

ABSTRACT

The diploma project is dedicated to the development of a portable radiometer that provides accurate and reliable measurement of radiation fields in real-time. In the context of increasing importance of radiation safety, the portable radiometer can become a valuable tool for monitoring and controlling the radiation environment. The project includes an analysis of the principles of operation of portable radiometers and existing solutions. Various types of sensors for measuring radioactive radiation, as well as data processing and analysis algorithms, are investigated. Potential applications of the portable radiometer in nuclear energy, medicine, industry, environmental monitoring, and population safety are discussed. The main objective of the diploma project is to enhance the portable radiometer by optimizing data processing and analysis algorithms, developing new types of sensors and their integration. Furthermore, the possibility of expanding the device's functionality, including additional measurement parameters and wireless data transmission, is considered.

The work comprises 67 pages (excluding appendices) and consists of three chapters, general conclusions, a list of references, one table, 20 figures, and 16 literature sources.

Keywords: digital radiation meter, non-destructive testing, automation.