

Table 3. Performance characteristics for the current commercial clinical PET scanners

	CTI ECAT Exact (922)	CTI ECAT HR+	CPS Accel	GE Advance	GE Discovery LS PET/CT	GE Discovery ST PET/CT	C-PET	CPS BGO PET/CT	CPS LSO PET/CT	Philips Allegro/ Gemini PET/CT*
Crystal	BGO	BGO	BGO	BGO	BGO	BGO	NaI:TI	BGO	LSO	GSO
Patient port	56.2 cm	56.2 cm	56.2 cm	58 cm	59 cm	70 cm	62 cm	70 cm	70 cm	56.5 cm
Total no. of blocks	144	288	144	168	168	280	N/A	288	144	28
No. of crystal detectors/block	8x8	8x8	8x8	6x6	6x6	6x6	N/A	8x8	8x8	22x29
Crystal size										
Transaxial	6.39 mm	4.39 mm	6.45 mm	4.0 mm	4.0 mm	6.2 mm	47 cm circum.	4.39 mm	6.45 mm	4 mm
Axial	6.39 mm	4.05 mm	6.45 mm	8.0 mm	8.0 mm	6.2 mm	30 cm	4.05 mm	6.45 mm	6 mm
Radial	20 mm	30.0 mm	25 mm	30.0 mm	30.0 mm	30.0 mm	2.54 cm	30.0 mm	25 mm	20 mm
No. of detector rings	24	32	24	18	18	24	N/A	32	24	
Detector ring diameter (cm)	82.4	82.4	82.4	92.7	92.7	88.0	62.0	82.4	82.4	90
Total no. of detectors	9,216	18,432	9,216	12,096	12,096	10,080	Six curved NaI:TI	18,432	9,216	17,864
Transaxial field of view (cm)	58.5	58.5	58.5	50	55	60	57.6	58.5	58.5	57.6
Axial field of view (cm)	16.2	15.5	16.2	15.2	15.2	15.2	25.6	15.5	16.2	18
Slice thickness (mm)	3.375	2.46	3.375	4.25	4.25	3.23	4.0 (body)	2.43	3.4	2
No. of slices	47	63	47	35	35	47	64	63	47	90
Coincidence timing window (ns)	12	12	6	12	12.5	11.7	8	12	6	8
Coincidence timing resolution (ns)	6	6	3	6	6	6	6	6	3	4
Energy window width (keV)	350–650	350–650	350–650	300–650	300–650	300–650	435–665	350–650	350–650	
Sensitivity 2D trues, NEMA 94 phantom (kcps μCi^{-1} cc $^{-1}$)	180	200	200	217	146	300	N/A	N/A	N/A	N/A
Sensitivity 2D trues + scatter, NEMA 94 phantom (kcps μCi^{-1} cc $^{-1}$)	214	244	238	238	159	348	N/A	N/A	N/A	N/A
Sensitivity 3D trues, NEMA 94 phantom (kcps μCi^{-1} cc $^{-1}$)	780	900	925	1,261	838	1,280	444	1,049	999	>700
Sensitivity 3D trues + scatter, NEMA 94 phantom (kcps μCi^{-1} cc $^{-1}$)	1,218	1,406	1,445	1,941	1,297	1,800	592	1,586	1,514	>1,000
2D axial resolution (mm)							N/A	N/A	N/A	N/A
FWHM at 0 cm	4.5	4.2	4.3	4.2	4.0	5.0				
FWHM at 10 cm	5.9	5.0	6.0	5.5	5.4	6.5				
FWHM at 20 cm	N/A	6.8	N/A	7.4	6.6	N/A				
3D axial resolution (mm)										
FWHM at 0 cm	4.6	3.5	4.7	6.0	6.0	5.0	6.2	4.2	5.8	4.2
FWHM at 10 cm	6.5	5.3	7.1	6.3	6.3	6.5	6.9	5.7	7.1	5.6
FWHM at 20 cm	N/A	7.8	N/A	6.6	6.6	N/A	8.0	N/A	N/A	N/A