Canadian National Radon Proficiency Program

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Consumer-Grade Electronic Radon Monitors: Detailed Results

2024/2025 Project

As stated in the Consumer-Grade Electronic Radon Monitors: Testing Process document (link to be added), the ERMs included in this intercomparison program underwent four rounds of testing, in four different sets of conditions. Two sets of test conditions are at a target level of 200 Bq/m^3 since this is the Canadian radon guideline level, and the data provided by these ERMs is used by consumers to decide whether to mitigate their homes. The temperature and relative humidity for these two sets of test conditions are meant to approximate typical indoor conditions in Canadian homes during winter (Round 1) and summer (Round 2); the summer conditions representing homes with either no air conditioning or limited air conditioning. The third and fourth sets of conditions are conducted at target radon levels of 400 Bq/m^3 (Round 3) and 1,000 Bq/m^3 (Round 4) to test the instrument performance across a range of radon levels, and at temperature and relative humidity conditions consistent with Round 1.

The actual conditions for the 2024-25 rounds of testing were as follows:

Round 1

a. Radon concentration: 218 Bq/m^3
b. Temperature: 23° C
c. Humidity: 28% RH
d. Duration: 7 days

Round 2

a. Radon concentration: 210 Bq/m^3
b. Temperature: 29° C
c. Humidity: 70% RH
d. Duration: 7 days

Round 3

a. Radon concentration: 436 Bq/m^3
b. Temperature: 23° C
c. Humidity: 36% RH
d. Duration: 7 days

Round 4

a. Radon concentration: 1201 Bq/m^3
b. Temperature: 23° C
c. Humidity: 35% RH
e. Duration: 7 days

The data provided by each ERM was then analyzed, and the Measurement Error was calculated for each device. Measurement Error is used as a reference as it combines precision and accuracy.

A performance grade was assigned to each ERM based on its Measurement Error as indicated in the following table:

Measurement Error (%)	Performance Grade
≤ 10	A
> 10 and ≤ 20	B
> 20 and ≤ 30	C
> 30 and ≤ 40	D
> 40	E

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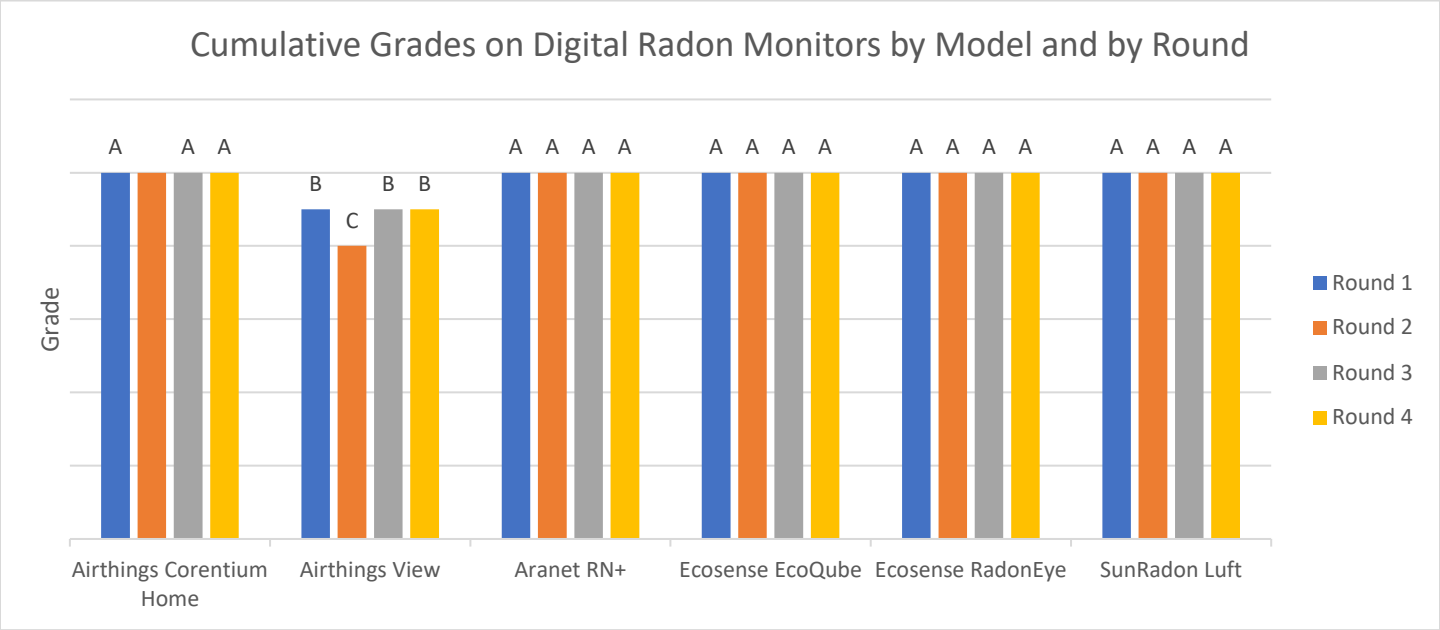
The graph below shows the performance grades assigned to each ERM during each round of testing. All of the ERMs featured demonstrated acceptable performance to be recommended by C-NRPP (an average performance grade of B or better).



This is the second year of this project. [You can review 2023 results here.]

Device manufacturers can sign up for each [annual comparison through the registration form here.]