COMMODITY DESCRIPTION

관세분류번호 H.S. NO.	등록번호 ITEM NO.	품 명 DESCRIPTION	UNIT	Q'TY
		PET-CT System	System	1

A. Application

1. This system is a whole body & cardiac PET/CT scanner system, with automatic image fusion.
2. This system provide both functional and anatomical information with high image quality with CT based atteuation correction.
3. High-resolution,high-countrate,positronemissiontomography(PET)imagingofmetabolic and physiologic processes.
4. High performance spiral computed tomography (CT) applications.
5. Highest quality metabolic and anatomic image registration and fusion for optimal lesion detection and identification within the body.
6. Highest quality attenuation correction for quantitative PET imaging.
7. Highest quality scatter correction for PET imaging.

B. Feature

1. Whole body positron emission tomography and CT components combined system provide 3D volume measurements of metabolic, physiologic processes and an accurate anatomical location of the lesion for the staging and treatment of cancer.
2. The PET imaging system consists of the multi-detector ring with 3D acquisition and reconstruction.
3. The CT imaging system consists of multi-slice spiral CT clinical applications with highest possible performance.
4. Small footprint minimizes the need for room modifications and simplifies installation.

C. Configurations

1.	PET Subsystem	1 Set
2.	CT Subsystem	1 Set
3.	Patient Table	1 Set
4.	PET/CT Operator Console(Acquisition Console)	1 Set
5.	Multi-modality Review & Analysis Workstation	1 Lot
6.	DICOM3.0 Support	1 Set
7.	General Accessories	1 Lot
8.	Local Accessories	1 Lot

D. Specifications

1. PET Subsystems — 1 Set

1) PET Detector Assembly
- Crystal type : LSO or LBS
- Available 3D image
- Crystal dimensions : 4.2 x 6.3 x 25 mm or 4.0 x 4.0 x 20mm
- Detector ring diameter : 810 mm or more
- Total number of crystal : 13,824 or more
- Number of image planes : 47 or more
- Plane spacing : 3.27mm or less
- Transaxial FOV : 70cm or more
- Axial FOV : 15.7cm or more

2) PET Data Acquisition / Processing
- Acquisition mode : Static, Multi-Static, Dynamic and Gated
- Reconstruction time(3D) with HD mode: 75sec./bed or less
- Attenuation correction by transmission measurement using CT
- Automated Calibration and QC System
- PET Cardiac Gating Acquisition

3) PET Performance Specifications
- Transaxial spatial resolution

>FWHM @1cm : 4.9 mm or less
>FWHM @10cm : 5.5 mm or less

- Axial spatial resolution
>FWHM @1cm : 5.6mm or less
>FWHM @10cm : 6.3mm or less
-Sensitivity:5.3(cps/kBq) or better
- Count rate peak NECR : 100 kcps@30 KBq/ml or equivalent

2. CT Subsystem 1 Set

1) CT Scan Parameters
- Max. scan field of view : 50cm or more
- Max. number of DAS : 64
- Maximum number of slices per gantry rotation : 128 slices or more
- Min. slice thickness : 0.625mm or less
- Min. scan speed : 0.4sec or less
- Freely selectable pitch : SureView or equivalent
- Extended FOV for attenuation correction or equivalent : 70cm or more

2) CT Physical Assembly
- Detector elements : 23,552 or more
- Gantry aperture(Bore Size) : 70cm or more
- Max kVp range : 140 kVp or more
- Max mA range : 600 mA or more
- X-ray tube : Straton or Performix 40 or Solid state-GOS
- Anode heat storage capacity : 6.3 MHU or more
-Tube focal spot : 0.9x0.7/1.2x1.1mm or 0.7x0.7mm/0.9x1.1mm

3) CT User Software Package
- Topogram or equivalent
- Automatic table moving, storage etc.
- Statistical evaluation and MPR
- **Cine display**
- Image annotation and labeling
- Automatic image reformatting and storage, filming
- Reduction of volume artifact
- **X-ray beam tracking to minimize patient dose**
- X-ray beam filteration independently for body & head

3. Patient Table 1 Set

1) Single patient table, horizontal/vertical bed movement
2) Table load capacity : Max. 195kg or more
3) Horizontal scan range : 180cm or more

4. PET/CT Operator Console 1 Set

The PET/CT operator console consists of a high-performance CPU based computer with for acquiring patient data.
IncludestheACPlus-ExtendedFieldofView-optionwhichallowsvisualization of objects with a FOV up to 70cm for improved PET attenuation correction.
The PET/CT operator console support :
- Patient registration
- Protocol selection, review and edit for patient scan
- Image reconsturction
- Full 3D iterative PET reconstruction for improved image quality of low statistics acquisitions
- Image viewing and Filming
- Advanced Image Processing for 3D analysis
- Autotransfer and Auto store

1) Hardware for PET/CT operator console
- Operating system : Windows XP or Linux
- CPU : 2.53GHz or more
- RAM memory : 4.0GB or more
- Data archiving : CD, DVD, External HDD
- One 19 inch TFT LCD monitor or more

2) Software for PET/CT operator console
- PET segmented attenuation correction and iterative reconstruction
- Simultaneous acquisition, reconstruction, display and archiving
- Realtime reformat for volume navigation
- Modality worklist shall be supplied
- DICOM Print and DICOM worklist available
- Patient scheduling and data entry

- View, analyze and QC integrated PET/CT data
- Archive, network and manual filming control

5. Multi-modality Review & Analysis Workstation (Server-Client type) 1 Lot

The multi-modality review & analysis workstation consists of a Windows XP based PC with basic viewing and filming software and network modules.
It is already prepared for advanced 3D post-processing regarding hardware performance and graphic card. The software functionality can be extended to suit specific user clinical needs by adding optional cross-modality & modality-specific application modules.
It is configured as a DICOM-connected stand alone system.
The multi-modality review & analysis workstation support :
- Patient browser
- Image viewing and Filming
- Image review and cine display
- Measurement and annotation
- Advanced Image Processing for 3D analysis
- Autotransfer and Auto store

The multi-modality review & analysis workstation bundles are focused on providing the solutions to match clinical needs in PET/CT Imaging.

1) Hardware for Multi-modality Review & Analysis Workstation (Server type)
- Operating system : Linux or Windows XP
- CPU : QuadCore 2.66GHz or more
- RAM memory : 8.0GB or more
- Hard drive storage : 300GB or more
- Data archiving : CD or equivalent
- Dual 19 inch TFT LCD monitor
- Image Processor : NVIDIA Quadro4 (128MB) or better

2) Hardware for Multi-modality Review & Analysis Workstation (Client type)
- Operating system : Windows 7 64bit or equivalent
- CPU: Intel Xeon 2.66 GHz QuadCore or equivalent
- RAM memory : 12.0GB or equivalent
- Hard drive storage : 1.6 TB or equivalent
- Data archiving : CD, DVD, USB or equivalent
- LCD monitor : Wide 3MP 21" monitor or equivalent

3) Software for Multi-modality Review & Analysis Workstation
- MPR (Multiple Planar Reformatting), MIP (Maximum Intensity Projection)
- SSD (Shaded Surface Display) and image fusion software
- Single and multiple display of images and processed sinograms
- Image text and graphic annotation
- ROI (Region of Interest) statistical analysis
- SVUV (Standard Variation Uptake Volume) analysis
- Distance measurement between any two points in image
- Modality worklist shall be supplied
- DICOM Print and DICOM worklist available
- Patient scheduling and data entry
- Archive, network and manual filming control

4) Advanced Application Software
(1) Image registration - 1 -
-Multi-modality image registration for offline fusion of non-registered NM, PET, CT and MR transaxial data. & Deformable registration

(2) Advacned Volume Rendering Technique - 1 -
- The Advacned Volume Rendering Technique that provides visualization of anatomical and functional volimes via projection of the volumes onto an arbitrary oriented plane in full screen mode or together with 3-orthogonal fused datasets

(3) Oncology Software - 2 -
a. PET/CT fusion software
b. MR/CT fusion software
c. PET SUV automatic analysis and several times studies comparision
d. Lung Nodle analysis and measurment software
e. Colon Nodle analysis and measurment software
f. Thoracic Nodle analysis and measurment software
g. Gating PET & CT image management software
h. TAC (Time Activity Curve) function

i. Gross Tumor Volume (GTV) contour function

(4) Cardiovascular Software -1-
Cardiac Image Analysis software
:Cedars or Card IQ PHYSIO

(5) Neurology Engine - 1 -
FDG Brain PET image analysis software

6. DICOM 3.0 Support 1 Set
All workstations should support DICOM 3.0 for Network interface
1) DICOM 3.0 Storage service class
2) DICOM 3.0 Query/Retrieve Service Class
3) DICOM 3.0 CD Archiving
4) DICOM 3.0 Modality worklist
5) DICOM Print

7. General Accessories
- Disconnect box - 1 -
- Patient arm support - 1 -
- Patient leg rest - 1 -
- Patient positioning straps - 1 -
- Head holder - 1 -
- Table extension - 1 -

8. **Local Accessories**
- 각사 장비 설치 기준에 맞는 설비 시스템 - 1 -
(F1 Switch, Power Panel ,Hole & Trench construction, Water Chiller 10RT, HVAC 10RT)
- 인테리어 리모델링 공사 - 1 -
- Ge-68 Source - 1 -
- 방사성 의약품 자동분배장치(RIID) - 1 -
- FDG Injection Cart with L-Block Shield - 1 -
- FDG Dispensing hood - 1 -
- MiniPACS System - 1 -
- Client PC - 3 -
- 납안경 - 2 -
- 납장갑 - 4 -
- Mobile Waste Storage(W800xD300xH600, Ph3mm) - 1 -
- RI Waste Storage, W300xD300xH600 mm, 3mmPb - 1 -
- MedCalc software(통계패키지) : MedCalc singleuser license(lifetime) - 2 -
- Pmod(pmod technologies LLC) 최신버젼-PMOD standalone license - 1 -
- STATA (STATA statistical Software)-Educational single-user, Stata/MP 4-core perpetual - 1 -
- iMAC 27inch 풀옵션 - 1 -
- 외장하드 도시바 칸비오 프리미엄 3TB - 2 -
- 무선마우스(로지텍 MX master) - 2 -
- 일반PC(SSE, RAM추가)+2모니터 - 2 -
- 노트북 - 1 -
- 판독용의자 : 씨디즈 T800HLDA 메쉬 - 2 -
- 사무용 컬러복합기 : 인쇄/복사/팩스/스캔 - 1 -
- 빔프로젝터 and 이동식 스크린 - 1 -

E. Optional Features

1. Point Spread Function 1 Set
- Using measured PSFs, this feature effectively positions the LORs in their actual geometric location, which dramatically reduces blurring and distortion in the final image.
- Average Resolution
FWHM @ 1cm : 2.0mm
FWHM @ 10cm : 2.0mm

2. Time of Flight Technology 1 Set
Time of Flight measures the actual time difference between the detection of each coincidence photon. This additional timing information is used to better localize the event within a small range along each LOR
2x better image contrast, Faster acquisition and less radiation Dose in result.

3. Automatic CT mAs adjustment function 1 Set
This feature is dose reduction software which is real-time dose modulation by adjusting mA for full dose-saving.

4. PET & CT Respiratory Gating 1 Set
-Provides both PET/CT Respiratory and Triggering option as well as
PET respiratory gated acquisition/reconstruction.

5. Amplitude Based gating 1 Set
- Adaptive respiratory gating for automated optimal, motion-freeze, providing improved image quality by reducing respiratory motion artifacts while providing optimized count statistics.

6. Advanced PET acquisition applications 1 Set
-Support for list mode acquisition, offline histogramming and reconstruction.
Support for retrospective histogramming in any arbitrary frame durations of 3 second or greater, maximum of 100 frames defined by available disk space.
Whole body (multi-bed) dynamic support of up to 25 passes.

7. CT iterative recon techonology for dose reduction 1 Set
CT dose reduction program which is the new iterative reconstruction for reducing CT dose without image compromise.

F. Advanced Option (Option A or B)

: Each vendor must to provide alternative solution when can not meet the required function or condition

Option A (Biograph mCT)

1. TrueV
Increase Axial Field of View from 16.4 to 22.1 and reduce acquisition time.

2. Neurology Software (Compatible with NeuraCeq, Vizamyl, Amyvid)
Perform SUVr calculations to quantify Amyloid deposits in the brain and compare a brain to a database of normal individuals
Creation DB for Neuro cases
Neuro DataBase creation

3. Physical double collimation to reduce dose or Equivalent
This feature consists of double CT Tube collimation for about 20% additional dose reduction

4. Correct the difference of SUV between different PET-CT by quantification software with QC (EQ PET)

5. Neuro AC : Brain PET Acquisition without CT attenuation correction

6. Care kV : Automatically adjust CT tube kVp factor working simultaneously with mAs by each patient.

7. Metal Artifact Reduction Function
Single CT source enables to do dual energy study especially regarding metal artifact reduction case or study.

8. **SPECT Neurology Engine**

9. **SPECT Cardiology Engine**
Cardiac Image Analysis software
Cedars S/W

10. syngo.MI Hybrid Coronary View
Provides a fused 3D display that combines the anatomical information from CT coronary angiography with the functional quantification results of PET and SPECT myocardial perfusion and PET myocardial blood flow

Option B (Discovery 710)

1. Advanced Motion correction solution
- Motion correction function with 100% count use at fast scan time (less than 15min)

2. Accurate attenuation correction regardless of potential variance at low dose

3. MIM Software including 2 computer Hardware
MIM Encore 2
MIM Neuro 1
MIM Cardiac 1
Cardiac 3rd party (SPECT QGS, QPS)

4. Neurology Software (Compatible with Amivid)
Perform SUVr calculations to quantify Amyloid deposits in the brain and compare a brain

to a database of normal individuals
Creation DB for Neuro cases
Neuro DataBase creation

5. **Q.clear including Q.SUV**

G. General Remarks

1. Installation
   Contractor is responsible for installation of this equipment at customer's premise.

2. Warranty
   3 Years

3. Manual
   Operation Manual & Service Manual

4. Compatibility
   W/S should be fully compatible with installed W/S for maintaining old data sets.

위와 같이 일반 경쟁 입찰을 의뢰합니다.
PS : 입찰 후 최저가 응찰 업체를 낙찰자로 결정함.

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