



SPECIFICATION

Desktop Workstations for Medical Imaging including visualization and processing of medical images

1. Scope

This specification describes the requirements a Desktop Workstation capable of efficiently executing medical image processing software, simulations, volume rendering and biomedical signal processing, deep learning training, etc. (hereinafter referred to as “the System”) to be installed at Mpilo Central Hospital, Zimbabwe (hereinafter referred to as “the End-User”).

2. Applicable Documents

The following documents shall be applicable for this Specification to the extent specified hereinafter:

2.1. IAEA Human Health Series No. 6 - Quality Assurance for SPECT Systems.

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1394_web.pdf

2.2. IAEA Human Health Series No. 19 - Quality Assurance Programme for Computed Tomography: Diagnostic and Therapy Applications

http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1557_web.pdf

In the event of conflict between the documents listed above and the content of this Specification, the content of this Specification shall take precedence to the extent of the conflict.

3. Definitions, Acronyms, and Abbreviations

The following definitions, acronyms, and abbreviations shall apply throughout this Specification unless defined otherwise hereinafter:

ADC – Analog to digital converter

CFOV – Central field of view

CT – Computed tomography

ECG – Electrocardiogram

FAT – Factory acceptance test

PACS – Picture archiving and communication System

QC – Quality control

SAT – On site acceptance test

SPECT – Single photon emission computed tomography



UPS – Uninterruptible power supply

4. Requirements

4.1. Functional and Performance Requirements:

The workstation shall be capable of executing efficiently: Medical Image Processing (including dynamic image processing, parametric imaging, pharmacokinetic modelling, etc); volume rendering; Emission (PET and SPECT) and Transmission (CT) Image reconstruction; Complementary Physiological signal processing (ECG, EKG, respiratory).

4.2 Technical Requirements

The System shall meet the following technical requirements:

- 4.2.1 Displays: 24-inch (diagonal), Aspect Ratio 16:9, Minimum Resolution 1920 x 1080 at 50/60 Hz (or Aspect Ratio 16:10, Native resolution 1920 x 1200), wide viewing angle, Input Connectors: HDMI, DisplayPort, Mini DisplayPort, USB 3.0 hub (upstream and downstream ports), minimum brightness 350 cd/m², Antiglare Screen Coating, minimum Contrast Ratio 1200: 1. 100 VAC to 240 VAC / 50 Hz or 60 Hz. **Quantity: 2**
- 4.2.2 Server class processor, minimum frequency 2.2GHz, minimum boost frequency 3.2GHz, minimum 10 Cores and 20 threading (with simultaneous multithreading technology), 9.6GT/s 2UPI, minimum 13MB processor Cache, DDR4-2400 support,
- 4.2.3 Memory: minimum 64GB DDR4 2666MHz RDIMM ECC,
- 4.2.4 Storage: minimum 1TB PCIe NVMe Solid State Drive (SSD), 2nd Hard Drive: minimum 4TB SATA,
- 4.2.5 Graphics: SINGLE dedicated graphics card, deep learning capable (CUDA proprietary technology): Parallel-Processing Cores 2,304 , Tensor Cores 288, GPU minimum Memory 8GB GDDR6, Graphics Bus PCI Express 3.0 x 16, 3 Connectors for Display Port 1.4,
- 4.2.6 Wireless connectivity: Dual Band Wireless (802.11ac) 2x2, Bluetooth module,
- 4.2.7 System Operating: full compatibility with the selected hardware; Windows 10 Pro (4 cores plus) or Linux Based OS, and
- 4.2.8 Line voltage: 100–240V AC; Frequency: 50Hz to 60Hz, single phase.

5 Licenses and Permits

In addition to the provisions of Article 3.1 (“Responsibilities of the Contractor”) and Article 27.2 (“Export Licenses”) of the General Conditions of Contract, the Contractor shall obtain and maintain all permits and licenses necessary for the supply and delivery of the System to the End-User. The Contractor shall timely provide the End User with all information and technical support that may be needed to obtain the import licenses, permits and/or authorizations in accordance with the regulations of the appropriate regulatory authorities.

6 Marking



The System shall have all safety markings in English language.

7 Packing

The System, for the shipment by air to the End-User, shall be packed in accordance with international standards that are applicable for the shipment by air of this kind of equipment.

8 Quality Requirements

8.2 The System shall be manufactured, shipped and installed in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.

8.3 The Contractor shall document the compliance with this quality assurance system.

9 Testing and Acceptance

The System, prior to shipment, shall be tested for conformance of the System with manufacturer's performance specifications and the minimum requirements specified herein.

10 Installation and Training:

9.1 The Contractor shall install the System at the end-user facility.

9.2 The Contractor shall be responsible for installation and commissioning of the System.

9.3 The Contractor shall provide a 3 (three) days training in the local language for the local staff (medical staff and maintenance engineers) in the operation, quality control and preventive maintenance of the System at the End-User's location immediately after the installation of the system.

11 Testing and Acceptance:

Factory Acceptance Test (FAT)

11.2 The System, prior to shipment, shall be tested for conformance of the System with manufacturer's performance specifications and the minimum requirements specified herein.

On site Acceptance Test (SAT)

11.3 The System, after installation, shall be tested by the Contractor together with the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the minimum requirements specified herein as determined by the IAEA and the End-User. The conductor shall provide the phantoms for the acceptance test.

11.4 The results of the testing of the System shall be documented by the Contractor in an acceptance protocol that shall be signed by the End-User.

12 Deliverable Data Items

The Contractor shall provide two complete sets of operation and servicing manuals and technical drawings in the English language.