mean CT # = _____HU			1:9
_____ kVp	Mean CT # = _____HU			1:10
_____ kVp	Mean CT # = _____HU			1:11
_____ kVp	Mean CT # = _____HU			1:12

Section 6 – Module 2: Low Contrast Resolution

Parameter	Measured (or calculated)	Film Page: Box
Adult Abdomen Technique		2:2
Diameter of smallest cylinders for which all 4 cylinders can be visualized	_____mm	
Mean CT # over 25-mm-diameter cylinder (a)	_____HU	
Mean CT # next to 25-mm-diameter cylinder (b)	_____HU	
Measured contrast (a – b)	_____HU	
Adult Head Technique		2:3
Diameter of smallest cylinders for which all 4 cylinders can be visualized	_____mm	
Mean CT # over 25-mm-diameter cylinder (c)	_____HU	
Mean CT # next to 25-mm-diameter cylinder (d)	_____HU	
Measured contrast (c – d)	_____HU	

Section 7 – Module 3: Uniformity and Noise

Parameter	Measured	Calculated	Film Page: Box
Adult Abdomen Technique			2:4
Center std. deviation	Standard deviation = _____HU		
Center mean	Mean CT # = _____HU		
3 o'clock mean	Mean CT # = _____HU	Center – 3:00 = ____HU	
6 o'clock mean	Mean CT # = _____HU	Center – 6:00 = ____HU	
9 o'clock mean	Mean CT # = _____HU	Center – 9:00 = ____HU	
12 o'clock mean	Mean CT # = _____HU	Center – 12:00 = ____HU	
Artifacts	Ring Y/N Streak Y/N	Other _____	

Section 8 – Module 4: High Contrast (Spatial) Resolution

Highest spatial frequency for which bars and spaces can be resolved		Film Page: Box
Adult Abdomen Technique	_____lp/cm	2:5
High Resolution Chest Technique	_____lp/cm	2:6

Radiation Dosimetry

For the radiation dosimetry portion of your phantom submission, please use the Dose Calculator spreadsheet found on the ACR website at: http://www.acr.org/accreditation/computed/qc_forms.aspx.

Please refer to the definitions on page 3 of the Phantom Testing Instructions.

See instruction manual for specific definitions and calculation methods. Calculations must be made with the Dose Calculator spreadsheet. The completed spreadsheet page must be submitted for all dosimetry calculations.

Physicists should record the model, serial number, and calibration date of the ionization chamber and electrometer in their own records.