

# Portable Radioisotope Identification Device for Special Nuclear Material Detection and Characterization

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This paper presents the features of an innovative portable radioactive isotope identifier for the detection and identification of both gamma and neutron emitting radionuclides, or even multiple ones. The described portable isotope identifier is suited for the site inspection for its capabilities of detecting and characterizing nuclear or radioactive materials in presence of gamma shielding material, neutron moderators, masking gamma sources. Its singular features are the capability to identify sources through the detection of neutrons and discriminating spontaneous fission sources (Cf-252),  $\alpha$ -n sources (Am/Be, Am/Li) and nuclear material containing mix of isotopes of plutonium or uranium. Those features are combined with the capability to make cross correlation between gamma and neutron measurements to achieve a higher level of accuracy in the identification of SNM that emits both neutrons and characteristics gammas. This paper presents the results of measurements performed in real-scenario conditions at gradually increasing levels of difficulty, adding shields, moderators, masking gamma sources and a mix of the above mentioned. The test results are also compared with international standards and the device exceeds the standard performance by triggering a neutron alarm for Cf-252 source at a five times greater distance than the one required by ANSI N42.34.

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## Promotional text

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## Oral preference format

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