

# **Application of a Type Test Methodology for Radiation Survey Meters**

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Body of Abstract:      APPLICATION OF A TYPE TEST METHODOLOGY FOR  
RADIATION SURVEY METERS

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## **ABSTRACT**

The operational characteristics of portable survey meters can be defined with the application of special tests, that can show how near the equipment readings are of the true values readings in the operation conditions. These special tests include the determination of some or all radiological or non radiological characteristics, that could affect the reading precision in the operational conditions. A series of type tests recommended by international standards was applied to gamma radiation monitoring survey meters (Geiger-Müller type and ionization chambers) commonly used in Brazil. The objective was to establish a routine test methodology to be applied to new and to repaired instruments. The tests included the verification of energy and angular dependences, overload characteristics tests, response to other ionizing radiations, and of non radiological characteristics as variation of response with the battery voltage, orientation of assembly, zero drift and intrinsic errors in exposure rate indications. The type tests shall be applied to new equipment, before it first use; in that case they are called pre-tests of use. However, only a few countries have specific laws that require these type tests from the manufacturers before selling their equipment. Eighteen instruments of different types and models from Brazilian and international manufacturers were tested in this work. It was observed that the ionization chambers and the G-M type detectors obtained 75% and 63% of approval respectively. The differences of the approval index values are due mainly to the different detector elements, to the different equipment configurations and to the operational conditions (aging, component oxidation, circuit alteration, probe substitution, etc.). The periodic application of these tests to monitoring survey instruments is very important to assure high quality measurements.