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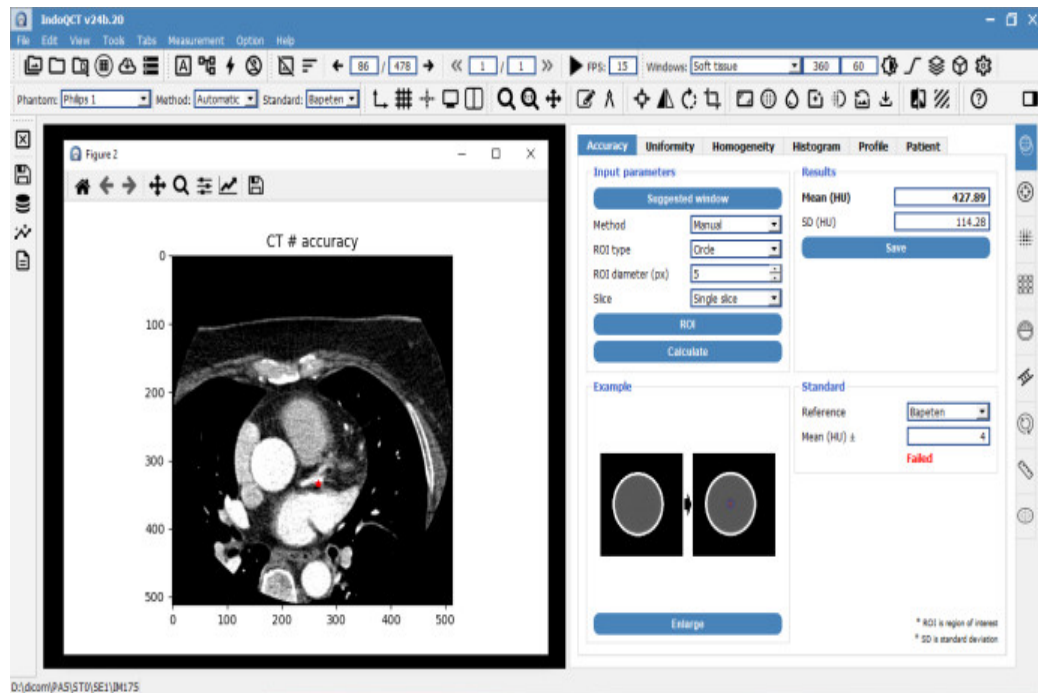
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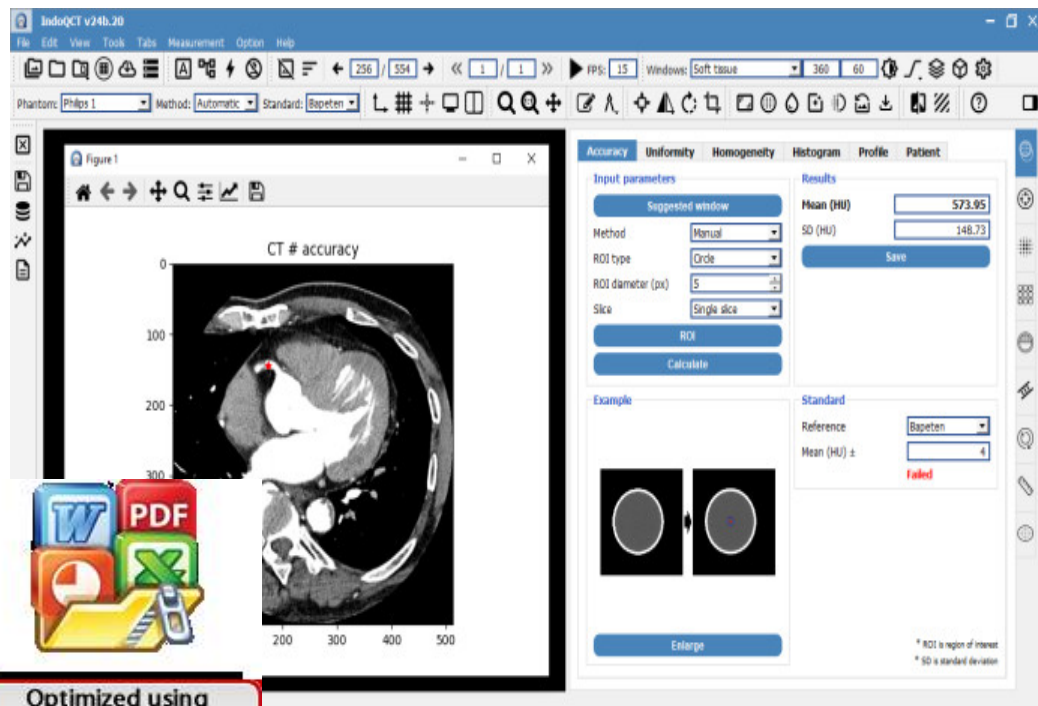
LAMPIRAN

Lampiran 1 Pengukuran *Mean* dan Standar Deviasi CT Number

a. Pasien 1



b. Pasien 2



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c. Pasien 3

IndroCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 7: CT # accuracy

Accuracy Uniformity Homogeneity Histogram Profile Patient

Input parameters

- Suggested window
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

ROI Calculate

Results

- Mean (HU): 819.78
- SD (HU): 220.92

Save

Example

Standard

- Reference: Bapeten
- Mean (HU) ± 4

Failed

Enlarge

* ROI is region of interest
* SD is standard deviation

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d. Pasien 4

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Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 19: CT # accuracy

Accuracy Uniformity Homogeneity Histogram Profile Patient

Input parameters

- Suggested window
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

ROI Calculate

Results

- Mean (HU): 829.00
- SD (HU): 210.31

Save

Example

Standard

- Reference: Bapeten
- Mean (HU) ± 4

Failed

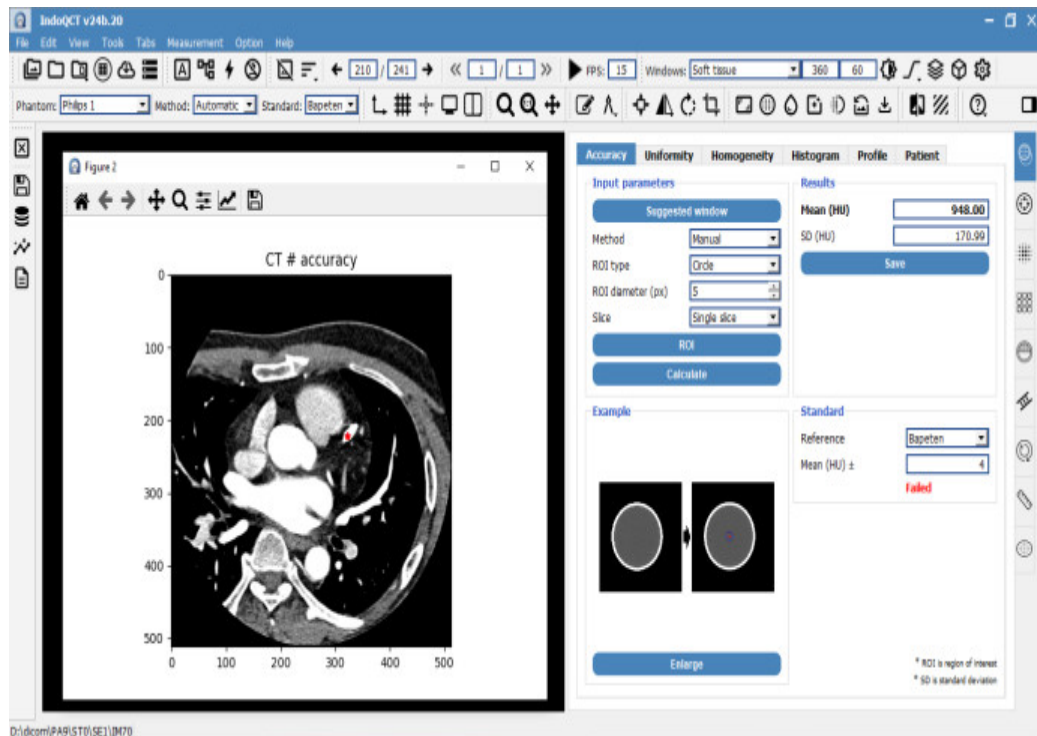
Enlarge

* ROI is region of interest
* SD is standard deviation



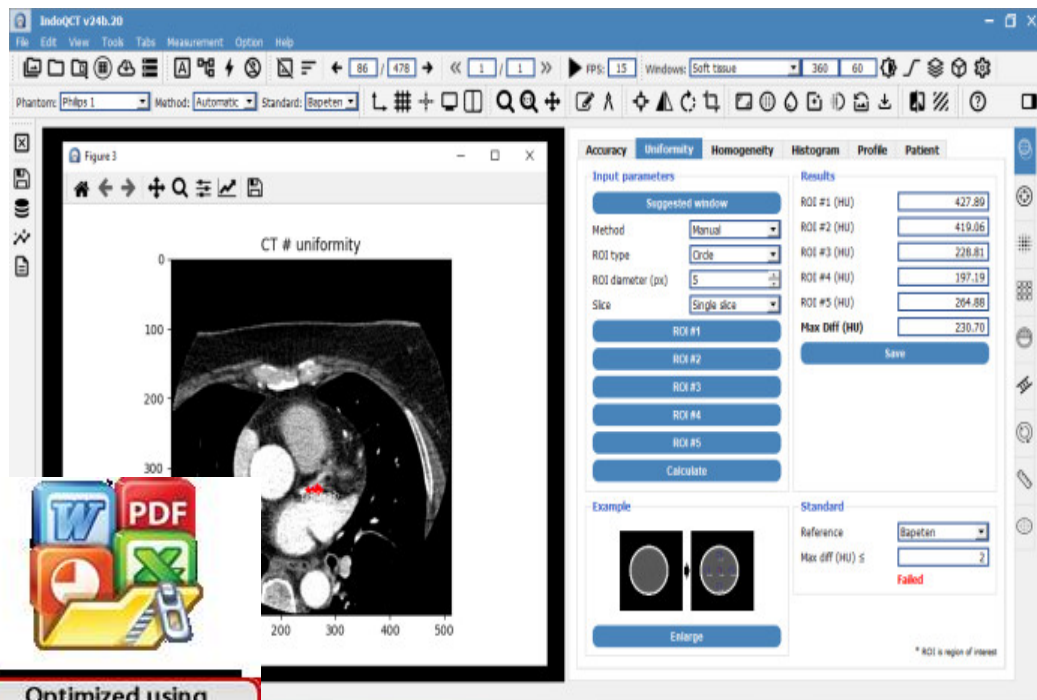
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e. Pasien 5



Lampiran 2 Pengukuran Uniformity CT Number

a. Pasien 1



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b. Pasien 2

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Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 2: CT # uniformity

Input parameters	Results
Suggested window	ROI #1 (HU) 574.75
Method: Manual	ROI #2 (HU) 352.37
ROI type: Circle	ROI #3 (HU) 332.79
ROI diameter (px): 5	ROI #4 (HU) 312.37
Slice: Single slice	ROI #5 (HU) 366.37
	Max Diff (HU) 262.38

Standard Reference: Bapeten Max diff (HU) ≤ 2 **Failed**

c. Pasien 3

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 3: CT # uniformity

Input parameters	Results
Suggested window	ROI #1 (HU) 819.78
Method: Manual	ROI #2 (HU) 338.32
ROI type: Circle	ROI #3 (HU) 382.26
ROI diameter (px): 5	ROI #4 (HU) 336.33
Slice: Single slice	ROI #5 (HU) 392.00
	Max Diff (HU) 483.25

Standard Reference: Bapeten Max diff (HU) ≤ 2 **Failed**



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d. Pasien 4

IndocT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 23: CT # uniformity

Input parameters	Results
Suggested window	ROI #1 (HU) 829.00
Method: Manual	ROI #2 (HU) 611.31
ROI type: Circle	ROI #3 (HU) 493.88
ROI diameter (px): 5	ROI #4 (HU) 765.69
Slice: Single slice	ROI #5 (HU) 846.94
	Max Diff (HU) 335.12

Standard Reference: Bapeten Max diff (HU) ≤ 2 Failed

* ROI is region of interest
1 of 24 - Clipboard
Item not Collected: Delete items to increase available space

e. Pasien 5

IndocT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 3: CT # uniformity

Input parameters	Results
Suggested window	ROI #1 (HU) 955.72
Method: Manual	ROI #2 (HU) 782.42
ROI type: Circle	ROI #3 (HU) 927.40
ROI diameter (px): 5	ROI #4 (HU) 901.35
Slice: Single slice	ROI #5 (HU) 972.90
	Max Diff (HU) 173.30

Standard Reference: Bapeten Max diff (HU) ≤ 2 Failed

* ROI is region of interest



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Lampiran 3 Pengukuran Level Noise

a. Pasien 1



b. Pasien 2



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c. Pasien 3

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Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 9: Noise calculation

Input parameters:

- Suggested window: [Button]
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

Results:

Noise:	Measure:	Estimate:
220.92	120	120
45.76	114.40	300
	0.90	8

Standard: Reference: Bapeten, Measured noise (HU) ≤ None

d. Pasien 4

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 24: Noise calculation

Input parameters:

- Suggested window: [Button]
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

Results:

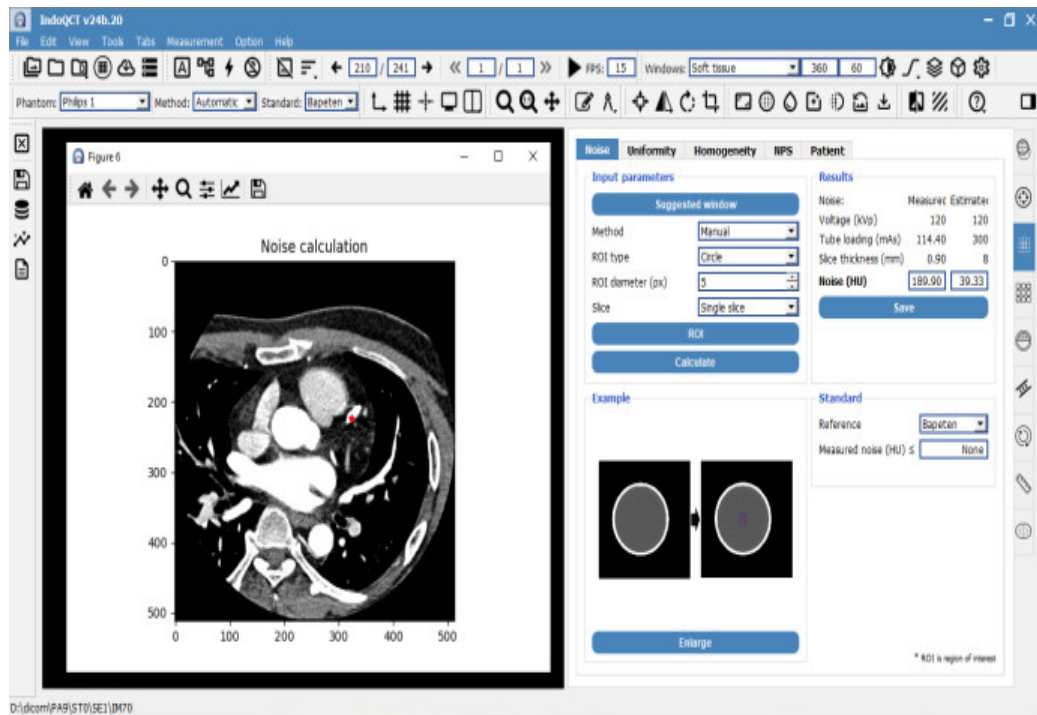
Noise:	Measure:	Estimate:
221.63	120	120
45.90	114.40	300
	0.90	8

Standard: Reference: Bapeten, Measured noise (HU) ≤ None



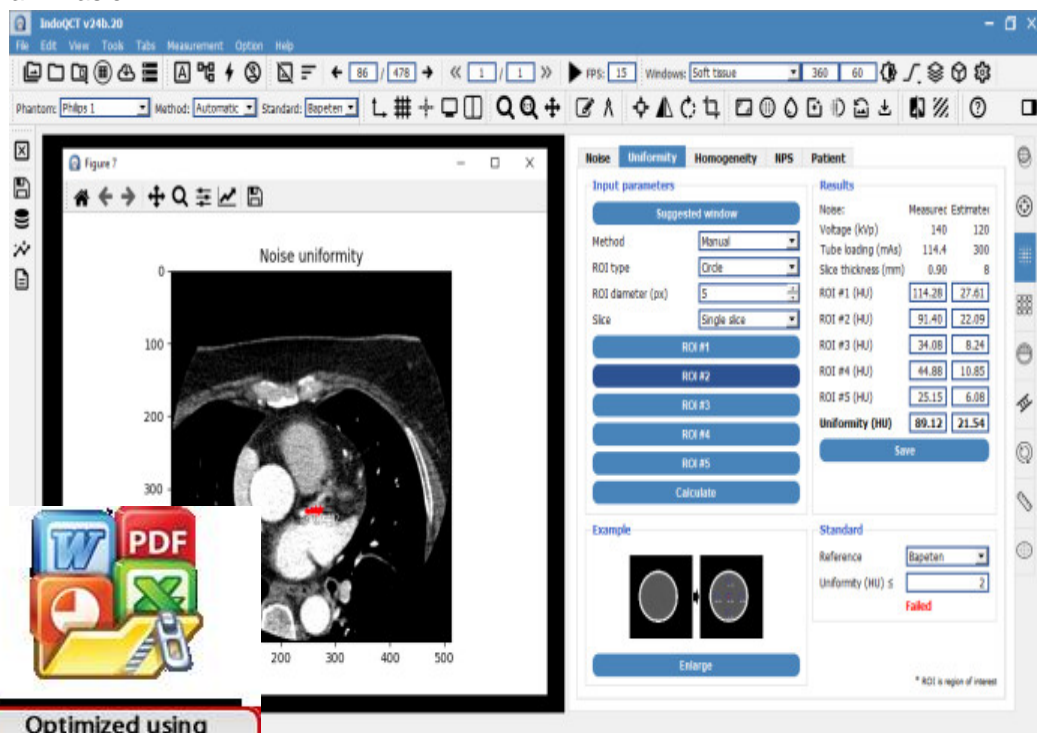
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e. Pasien 5



Lampiran 4 Pengukuran Uniformity Noise

a. Pasien 1



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b. Pasien 2

IndroCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 4: Noise uniformity

Input parameters	Results
Suggested window	Noise: Measure: Estimator
Method: Manual	Voltage (kVp): 120 120
ROI type: Circle	Tube loading (mAs): 114.4 300
ROI diameter (px): 5	Slice thickness (mm): 0.90 8
Slice: Single slice	ROI #1 (HU): 166.28 34.44
ROI #1	ROI #2 (HU): 9.38 1.94
ROI #2	ROI #3 (HU): 29.97 6.21
ROI #3	ROI #4 (HU): 20.37 4.22
ROI #4	ROI #5 (HU): 21.10 4.37
ROI #5	Uniformity (HU): 156.90 32.50
Calculate	Save

Standard: Reference: Bapeten, Uniformity (HU) ≤ 2, Failed

c. Pasien 3

IndroCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 9: Noise calculation

Input parameters	Results
Suggested window	Noise: Measure: Estimator
Method: Manual	Voltage (kVp): 120 120
ROI type: Circle	Tube loading (mAs): 114.40 300
ROI diameter (px): 5	Slice thickness (mm): 0.90 8
Slice: Single slice	Noise (HU): 228.92 45.76
ROI	Save
Calculate	

Standard: Reference: Bapeten, Measured noise (HU) ≤ None



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d. Pasien 4

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 24

Noise calculation

Input parameters

- Suggested window
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

Results

Noise:	Measure:	Estimate:
Voltage (kVp)	120	120
Tube loading (mAs)	114.40	300
Slice thickness (mm)	0.90	8
Noise (HU)	221.63	45.90

Standard: Bapeten
Reference: Bapeten
Measured noise (HU) ≤ None

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e. Pasien 5

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 7

Noise uniformity

Input parameters

- Suggested window
- Method: Manual
- ROI type: Circle
- ROI diameter (px): 5
- Slice: Single slice

Results

Noise:	Measure:	Estimate:
Voltage (kVp)	120	120
Tube loading (mAs)	114.4	300
Slice thickness (mm)	0.90	8
ROI #1 (HU)	109.90	39.33
ROI #2 (HU)	378.58	78.41
ROI #3 (HU)	449.31	93.06
ROI #4 (HU)	126.39	26.18
ROI #5 (HU)	206.14	42.70
Uniformity (HU)	322.92	66.88

Standard: Bapeten
Reference: Bapeten
Uniformity (HU) ≤ 2
Failed



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Lampiran 5 Nilai CT Number (HU) dan Noise (HU) objek plak koroner untuk penentuan nilai SNR

a. Pasien 1



b. Pasien 2



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c. Pasien 3

IndoQCT v24b.20

Phantom: Philips Method: Automatic Standard: Bapeten

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	810.45	120.00
Noise (HU)	207.23	25.85
SNR	3.91	4.64
Contrast (HU)	690.45	
Noise (HU)	147.67	
CNR	4.68	

Save

Example

Type 1

Window Liver

Enlarge

Standard

Reference: Bapeten

CNR 2: 1

Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio

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d. Pasien 4

IndoQCT v24b.20

Phantom: Philips Method: Automatic Standard: Bapeten

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	668.55	121.82
Noise (HU)	226.53	17.18
SNR	2.95	7.09
Contrast (HU)	546.73	
Noise (HU)	160.64	
CNR	3.40	

Save

Example

Type 1

Window Liver

Enlarge

Standard

Reference: Bapeten

CNR 2: 1

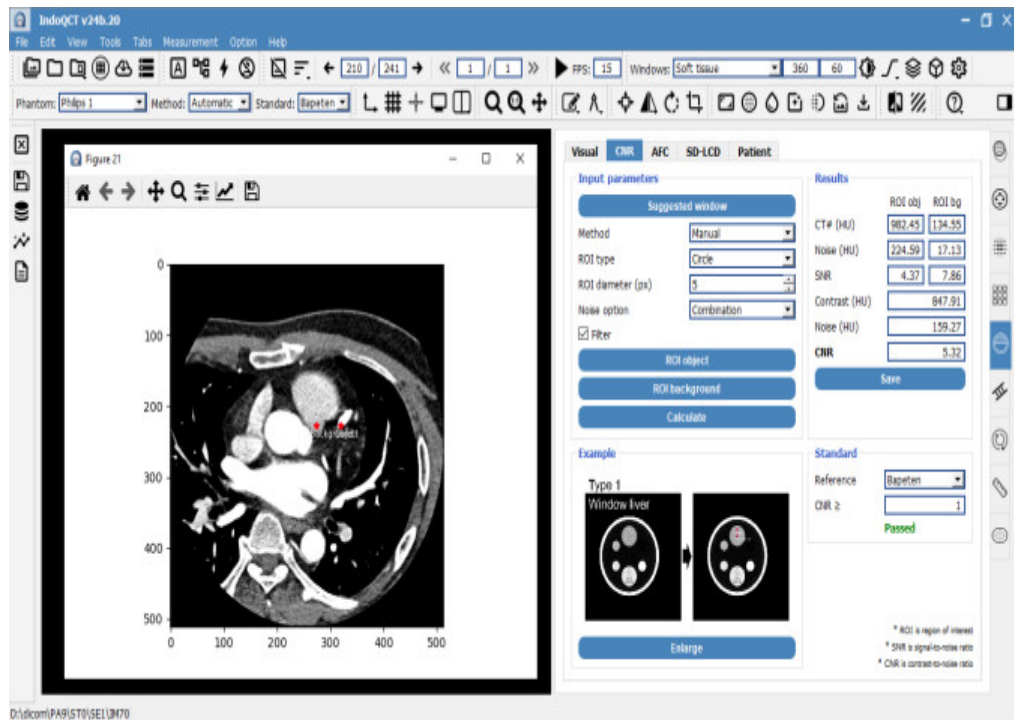
Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio



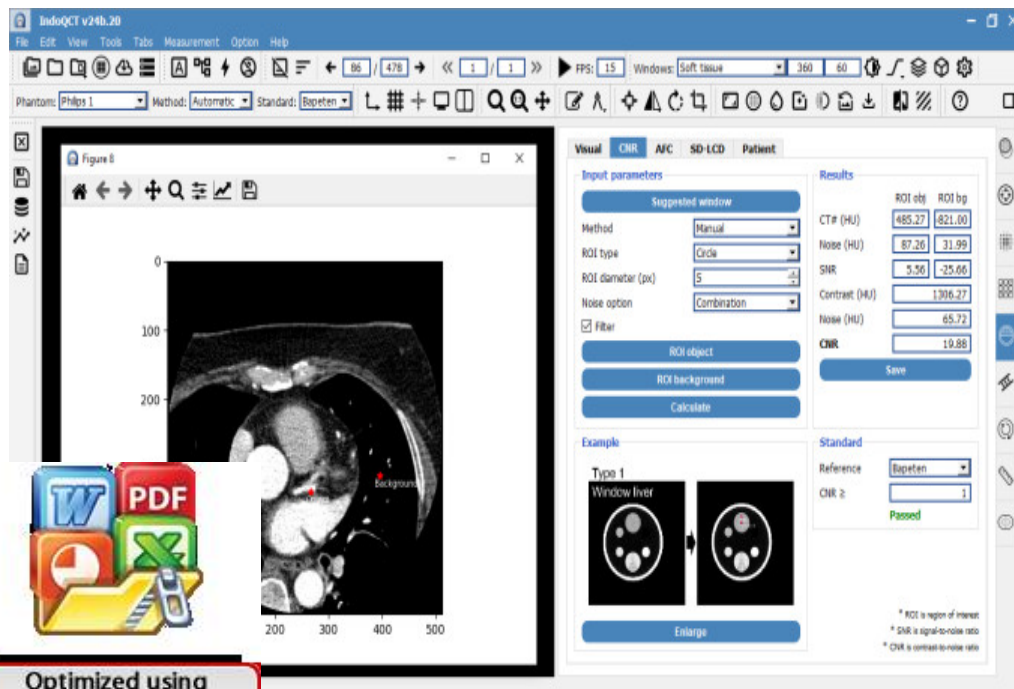
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e. Pasien 5



Lampiran 6 Nilai CT Number (HU) dan Noise (HU) objek plak koroner untuk penentuan nilai CNR

a. Pasien 1



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b. Pasien 2

IndroCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 5

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	605.55	783.27
Noise (HU)	137.71	47.29
SNR	4.40	-16.56
Contrast (HU)	1388.82	
Noise (HU)	102.96	
CNR	13.49	

Save

Example

Type 1 Window Liver

Enlarge

Standard

Reference: Bapeten

CNR z: 1

Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio

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c. Pasien 3

IndroCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Figure 12

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	810.45	753.58
Noise (HU)	207.23	63.03
SNR	3.91	-11.96
Contrast (HU)	1564.04	
Noise (HU)	153.16	
CNR	10.21	

Save

Example

Type 1 Window Liver

Enlarge

Standard

Reference: Bapeten

CNR z: 1

Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio



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d. Pasien 4

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	793.60	784.42
Noise (HU)	187.92	72.10
SNR	4.22	-10.88
Contrast (HU)		1578.02
Noise (HU)		142.33
CNR		11.09

Save

Example

Type 1

Window Liver

Enlarge

Standard

Reference: Bapeten

CNR 2: 1

Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio

e. Pasien 5

IndoQCT v24b.20

Phantom: Philips 1 Method: Automatic Standard: Bapeten

Visual **CNR** AFC SD-LCD Patient

Input parameters

Suggested window

Method: Manual

ROI type: Circle

ROI diameter (px): 5

Noise option: Combination

Filter

ROI object

ROI background

Calculate

Results

	ROI obj	ROI bg
CT# (HU)	856.73	630.42
Noise (HU)	138.61	64.45
SNR	6.51	-9.78
Contrast (HU)		1481.14
Noise (HU)		102.99
CNR		14.38

Save

Example

Type 1

Window Liver

Enlarge

Standard

Reference: Bapeten

CNR 2: 1

Passed

* ROI is region of interest
* SNR is signal-to-noise ratio
* CNR is contrast-to-noise ratio



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Lampiran 7 Analisis perhitungan nilai SNR

$$SNR = \frac{Mean_{object} - Mean_{background}}{\sqrt{\frac{(SD_{object})^2 + (SD_{background})^2}{2}}}$$

1. Pasien 1

$$SNR = \frac{415,91 - 56,82}{\sqrt{\frac{(92,09)^2 + (11,63)^2}{2}}}$$

$$SNR = 5,47$$

2. Pasien 2

$$SNR = \frac{605,55 - 111,09}{\sqrt{\frac{(137,71)^2 + (11,51)^2}{2}}}$$

$$SNR = 5,06$$

3. Pasien 3

$$SNR = \frac{810,45 - 120,0}{\sqrt{\frac{(207,23)^2 + (25,85)^2}{2}}}$$

$$SNR = 4,68$$

4. Pasien 4

$$SNR = \frac{668,55 - 121,82}{\sqrt{\frac{(226,53)^2 + (17,18)^2}{2}}}$$

$$SNR = 3,40$$

5. Pasien 5

$$SNR = \frac{982,45 - 134,55}{\sqrt{\frac{(224,59)^2 + (17,13)^2}{2}}}$$

$$SNR = 5,32$$



Lampiran 8 Analisis perhitungan nilai CNR

$$\text{CNR} = \frac{\text{Mean}_{\text{object}} - \text{Mean}_{\text{background}}}{\text{SD}_{\text{background}}}$$

1. Pasien 1

$$\text{CNR} = \frac{485,27 - (-821,0)}{31,99}$$

$$\text{CNR} = 40,83$$

2. Pasien 2

$$\text{CNR} = \frac{605,55 - (-783,27)}{47,29}$$

$$\text{CNR} = 29,36$$

3. Pasien 3

$$\text{CNR} = \frac{810,45 - (-753,58)}{63,03}$$

$$\text{CNR} = 24,81$$

4. Pasien 4

$$\text{CNR} = \frac{793,6 - (-784,42)}{72,1}$$

$$\text{CNR} = 21,88$$

5. Pasien 5

$$\text{CNR} = \frac{850,73 - (-630,42)}{64,45}$$

$$\text{CNR} = 22,98$$

