



ELSE
NUCLEAR



B-RAD

HAND-HELD SPECTROMETER FOR GAMMA RADIATION



Portable hi-res
spectrometer



Works in extremely intense
magnetic fields



Technology developed
at CERN

Radio-isotope
identification

Double display

Light and compact, ideal
for radiation surveys

Built-in signal processing
electronics

Equipped with a Hall probe

Carrying cross-body pouch

B-RAD is a hand-held radio-isotope identifier (RIID), capable of providing the photon spectra in presence of strong electromagnetic fields. It has been tested to work properly in magnetic fields up to 3 T. For comparison, conventional devices fail to operate at intensities as low as 0.1 T.

Light and compact, **B-RAD** is ideal for radiation surveys and for local measurements of contamination or residual radioactivity in hot spots. It also includes a Hall probe connected to an indicator for a rough measurement of the magnetic field in which it is operating.

B-RAD employs a high sensitivity $\text{LaBr}_3(\text{Ce}^{3+})$ crystal directly coupled to a Silicon photomultiplier (SiPM) matrix. The excellent scintillation properties and the high photon resolution of the detector (3.3% FWHM at 662 keV) make the device capable of operating over a wide energy range with a very fast response, i.e. reducing at minimum dead time-related issues.

This technology has been originally developed at CERN (*) and has become the standard for radiation surveys in the Large Hadron Collider (LHC) experiments. It is commercialized under an official license granted by CERN, with the "CERN Technology" label.

(*) Patent grant number: 9977134 (13 July 2017)
"Portable Radiation Detection Device for Operation in Intense Magnetic Fields".



technology

TECHNICAL SPECIFICATIONS

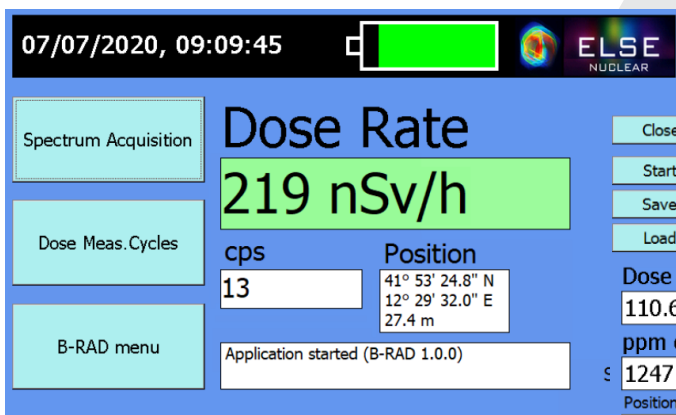
- Crystal: 0.6" × 0.6" LaBr₃(Ce³⁺)
- FWHM: 3.3% at 662 keV
- Dose rate range: 100 nSv/h ÷ 10 mSv/h
- Sensitivity: 90 cps/μSv/h
- Energy range: 30 keV ÷ 2 MeV
- Temperature range: 0 ÷ 40 °C
- Battery life: up to 12 hours (in "power save mode")
- Dimensions:
 - Main unit: 156 x 191 x 92 mm
 - Probe: 180 x 50 mm (diameter)
- Weight: 2.3 kg



B-RAD main unit
with double display

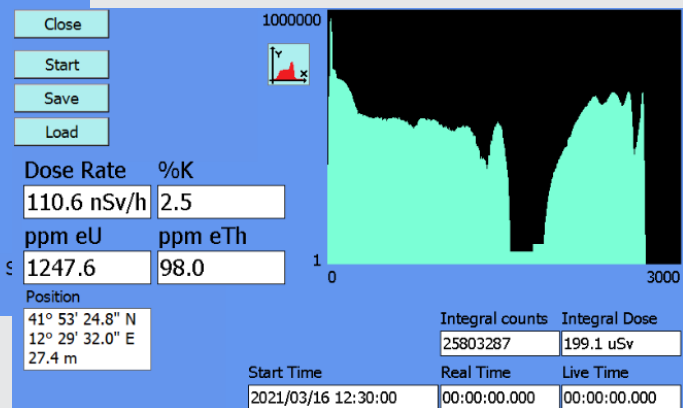
MAIN APPLICATIONS

- Radiation surveys at particle accelerators
- Medical accelerators (electron linacs including Image Guided Radiation Therapy (IGRT) with MRI imaging, cyclotrons for radionuclide production and radiotherapy)
- Radiation measurements at medical PET/MRI scanners
- Radiation measurements in industrial applications, metal recycling and for fire brigade services
- Current and future technologies involving the need of measuring radioactivity in the potential presence of perturbing magnetic fields
- Geophysical applications (B-RAD NAT version)



B-RAD software main panel

Natural nuclides assaying (B-RAD NAT version)



OPTIONS

- Version for natural nuclides concentration measurement (B-RAD NAT)

ACCESSORIES AVAILABLE UPON REQUEST

- GPS module
- Warranty extension from 12 months to 24 months

