Český metrologický institut

Type Approval Certificate

No. 0111-CS-A019-14

Czech Metrology in accordance with the Law of metrology No. 505/1990 Coll. as amended

approved

personal dosimeter
type DKG-21M

under observation of technical data referred to in Annex of this Certificate.

Type approval mark: **TCM 221/14 - 5220**

Applicant: **PE "SPPE "Sparing-Vist Center"**
33 Volodymyr Velyky Str.
Lviv, 79026
Ukraine

Manufacturer: **PE "SPPE "Sparing-Vist Center"**
Ukraine

Valid until: **27 August 2024**

Information on judicial remedies:
The judicial remedies against this decision are available to the applicant through Czech Metrology Institute to Czech Office for Standardization, Metrology and Testing within 15 days since the receipt of this Certificate.

Description:
Essential characteristic, approved conditions special conditions, examination results including technical drawings and schemas are set out in the technical test report appertaining to this certificate. The certificate comprises the front page and the technical test report totally having 3 pages.

Český metrologický institut

Brno, 28 August 2014

RNDr. Pavel Klenovský
Director General

Technical test report

1. Description

DKG-21M is a personal dosimeter intended for measurement of personal dose equivalent $H_p(10)$ and personal dose equivalent rate. The dosimeter may be used as an electronic dosimeter for automated systems of personal dosimetry control and/or as an independent device. Dosimeter is designed for use in conditions of significant temperature oscillations and high dustiness of atmosphere (e.g. army, firefighters, and other first responders).

It has an internal energy compensated GM detector, measured value is displayed on a LC display on the front panel. Instrument is controlled by two buttons.

DKG-21M can store dose accumulation history in the non-volatile memory with real time reference and it has light and audio alarm of exceeded programmed threshold level of gamma radiation dose and dose rate.

Dosimeter DKG-21M

2. Basic metrology characteristic

Measured quantity	- personal dose equivalent $H_p(10)$ - personal dose equivalent rate
Measurement range	- 1 µSv up to 1 Sv - background up to 1 Sv/h
Effective measurement range	- 1 µSv up to 1 Sv - 1 µSv/h up to 1 Sv/h
Energy range	- 65 keV up to 1.25 MeV
Operating temperature range	- -20°C up to +50°C
Dimensions	- 98 x 58 x 18 mm
Weight	- 120 g

3. Data on device

The device must be identified by the manufacturer identification, type, serial number and type approval mark.

4. Test

The manufacturer submitted two samples of the dosimeter DKG-21M, S/N 1200463 and 1200465.

The applicant also submitted a statement declaring that the dosimeter DKG-21M is together with DKG-21 member of the DKG family of measuring instruments, which use the same operation principle, signal processing algorithm, firmware and have the same internal parts (detector, electronics parts, connectors). The main difference is the outer case of both devices (DKG-21M and DKG-21) and different arrangement of internal parts. Another difference is higher ingress protection rating of DKG-21M.

Therefore, in the metrological properties assessment of DKG-21M some tests results of DKG-21 were accepted for economy reasons, namely the test of statistical fluctuations, variation of the response due to dose rate dependence of dose measurements, variation of the response due to beta radiation, accuracy of alarm, environmental characteristics (influence of ambient temperature and atmospheric pressure), battery test and mechanical tests (drop test, microphonics test). These results were supplemented by the test of the linearity of response, variation of the response due to photon radiation energy and angle of incidence, overload characteristics and influence of relative humidity acc. to the standard ČSN EN 61526. All requirements of the standard were met, only in the tests of variation of the response due to photon radiation energy and angle of incidence was found that when rotating the dosimeter in a vertical plane to the angle of 50° to 60° (irradiation is impacting askew from above) the deviation of measured value exceeds the requirements of the standard approximately by 5% for photon energy range of 205 to 250 keV.

Based on the test results and submitted documentation assessment it was found that the measuring instrument can be used for the intended purpose stated in the paragraph 1 of this document and can be used as a legal measuring instrument in the scope of this protocol.

5. Verification

Within the verification, the test of the intrinsic error should be carried out according to the ČSN EN 61526 standard. After verification, the verification mark identifying the year of the verification should be placed on the front panel so as not to block any data on the dosimeter.

6. Validity of verification period

Validity of verification period is stated by Decree of Ministry of Industry and Trade.