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Technical specifications for gamma-photon spectrometers

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Technical specifications for gamma-photon spectrometers

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SPECIFICATION DE L'EQUIPEMENT / *MACHINE SPECIFICATION*

Référence équipement / <i>Serial number</i>	
Processeur / <i>Processor</i>	

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HISTORIQUE DES MODIFICATIONS / *DOCUMENT REVIEW*

0		Version originale/ <i>Original version</i>
Version / Version	Date / Date	Objet de la modification / <i>Purpose of the amendment</i>

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1 INTRODUCTION

The LEMA lab develops methods for measurement, electronic architectures, and data analysis algorithms for radiation detection.

2 BACKGROUND

The LEMA lab has been assigned the task of developing a measurement system with forty independent channels, each capable of generating gamma photon spectra. To accomplish this, LEMA intends to acquire **fifty identical detectors**, including ten spares, to assemble the system. Given the system's planned usage over the next decade, it requires durable and reliable technological solutions.

3 TECHNICAL SPECIFICATIONS

This call for tenders concerns the purchase of fifty gamma-photon spectrometers. Forty of them will be placed on the measurement system and operated in parallel.

The Equipment supplied must be new only. The Equipment must meet the following technical and performance characteristics.

Type of measurement:


- Gamma photon spectrometry
- Measurement will be performed in a temperature-controlled room, nevertheless the detector should have little temperature dependences (either by design or through integrated thermo-compensation)
- Functional in day long measurements.
- Functional operation for at least a decade (maintenance free) with at least 1000 days of measurements.

3.1 TECHNICAL CAPABILITY:

- The detector should enable gamma photon spectrometry in the 15keV to 2.500 MeV range
- Resolution should be better than 4% at 662keV
- Maximum count rate should be at least 10 000 cps
- Having auto energy calibration capability would be appreciated

3.2 TECHNICAL CHARACTERISTICS:

- Full detector (including housing) smallest dimension should be lower than 22 mm
- Active volume should be in the 10 to 30 cm³ range
- Connectivity: the detector should be connected through USB or Ethernet (with POE) without external power supply
- Parallel operation of multiple sensors should be possible through USB or Ethernet hubs
- Power consumption per detector: < 2.5 Watts
- Having dust proof certification would be appreciated

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4 DELIVERY

The delivery location is the CEA site at Saclay, France, and the delivery costs are the responsibility of the contractor. Installation is not required under this contract. It is important to specify the maximum deadline for sending all the material to be supplied.

5 GUARANTEE

The sensors come with a one-year guarantee, with the option n°1 to extend for an additional year.

6 FINAL RECEIPT OF ORDER

A test report for each sensor, along with verification of its proper operation by the CEA, will be required for CEA to validate the order.