Malta Equivalence Report for Attard Station (MT00008)

Sampling Points:

- SPO-MT00008_00005_100
- SPO-MT00008_06001_100

In 2024, the monitoring of PM_{10} was introduced at the urban station in Attard (MT00008) from 17th January using a Grimm EDM 280 real-time analyser. As from 26th August PM_{10} was also monitored using the reference method. In the previous years, the low volume sampler has been exclusively used for $PM_{2.5}$ monitoring at this station, due to limited equipment availability, its use was alternated between PM_{10} and $PM_{2.5}$ from August 2024. Consequently, the data capture for the gravimetric data was 11.2% for PM_{10} and 30.1% for $PM_{2.5}$. In contrast, continuous monitoring of real-time data resulted in significantly higher data capture rates compared to the reference method. To ensure equivalence, an equivalence test was conducted using the European Commission's official tool corresponding to the "Guidance for the Demonstration of Equivalence of Ambient Air Monitoring Methods." The real-time daily data was plotted against the reference gravimetric data, outliers were identified, and the slope was adjusted to pass through the origin. The resulting calibrated formula was then applied to scale the real-time data. Malta is thus reporting the scaled real-time data to fill in the data gaps where gravimetric data was absent. The final data capture of the combined data sets under sampling points SPO-MT00008_00005_100 and SPO-MT00008_06001_100 is 99.7% for $PM_{2.5}$ and 95.4% for PM_{10}.

The resulting scaling factors are as follows:

- SPO-MT00008_06001_100: 1.052y + 0 with 18.7% expanded relative uncertainty.
- SPO-MT00008_00005_100: 0.966y + 0 with 18% expanded relative uncertainty.

The figures below illustrate the data charts for both size fractions before and after calibration.

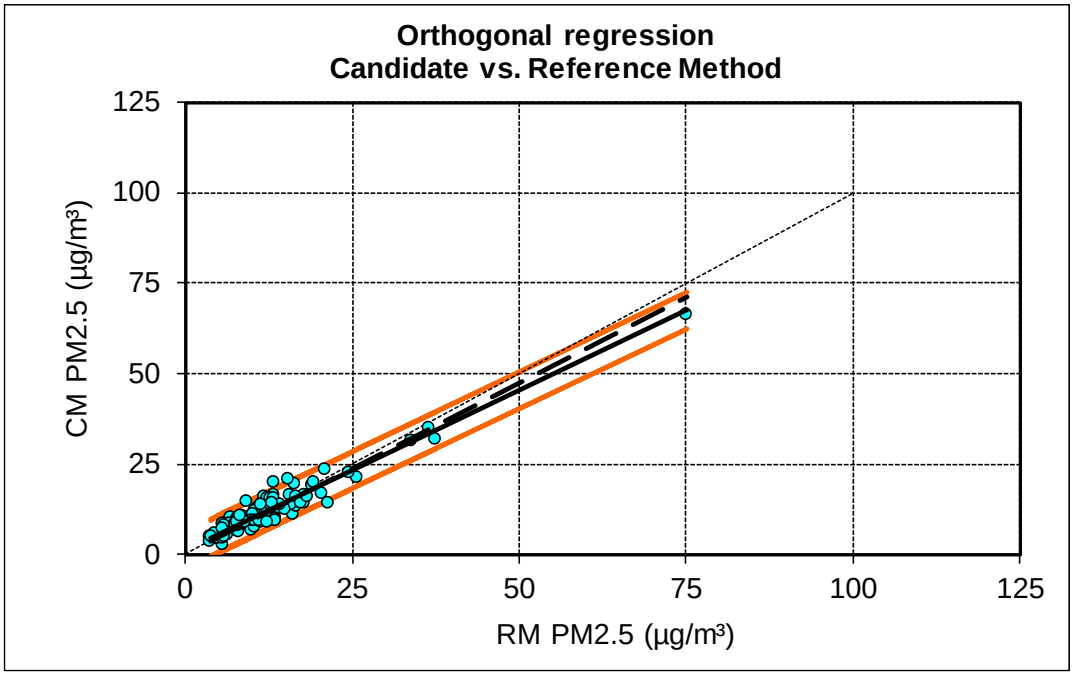

Figure 1: Chart illustrating the $PM_{2.5}$ raw data using 105 values to compare both methods excluding the identified outliers.

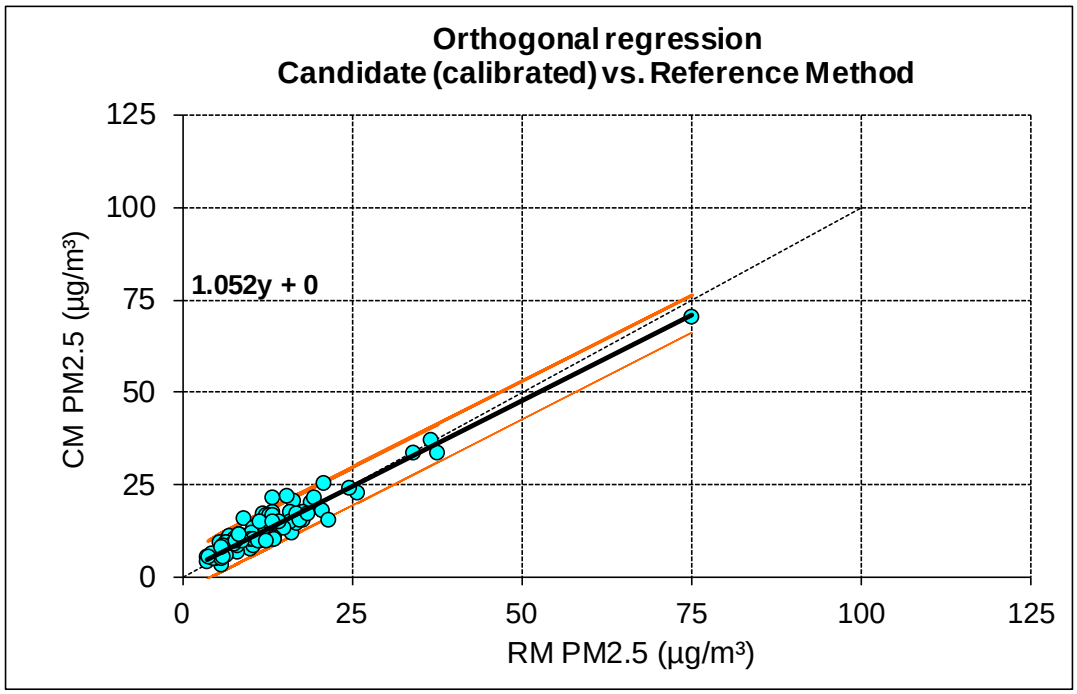

Figure 2: Chart illustrating the $PM_{2.5}$ calibrated data using 105 values to compare both methods excluding the identified outliers.

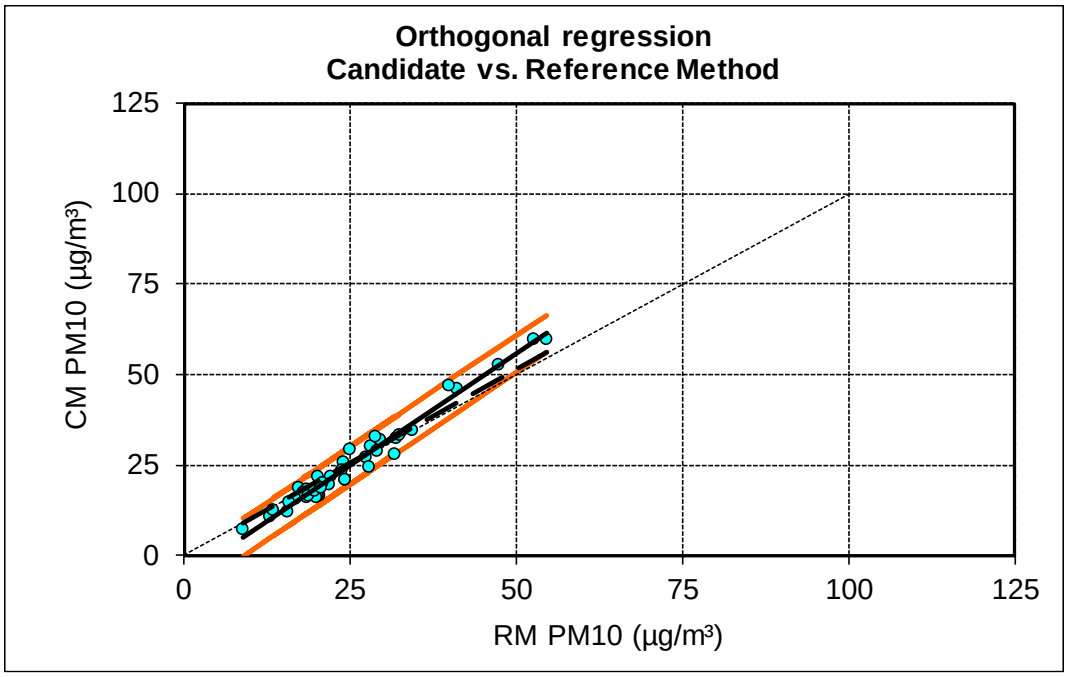

Figure 3: Chart illustrating the PM_{10} raw data using 41 values to compare both methods; no outliers were identified for this pollutant size fraction.

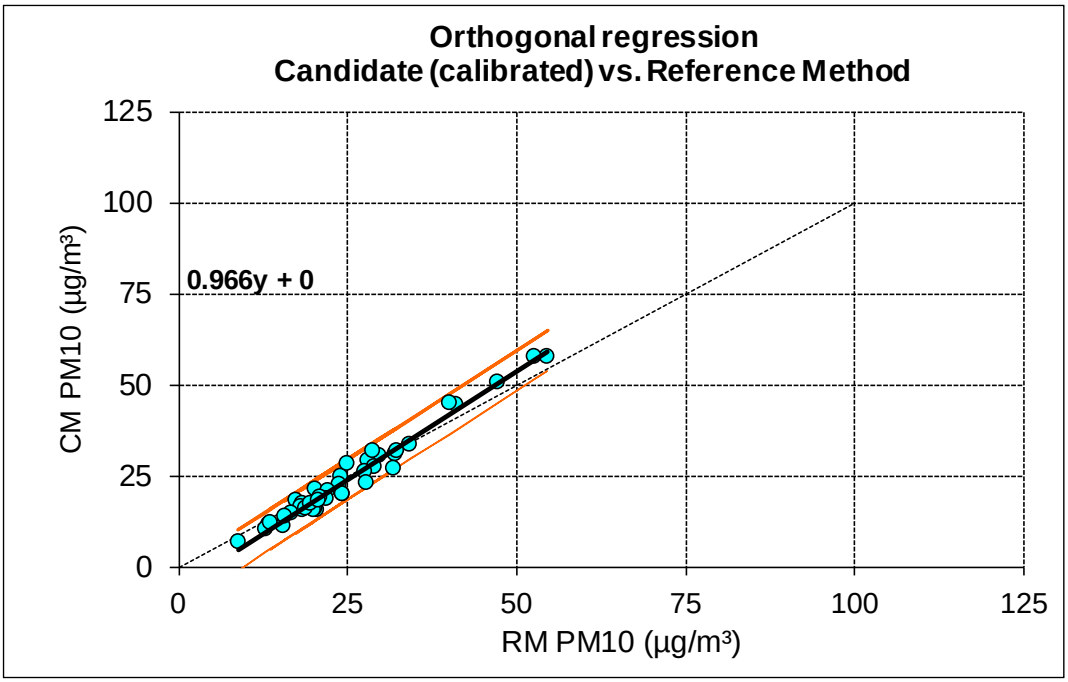

Figure 4: Chart illustrating the PM_{10} calibrated data using 41 values to compare both methods; no outliers were identified for this pollutant size fraction.