NUVIATECH INSTRUMENTS

SPECIFICATION SHEET

NuVISION-MAX

Portable spectrometric gamma imaging system

The NuVISION-MAX is the high efficiency version of our gamma cameras. As the standard NuVISION, the camera combines several functions in one device. It can localize hotspots from a distance, identify the corresponding radionuclides and estimate the dose-rate contribution of every hotspot seperately. The high efficiency performance reduces the acquisition time and allows to image hot spots of lower activities in particular at high energies. The NuVISION-MAX incorporates a large volume CZT-detectorsystem, twice as large as the regular NuVISION. Its unique design allows both coded mask AND Compton imaging. This combination provides a full 360° FOV (Compton) while having a great 3.5° resolution (coded mask). The high processing speed allows to perform real-time imaging and tracking mobile sources.

Benefits

- Higher efficiency resulting in reduced acquisition time and improved sensitivity
- Real-time imaging
- High resolution (coded mask) and 360° field of view (compton)
- Wide energy range for spectrometry from 20—1400 keV: Radioisotopes from ^{241}Am to ^{60}Co
- H*(10) dose rate estimation per hotspot
- Dose rate in specified distance to source can be calculated
- User-friendly, portable device

Key figures

~20 cm^3

➥ *Detector volume*

3X faster

➥ *Than standard NuVISION in Compton Mode*

~90 sec

➥ *Localisation & identification of a Cs-137 hotspot generating 50 nSv/h*

NUVIATECH INSTRUMENTS

NuVISION-MAX

Portable spectrometric gamma imaging system

Product description

NuVISION-MAX is the high efficiency version of NUVIATech Instruments' gamma imagers. Its large CZT detector system allows to minimize acquisition time in particular at high energies. The 19.2 cm^3 CZT detector allows to reach unprecendented energy resolution of 1.5% at 662 keV. Each gamma event is localised on a 128 × 128 pixel array. The resulting spectral image is reconstructed in real time to identify isotopes and localise activity.

Angular resolution:

· 3° for a 45 degree field of view using the coded aperture

· 15° for a 360 degree field of view using the Compton imaging

The system is sensitive enough to localize a 250 nSv/h Co-60 source in natural background in less than 60 seconds.
The strength of the system is its spectrometric capability for the detection of low energy peaks from isotopes which may otherwise be masked by other sources, legitimate or not combined with high detection efficiencies at high energies.
The system is able to localise the source of interest and isolate it from the background whether it is a NORM, medical or industrial source.

With a weight of only 3.3 kg the NuVISION can be used as an handheld device in dynamic mode.

Specifications	
Size	10cm x 10cm x 24cm (HxWxD) 23cm x 42cm x 30cm with bumper, handle tablet
Weight	3.3 kg (5.1 kg with bumper, handle, and tablet)
Detection Vol.	192 cm^3
Ingress Point	IP65
Angular Resol.	3.5° Coded Apert. 15° Compton
Field of view	45° Coded Apert. 360° Compton
Battery operation	Yes (15V/6.5W)
Energy Range	20-1400 keV
Dose Rate Range (at detector)	Max. 15 mSv/h (Identification & DR estimation) Max. 50 mSv/h (Localisation)
Sensitivity ^{137}Cs	50 nSv/h < ~90s (localisation + identification)
Sensitivity ^{57}Co	50nSv/h ~ 5s
Sensitivity ^{60}Co	150 nSv/h: ca.120s localisation 250 nSv/h: ca 60s localisation
Energy Res.	2.5% at 122 keV 1.5% at 662 keV

Isotope	c.s-1/ (µSv/h)
Cs-137	Approx. 430
Co-60	Approx. 280

Performance Characteristics

· Sensitive enough to detect a 50 nSv/h ^{57}Co source within few seconds and a 50 nSv/h ^{137}Cs source in approx. 90s

· Dynamic mode allows to capture hot spots while moving or track radioactive sources in movement

· An angular resolution of 3.5° allows to localize differences of under 10 cm in a distance of 10 m

· A tripod with a motorized mount allows completely remote operation (optional)

· A scan modus autonomously acquires measurements of large areas (requires tripod)

· Ethernet and power supply via cable drum allow remote operation from up to 60 m distance

· Advanced possibilites for expert users (e.g. set alarm threshold, spectrum analysis, edit library, ...)

Product applications

· Process control
· Work planning
· Identifying hazards
· Dose monitoring - ALARA principles
· Environmental monitoring
· CBRN
· Safeguards
· Emergency response
· Securing critical sites

NuVISION has been developed in cooperation with the CEA-LETI and leverages their strong expertise in CZT gamma imagers.