

Unmanned Radiation Measurements

The unmanned UAV platform allows make gamma spectrometry in severe nuclear release situation where manned aerial radiation measurements are not acceptable. The system consist of solid state Kromek GR1 Cadmium Zinc Telluride (CZT, active volume 1 cm³) or Canberra Osprey Lanthanum Bromide (LaBr₃, active volume 43.5 cm³) gamma-ray spectrometer, Intel 32/64 architecture PC Stick computer and Threod Systems KX-4 LE or KY-6 mini helicopter. We have implemented manned aerial radiation measurements more than twenty years using Unisampo measurements program with online extension to control measurements, combine GPS coordinates with radiation data to produce modeled radiation map layer to be presented on geographical map. The measurement, analysis and modeler programs run on Linux operating system. Kromek spectrometer and computer weight 700 grams. With Osprey LaBr₃ detector the weight is 2000 grams. Measurement system works autonomously and can be controlled from ground station. The UAV radiation measurements will be used to:

- Measure heavily contaminated areas
- Find lost radiation sources
- Identify nuclear power plant release
- The system can be implemented on jet powered UAV to measure radiation levels from wider areas what is possible with mini helicopter or from upper atmosphere where military and commercial aero plane fly.

Primary author: KETTUNEN, Markku Juhani

Presenter: KETTUNEN, Markku Juhani

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