

## DAFTAR PUSTAKA

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## LAMPIRAN

### Lampiran 1: Pengisian *phantom* dengan *aquabides*



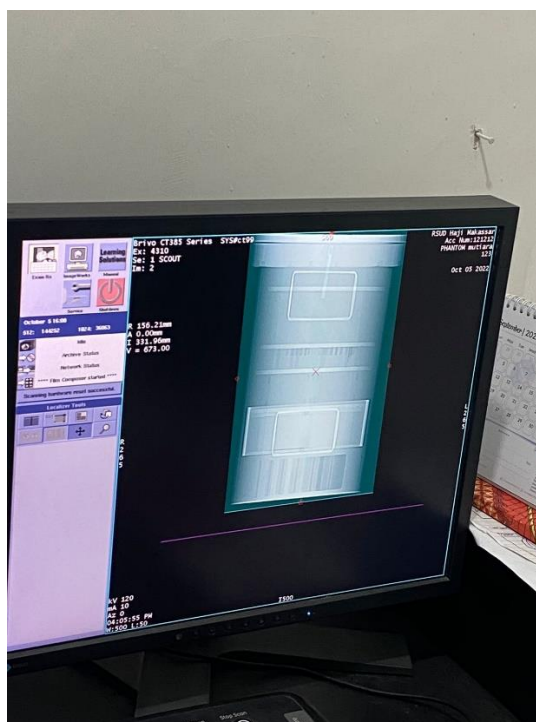
### Lampiran 2: Penempatan *phantom* pada *head holder* dengan panduan sinar laser



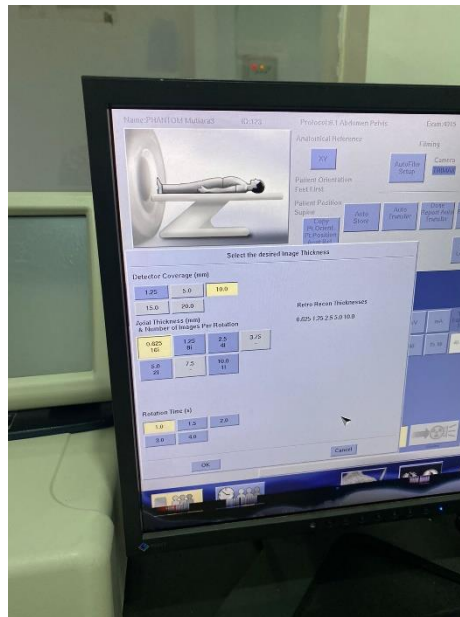
**Lampiran 3: Tes *phantom* dan kalibrasi pesawat CT Scan**



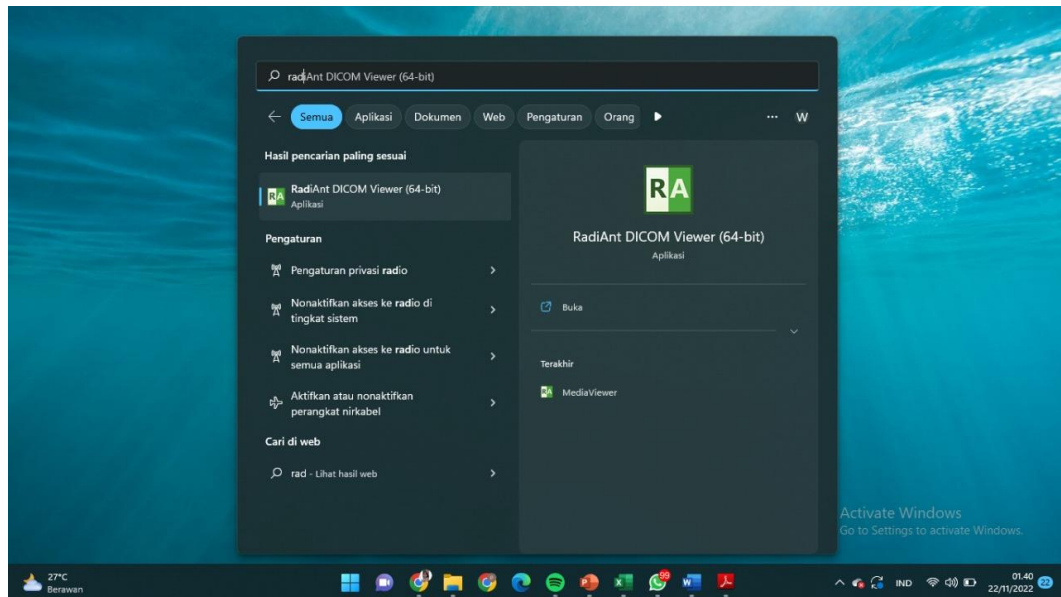
**Lampiran 4: Pengaturan area scanning pada phantom**



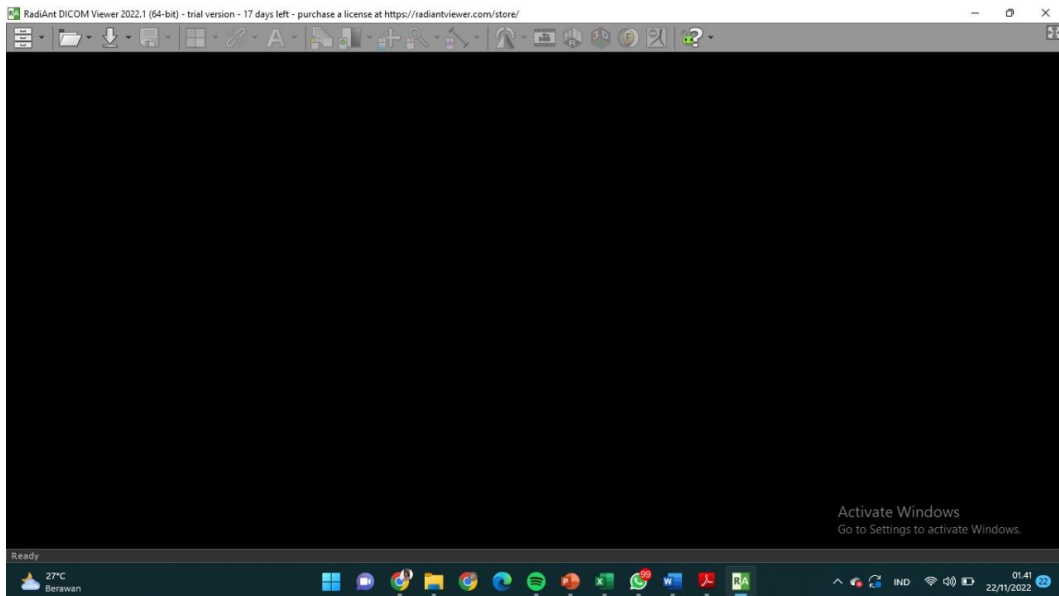
## Lampiran 5: Pengaturan parameter scan



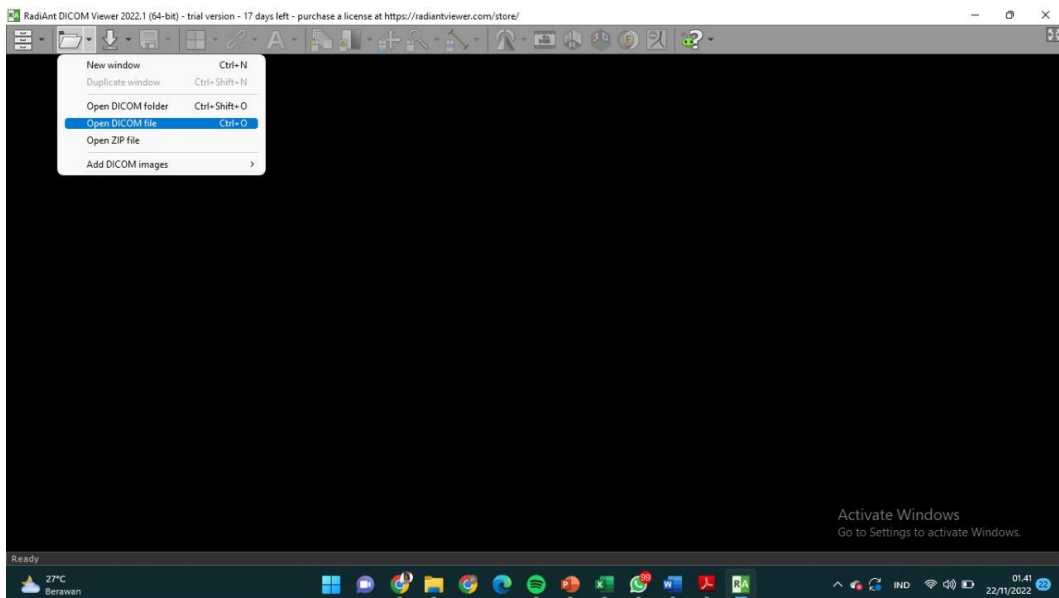
## Lampiran 6: Pengukuran pada software radiant



Gambar 1. Membuka software radiant



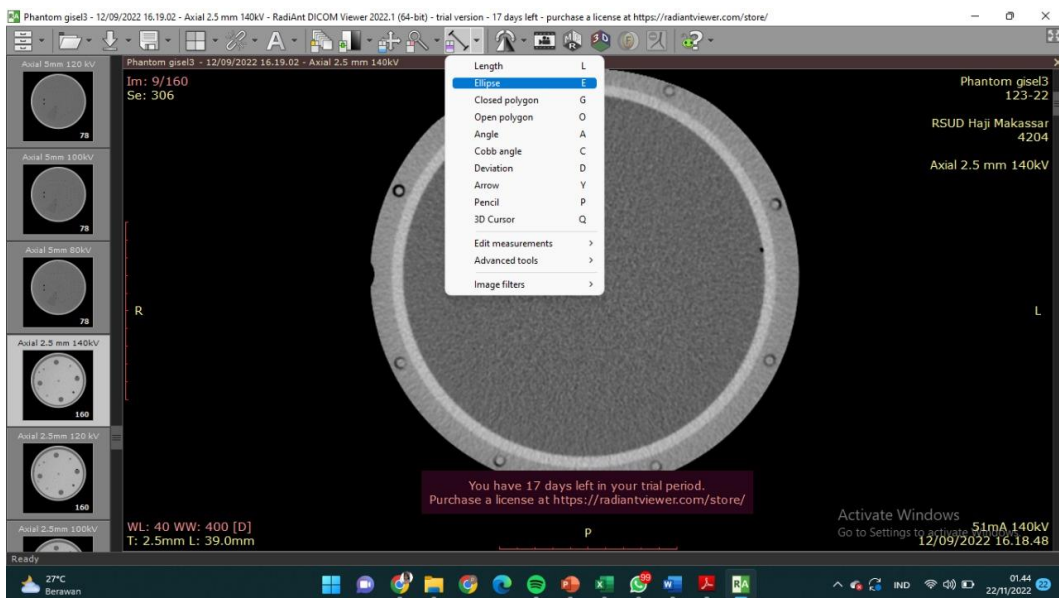
Gambar 2. Tampilan awal ketika membuka radiant



Gambar 3. Memilih open DICOM file

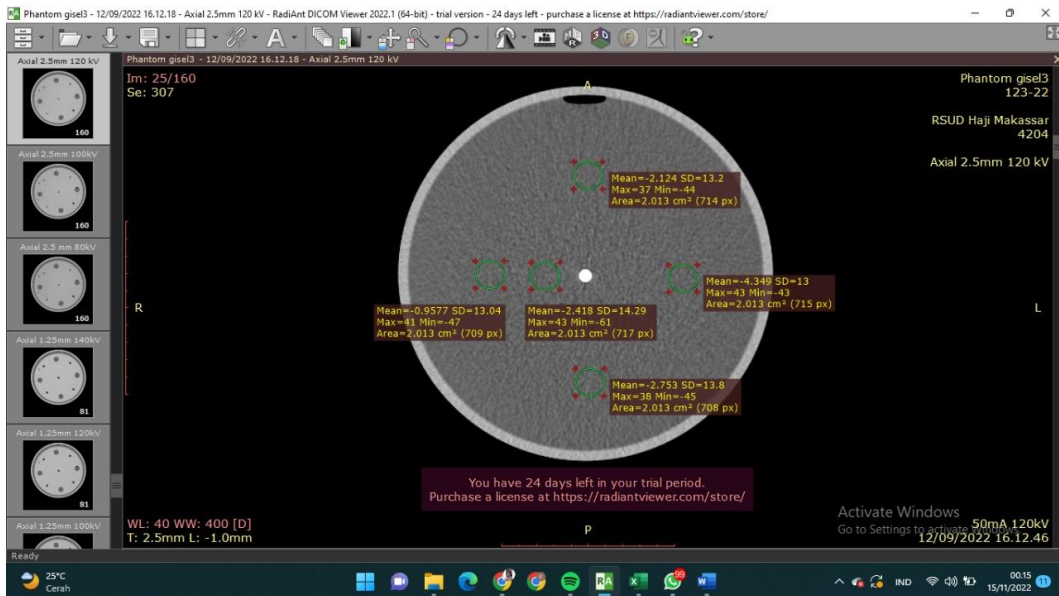


Gambar 4. Tampilan phantom yang sudah di scan



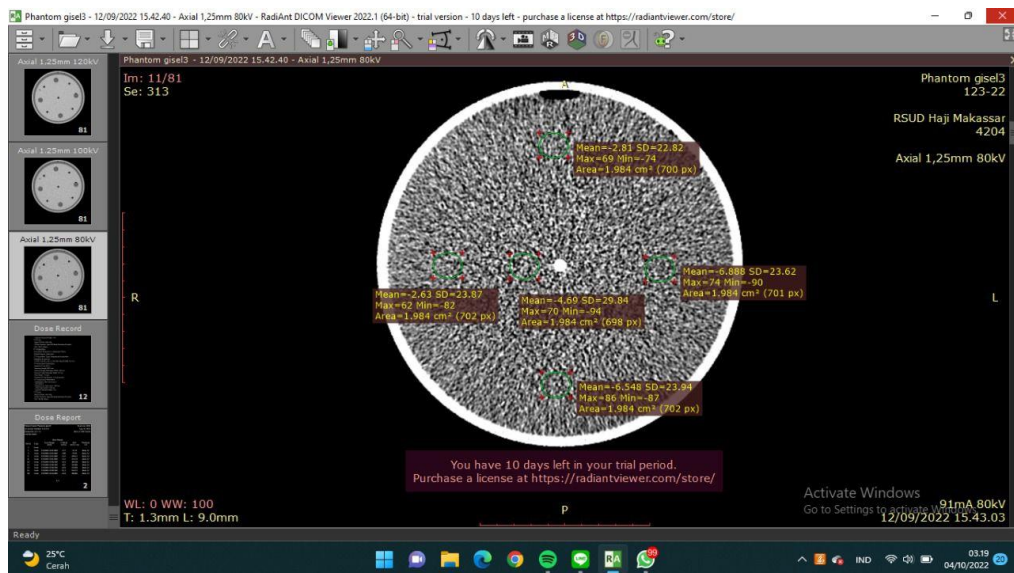
Gambar 5. Untuk mencari noise memilih ellipse



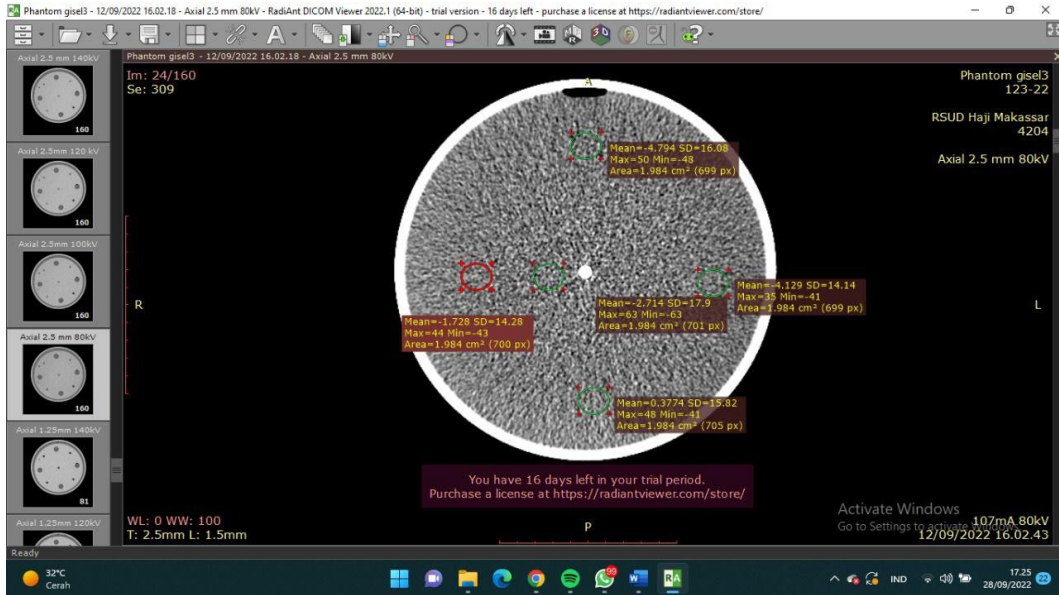


Gambar 6. Membuat ROI disekitar pusat dan tepi

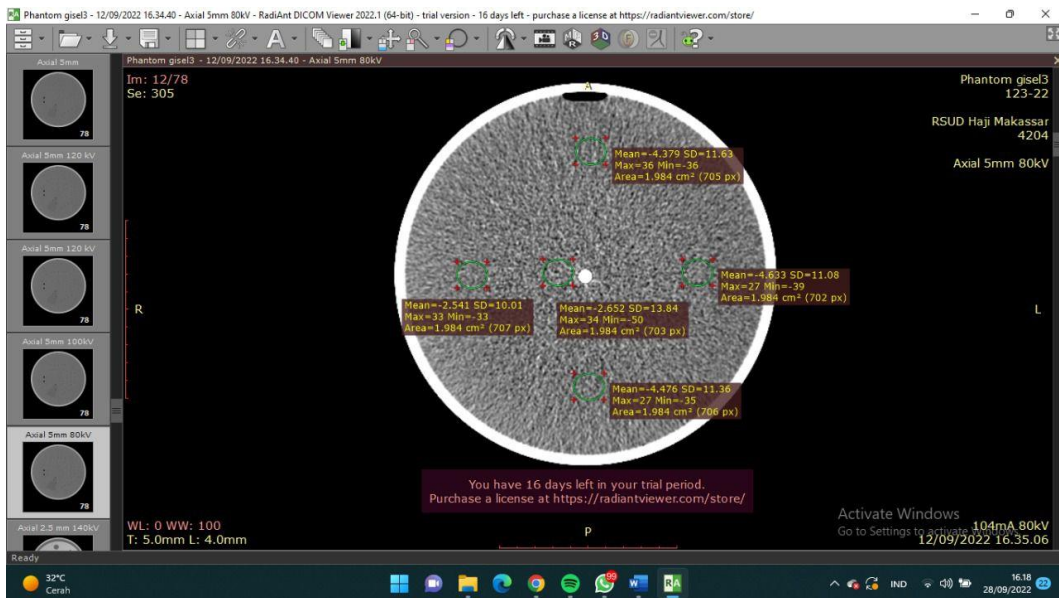
### Lampiran 7: Hasil pengukuran nilai error pengukuran CTN berdasarkan ROI tiap posisi di software radiant



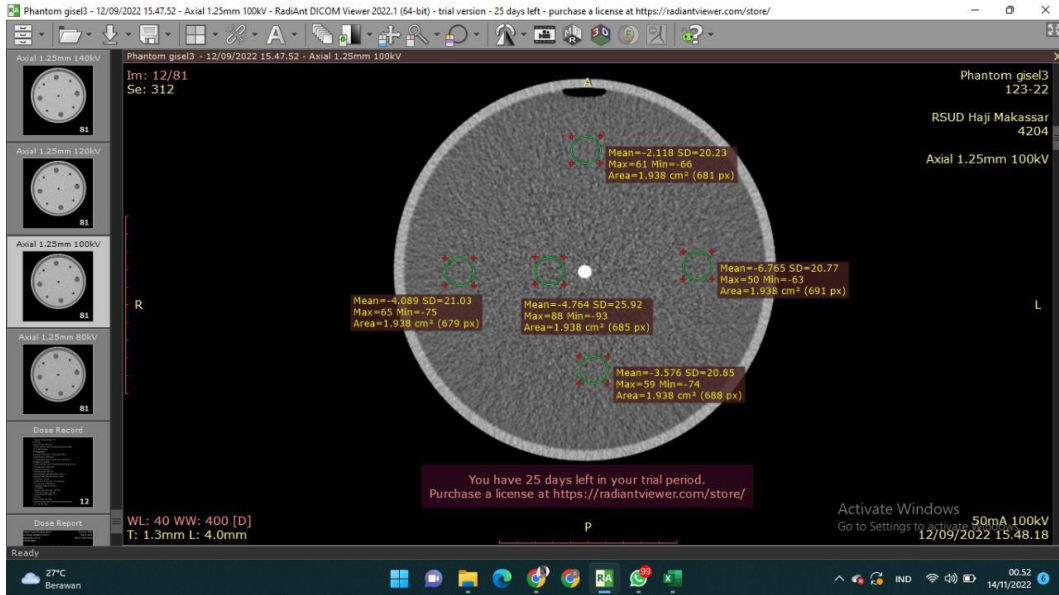
(a)



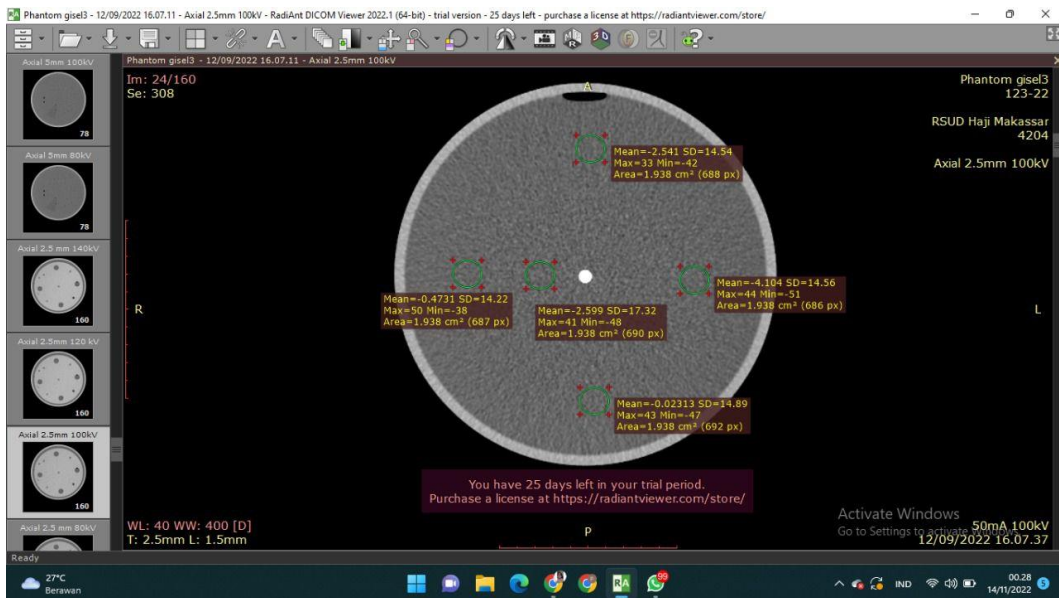
(b)



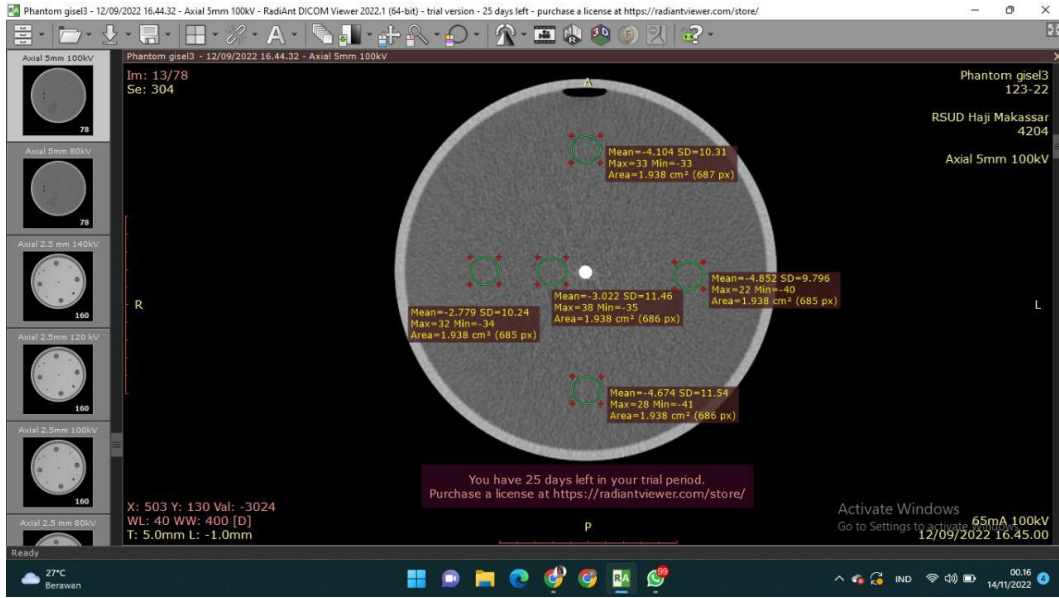
(c)



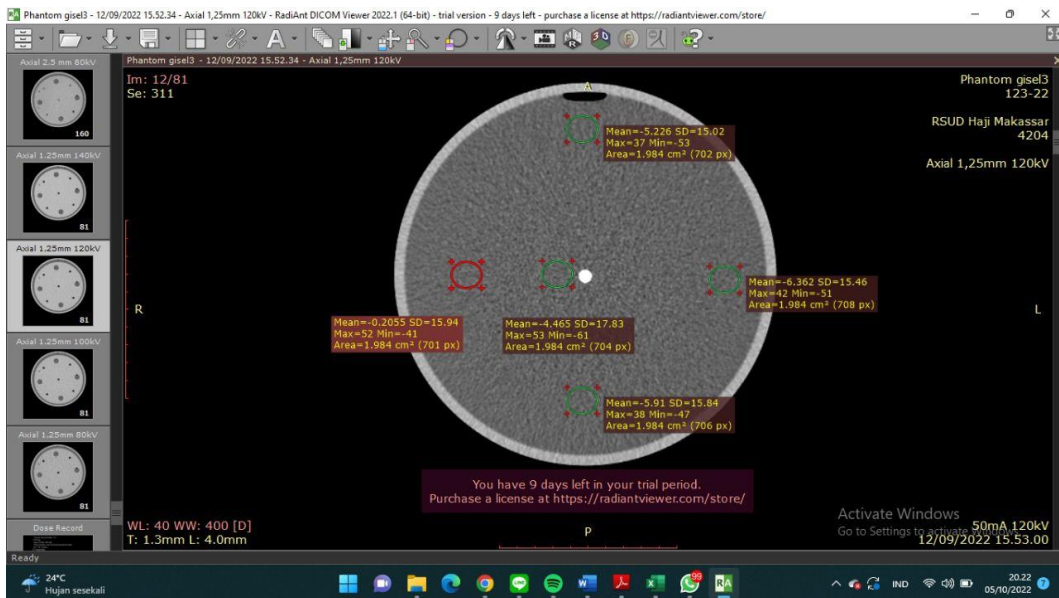
(d)



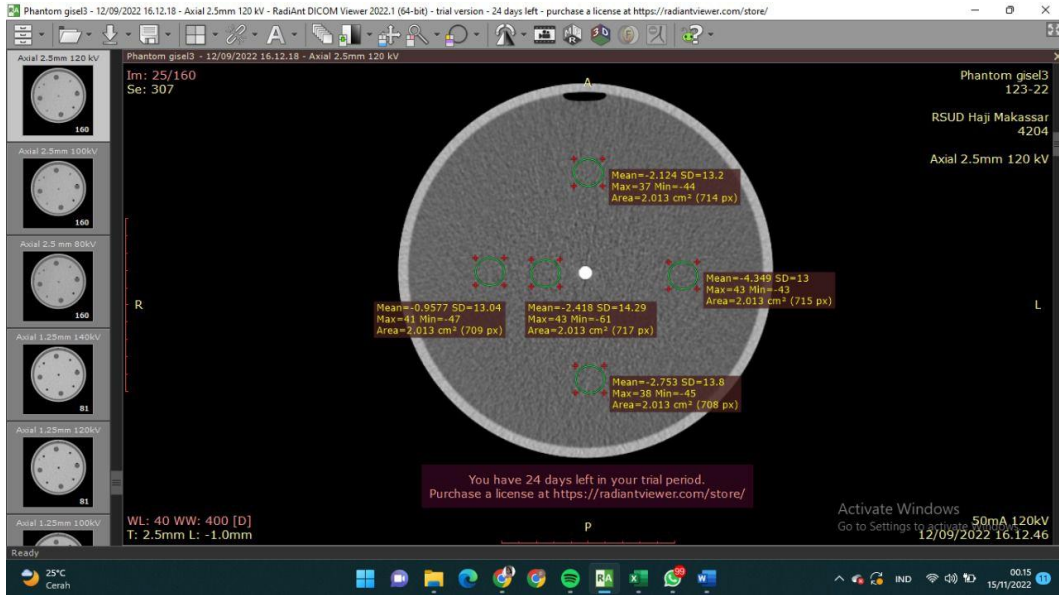
(e)



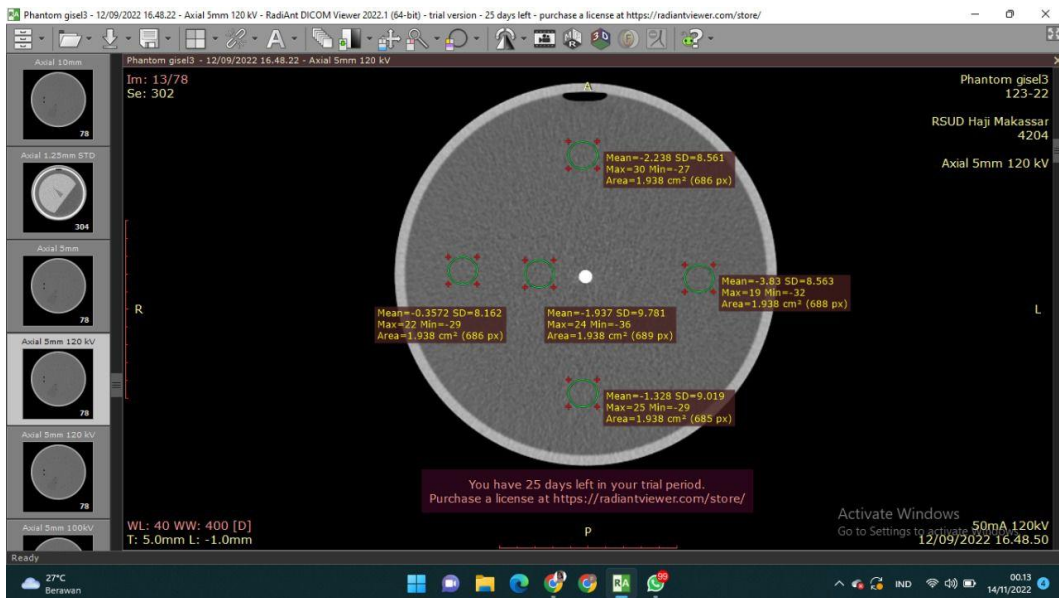
(f)



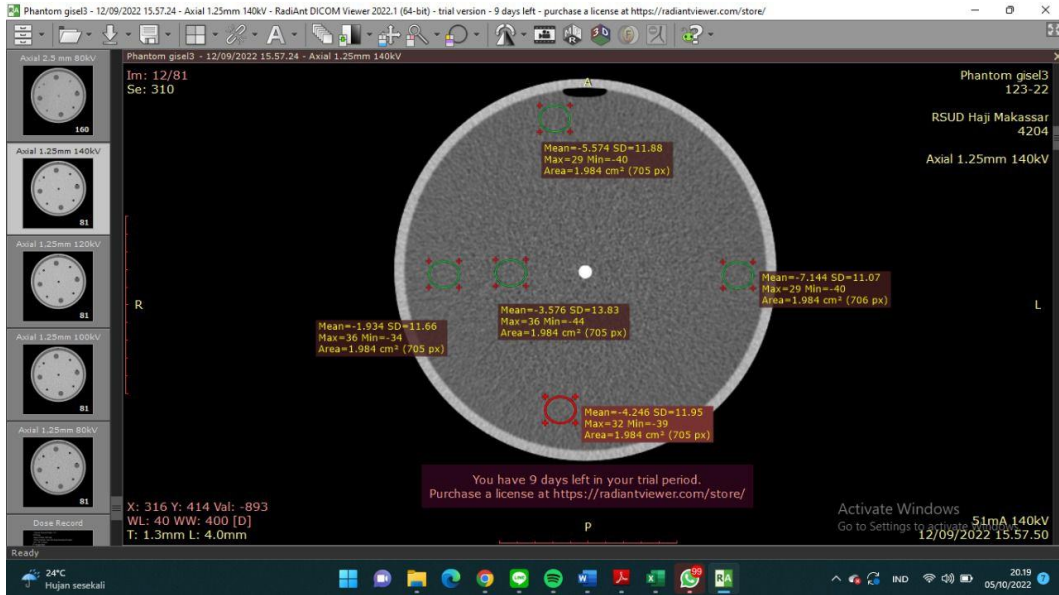
(g)



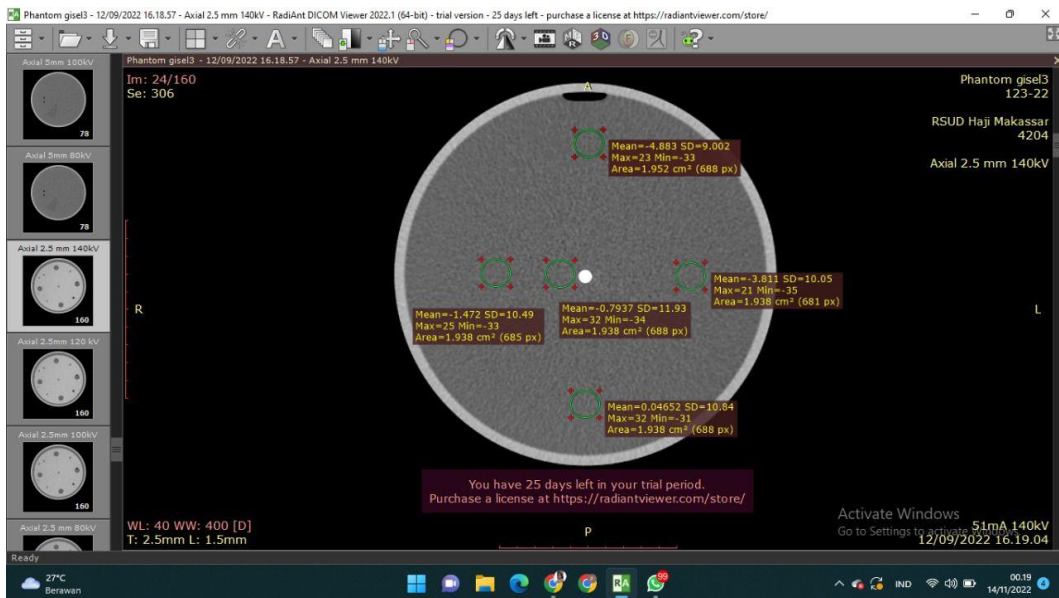
(h)



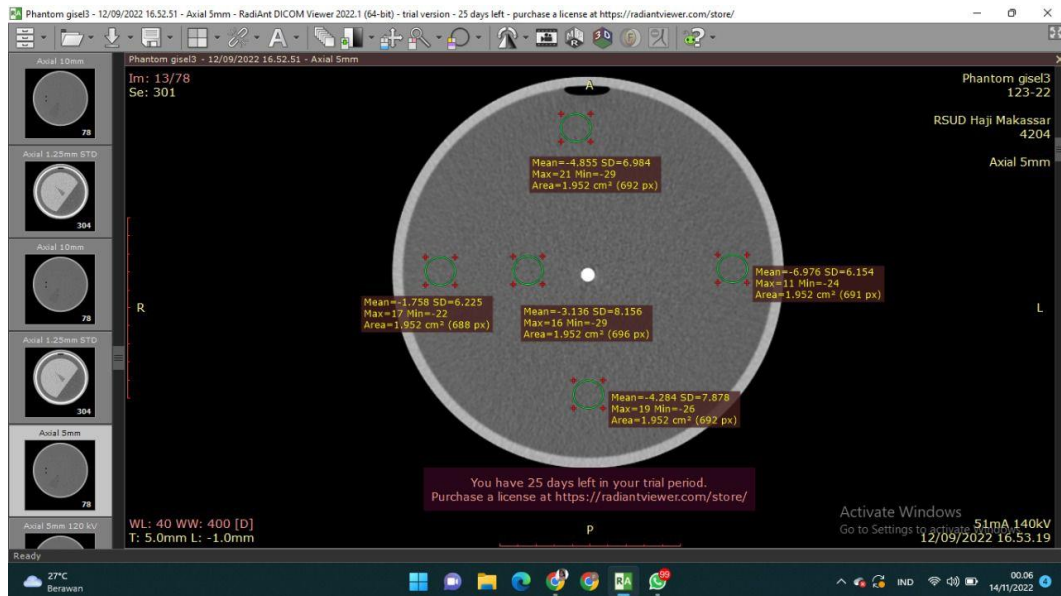
(i)



(j)



(k)



(l)

Nilai error pengukuran CTN (a) tegangan 80 kV tebal slice 1,25 mm, (b) tegangan 80 kV tebal slice 2,5 mm, (c) tegangan 80 kV tebal slice 5 mm, (d) tegangan 100 kV tebal slice 1,25 mm, (e) tegangan 100 kV tebal slice 2,5 mm, (f) tegangan 100 kV tebal slice 5 mm, (g) tegangan 120 kV tebal slice 1,25 mm, (h) tegangan 120 kV tebal slice 2,5 mm, (i) tegangan 120 kV tebal slice 5 mm, (j) tegangan 140 kV tebal slice 1,25 mm, (k) tegangan 140 kV tebal slice 2,5 mm, (l) tegangan 140 kV tebal slice 5 mm.

**Lampiran 8 : Data hasil pengukuran standar deviasi**

$$\sigma = \sqrt{\sum \frac{(x_i - \bar{x})^2}{n-1}}$$

$$\sigma = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n-1}}$$

$$\sigma = \sqrt{\frac{(22,82 - 24,818)^2 + (23,62 - 24,818)^2 + (23,94 - 24,818)^2 + (23,87 - 24,818)^2 + (29,84 - 24,818)^2}{5 - 1}}$$

$$\sigma = \sqrt{\frac{3,99 + 1,44 + 0,77 + 0,90 + 25,22}{4}}$$

$$\sigma = \sqrt{\frac{32,32}{4}}$$

$$\sigma = \sqrt{8,079}$$

$$\sigma = 2,84$$

TEGANGAN (kV)	TEBAL IRISAN (mm)	ARUS TABUNG (mAs)	STANDAR DEVIASI
80	1,25	125	2,842
	2,5		1,536
	5		1,403
100	1,25		2,181
	2,5		1,260
	5		0,784
120	1,25		1,279
	2,5		0,988
	5		0,618
140	1,25		1,361
	2,5		1,072
	5		0,523



**Lampiran 9 : Data hasil pengukurann noise level**

$$\text{Noise level (\%)} = \frac{\sigma}{CTN Max} \times 100\%$$

$$\text{Noise level (\%)} = \frac{2,84}{1000} \times 100\%$$

$$\text{Noise level (\%)} = 0,00284 \times 100\%$$

$$\text{Noise level (\%)} = 0,28\%$$

TEGANGAN (kV)	TEBAL IIRISAN (mm)	ARUS TABUNG (mAs)	NOISE LEVEL (%)
80	1,25	125	0,28
	2,5		0,15
	5		0,14
100	1,25		0,22
	2,5		0,13
	5		0,08
120	1,25		0,13
	2,5		0,10
	5		0,06
140	1,25		0,14
	2,5		0,11
	5		0,05

**Lampiran 10 : Data hasil pengukuran keseragaman noise**

$$S_s = S_m \frac{KV_m}{120} \sqrt{\frac{mAs_m \times slice\ width_m}{300 \times 8}}$$

$$S_s = 22,82 \frac{80}{120} \sqrt{\frac{125 \times 1,25}{300 \times 8}}$$

$$S_s = 15,213 \sqrt{\frac{156,265}{2400}}$$

$$S_s = 15,213 \sqrt{0,06511}$$

$$S_s = 15,213 \times 0,255$$

$$S_s = 3,88$$

TEGANGAN	TEBAL IRISAN	POSISI ROI	NOISE	NOISE TERNORMALISIR	KESERAGAMAN NOISE	NILAI LOLOS UJI	KESIMPULAN
80	1,25	Tepi 1	22,82	3,88	0,19	$\leq 2$ CT	Sesuai
		Tepi 2	23,62	4,02			
		Tepi 3	23,94	4,07			
		Tepi 4	23,87	4,06			
	2,5	Tepi 1	16,08	3,87	0,47		
		Tepi 2	14,14	3,40			
		Tepi 3	15,82	3,81			
		Tepi 4	14,28	3,44			
	5	Tepi 1	11,63	3,96	0,55		
		Tepi 2	11,08	3,77			
		Tepi 3	11,36	3,86			
		Tepi 4	10,01	3,41			
100	1,25	Tepi 1	20,96	4,46	0,18	$\leq 2$ CT	Sesuai
		Tepi 2	20,44	4,35			
		Tepi 3	21,31	4,53			
		Tepi 4	21,03	4,47			
	2,5	Tepi 1	14,56	4,38	0,20		
		Tepi 2	14,89	4,48			
		Tepi 3	14,22	4,28			
		Tepi 4	14,54	4,37			
	5	Tepi 1	9,796	4,17	0,74		
		Tepi 2	11,54	4,91			
		Tepi 3	10,24	4,35			
		Tepi 4	10,31	4,38			
120	1,25	Tepi 1	15,02	3,83	0,38	$\leq 2$ CT	Sesuai
		Tepi 2	14,46	3,69			
		Tepi 3	15,84	4,04			
		Tepi 4	15,94	4,07			
	2,5	Tepi 1	13	4,69	0,29		

		Tepi 2	13,8	4,98		≤ 2 CT	Sesuai
		Tepi 3	13,04	4,71			
		Tepi 4	13,2	4,76			
	5	Tepi 1	8,563	4,37			
		Tepi 2	9,019	4,60	0,44		
		Tepi 3	8,162	4,17			
		Tepi 4	8,561	4,37			
140	1,25	Tepi 1	11,88	3,54	0,29	≤ 2 CT	Sesuai
		Tepi 2	12,35	3,68			
		Tepi 3	11,36	3,38			
		Tepi 4	12,2	3,63			
	2,5	Tepi 1	10,05	4,23	0,77		
		Tepi 2	10,84	4,56			
		Tepi 3	10,49	4,42			
		Tepi 4	9,002	3,79			
	5	Tepi 1	6,154	3,66	0,51		
		Tepi 2	6,124	3,65			
		Tepi 3	6,225	3,71			
		Tepi 4	6,985	4,16			