Český metrologický institut

Type Approval Certificate

No. 0111-CS-A015-22

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

approved

Continuous radon monitor
type Corentium Pro

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

Type approval mark: **TCM 442/22 - 5879**

Applicant: **GT-Analytic SARL**
30 rue Grande
13410 Lambesc
France

Manufacturer: **Airthings ASA**
Norway

Valid until: **18 August 2032**

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. Certificate has 3 pages.

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Brno, 19 August 2022

Ing. František Staněk, PhD.
Deputy Director for Legal Metrology

Technical test report

1 Description

CORENTIUM PRO is a battery powered, lightweight, portable instrument for the continuous measurement of ^{222}Rn volume activities. Four semiconductor detectors (silicon PIN photodiodes) with alpha-spectrometric properties are used as detectors, which are located in specially designed measuring chambers. The air to be measured enters the chambers by passive diffusion. Spectro-metric characteristics of the detectors are used to determine radon activity concentra-tions. Signals from ^{220}Rn and cosmic rays are excluded, making the radon monitor insen-sitive to ^{210}Po contamination.

The meter does not have a display for measurement results, which can be visua-lized and analysed on an external device (e.g. computer, mobile phone) after data transfer via mini-USB or Bluetooth. The operating status of the meter is indicated by coloured LED signals. Continuous measurement operation starts automatically when the power supply via batteries is established. The data is stored in the internal memory, the capacity of which allows storing 1-hour measurement data of about 5 years. The measurement results of ^{222}Rn volume activities are given in SI units [Bq/m^3] or in the older units [pCi/l].

The measuring device is suitable for professional measurements as well as for home use. The device system is designed to prevent or to record unwanted interference in the measurement process. The meter further records temperature, humidity and air pressure.

2 Basic metrological characteristics

Table 1: Technical parameters:

Measurement range	0 – 150 000	Bq/m^3
Detector	semiconductor Si PIN photodiode	
method of detection	spectrometric	
Sampling diffusion time constant	passive diffusion 25	 min.
Measuring intervals	1	h
Memory capacity	1900	days
Measurement uncertainty	σ: 7% (± 5 Bq/m^3)	24 h measurement
Power supply	3x AA alkaline cells	
Weight	300 (including batteries)	g
Dimensions	140 x 140 x 30	mm
Data communications	Bluetooth, USB	
Operation environment:		
temperature	+4 to + 50	°C
relative humidity	5 to 85 (non condensing)	%

3 Markings on the device

The meter must be labeled with the designation of the device and include a production label with the serial number of the meter. If used as a designated workplace measuring device, it must also bear a label with the type approval mark.

4 Device tests

The meter was tested at the Authorized Metrological Center No. 113 for meters of radon volume activity and equivalent radon volume activity, State Institute of Nuclear, Chemical and Biological Protection, v. v. i., Kamenná 71, 262 31 Milín. The main AMS standard was used for the test. The test was carried out with the measuring devices serial No. 2700013744, 2700013785 and 2700013805. Supplied documentation: manual Airthings-Corentium-Pro_Use-Manual-EN.pdf, calibration sheet Bundesamt für Strahlenschutz No. D-K-15063-01-00. The tests were completed on 09/05/2022 with the issuance of the Technical Test protocol for the approval of the type of radon volume activity meters CORENTIUM PRO No. SÚJCHBO/979/J-4.2.4 /22/Vo. The tests were carried out according to General Measures No. 0111-OOP-C097-18.

The following tests were performed:

1) External inspection.

2) Response linearity test.

3) Long-term stability test.

4) Influence of climatic conditions.

5) Influence of factor F on the response of the meter.

6) Diffusion rate test.

7) Gamma radiation test.

The meter is capable of fulfilling the purpose for which it is intended. Due to passive air exchange in the detector, the correct value is from the fourth measurement interval.

5 Meter verification

The meter will be verified according to the internal methodology of AMS No. 113 according to the requirements of General Measures No. 0111-OOP-C097-18. Verification is confirmed by placing a verification mark on the meter. The mark is placed next to the production label, if operational conditions require it, the mark can be placed on the front side of the meter outside the control and signaling elements.

6 Validation period

The validity period of the verification is determined by a Decree of the Ministry of Industry and Trade.