

ISO 13304-1:2013-07 (E)

Radiological protection - Minimum criteria for electron paramagnetic resonance (EPR) spectroscopy for retrospective dosimetry of ionizing radiation - Part 1: General principles

Contents	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Terms and definitions	1
3 Confidentiality and ethical considerations	2
4 Laboratory safety requirements	2
4.1 Magnetic field	2
4.2 Electromagnetic frequency	3
4.3 Biohazards from samples	3
5 Collection/selection and identification of samples	3
6 Transportation and storage of samples	3
7 Preparation of samples	4
8 Apparatus	5
8.1 Principles of EPR spectroscopy	5
8.2 Requirements for EPR spectrometers	5
8.3 Requirements for the resonator	5
8.4 Measurements of the background signals	6
8.5 Spectrometer stability and monitoring/control of environmental conditions	6
8.6 Baseline drift	6
9 Measurements of the samples	7
9.1 General principles	7
9.2 Choice and optimization of the measurement parameters	7
9.3 Sample positioning and loading	9
9.4 Microwave bridge tuning	9
9.5 Use of standard samples as field markers and amplitude monitors	9
9.6 Monitoring reproducibility	10
9.7 Procedure to measure anisotropic samples	10
9.8 Coding of spectra and samples	10
10 Determination of the absorbed dose in the samples	10
10.1 Determination of the radiation-induced signal intensity	10
10.2 Conversion of the EPR signal into an estimate of absorbed dose	11
11 Measurement uncertainty	11
12 Investigation of dose that has been questioned	12
13 Quality assurance (QA) and quality control (QC)	13
14 Minimum documentation requirements	14
Bibliography	15