by Swam Singla

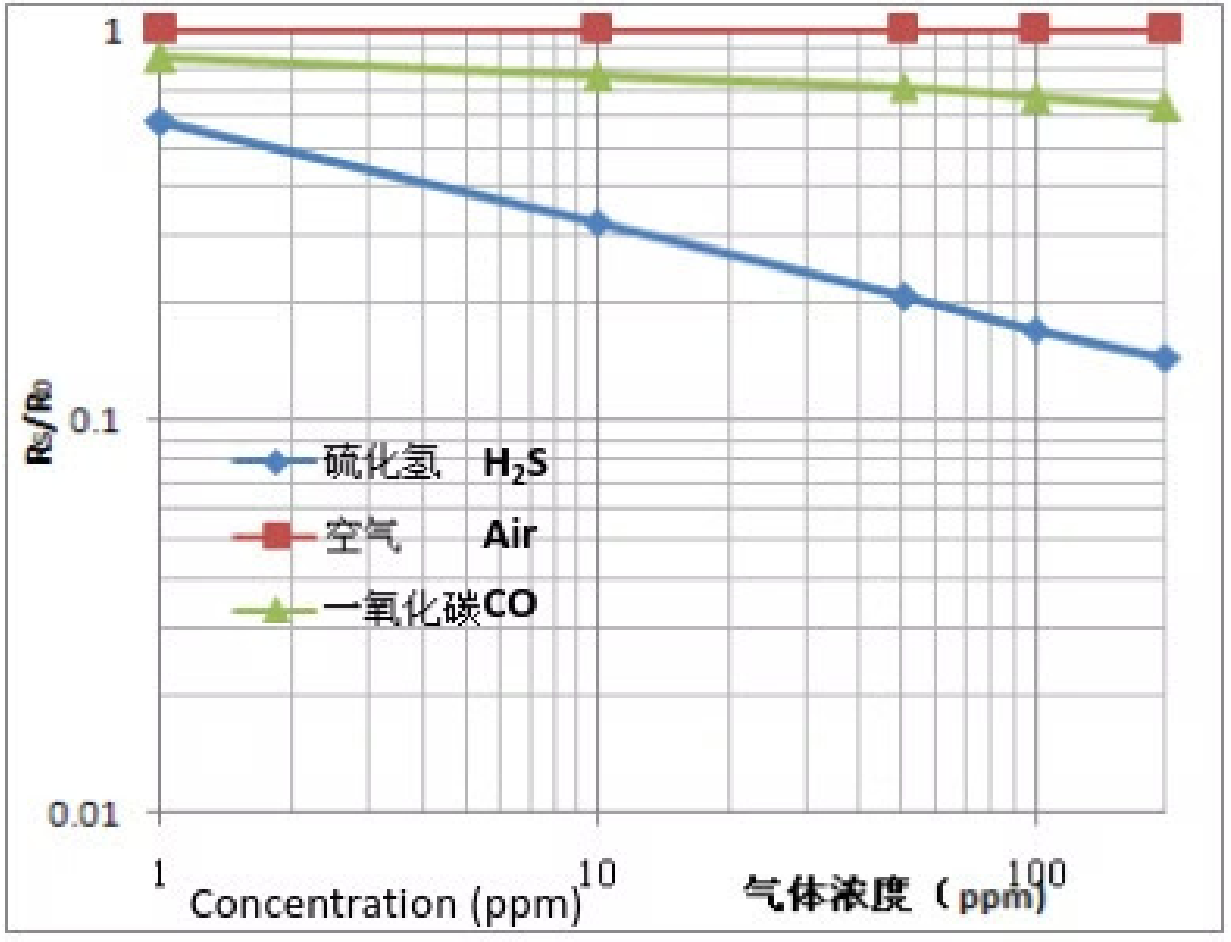
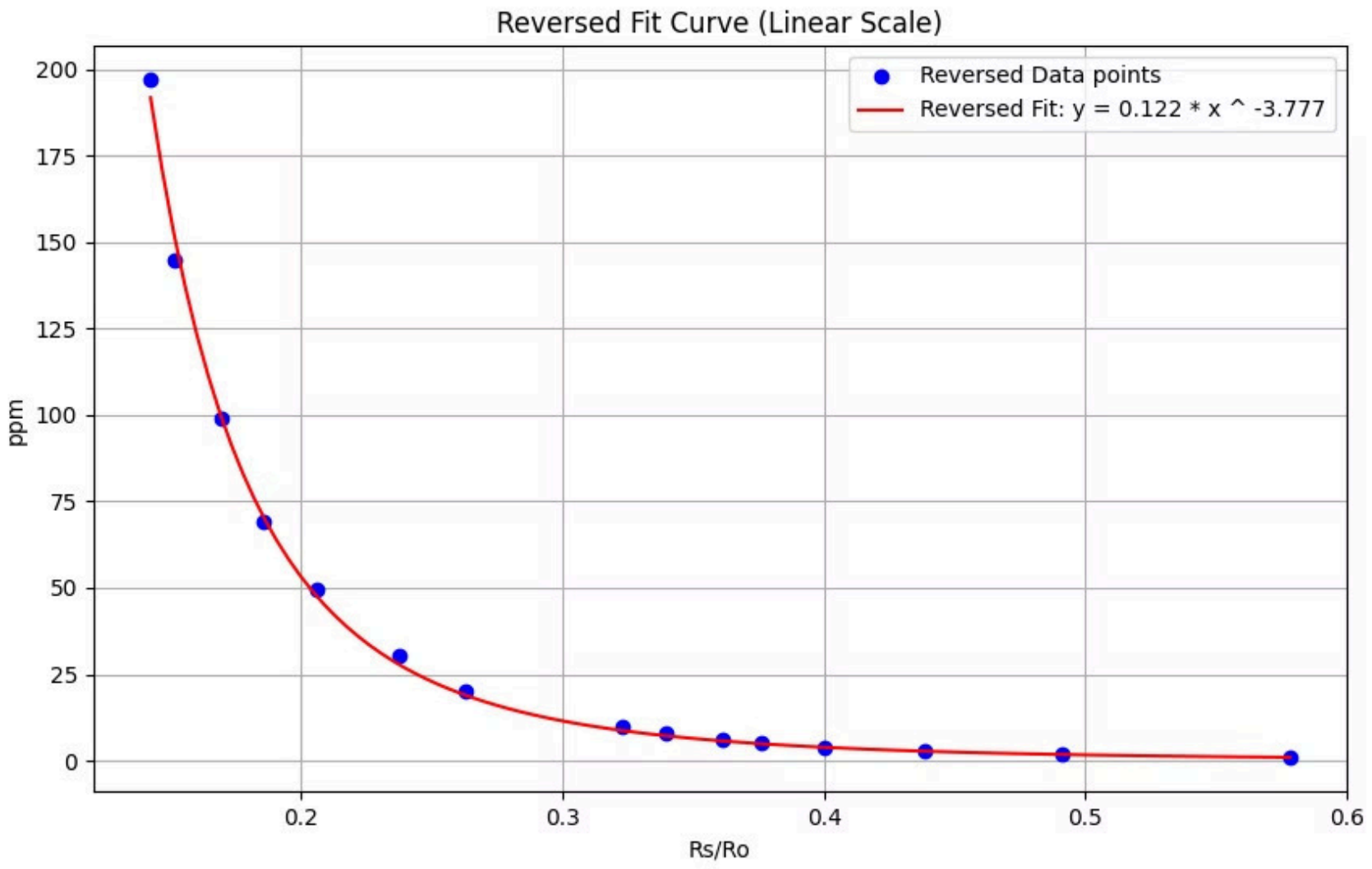
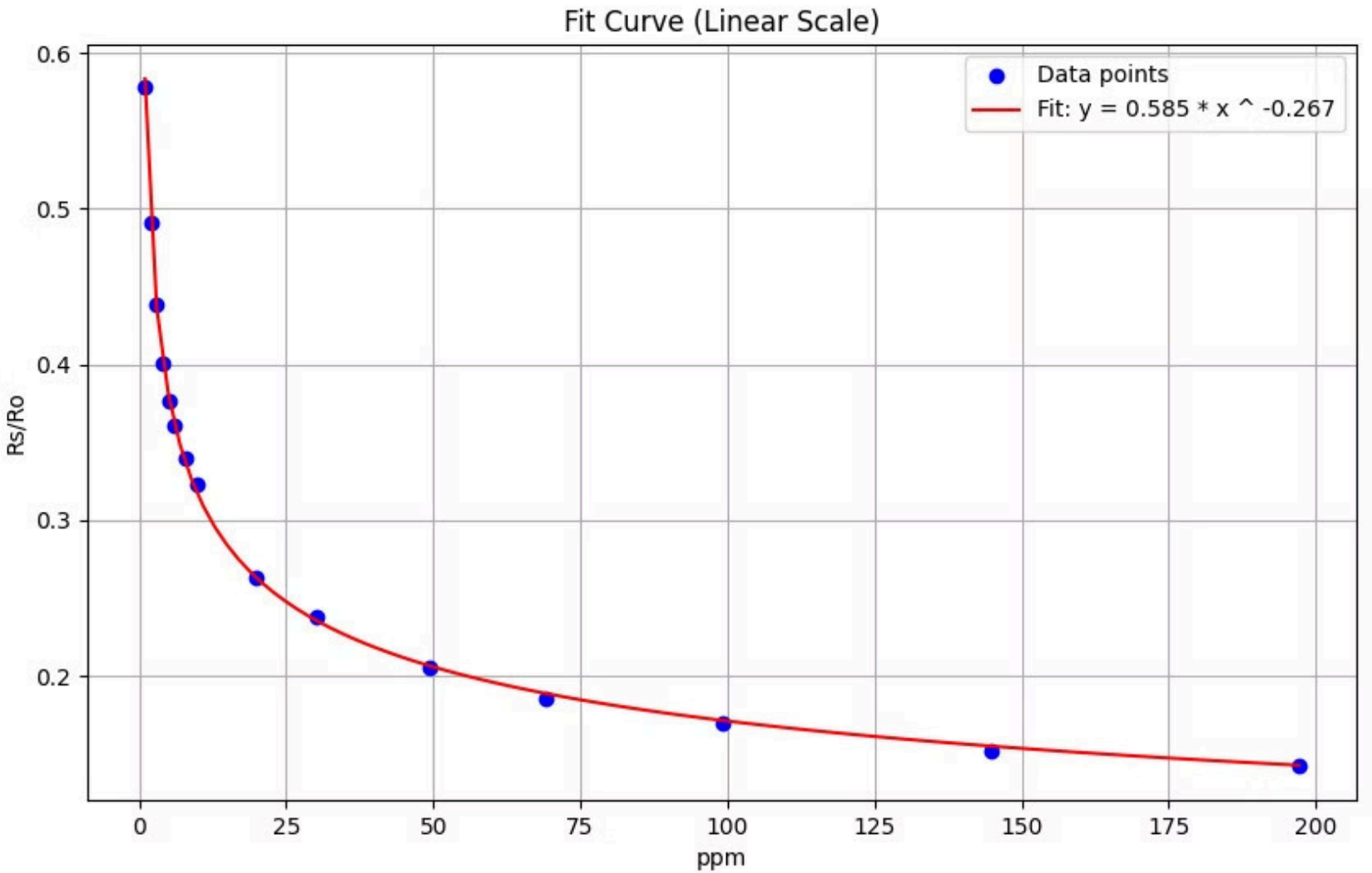
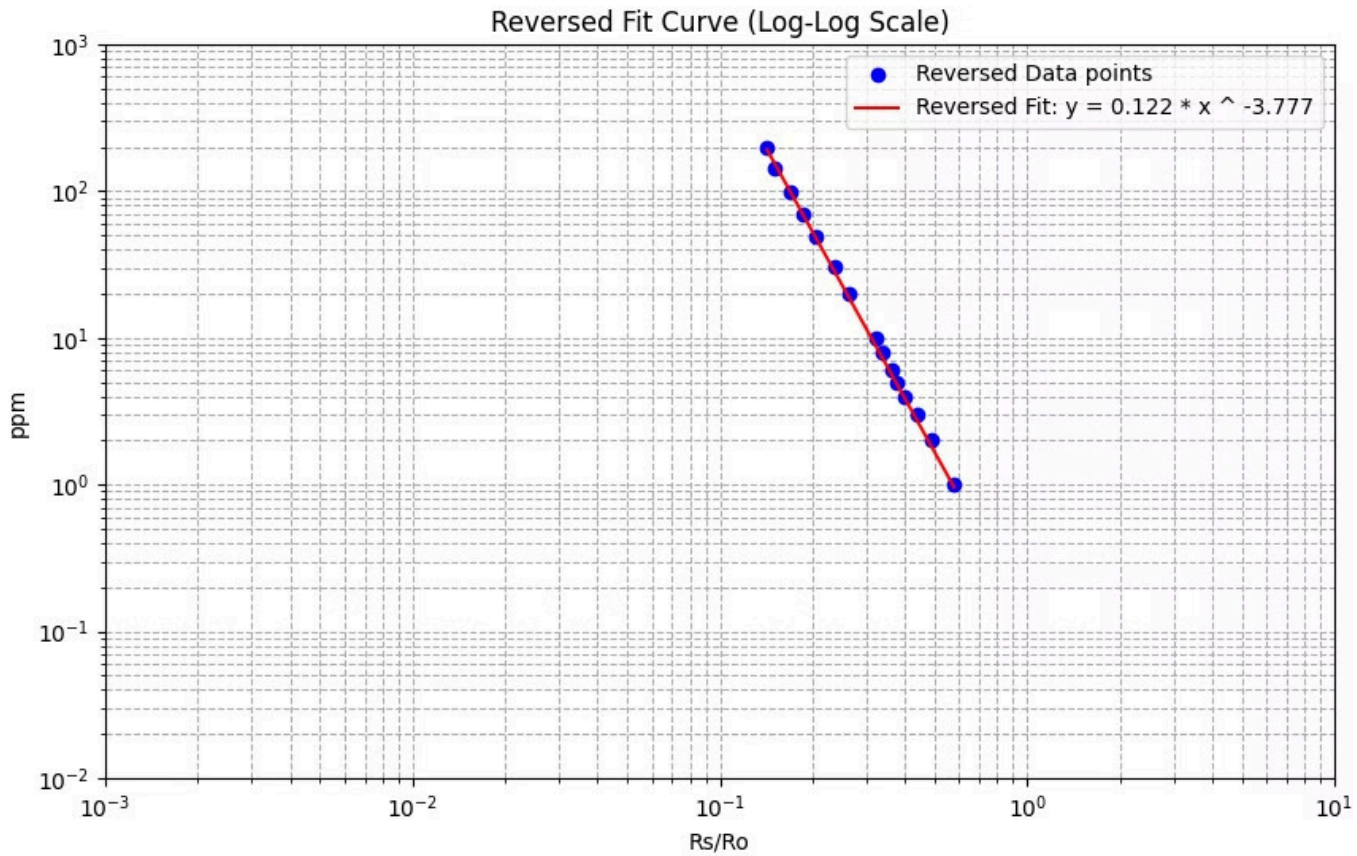
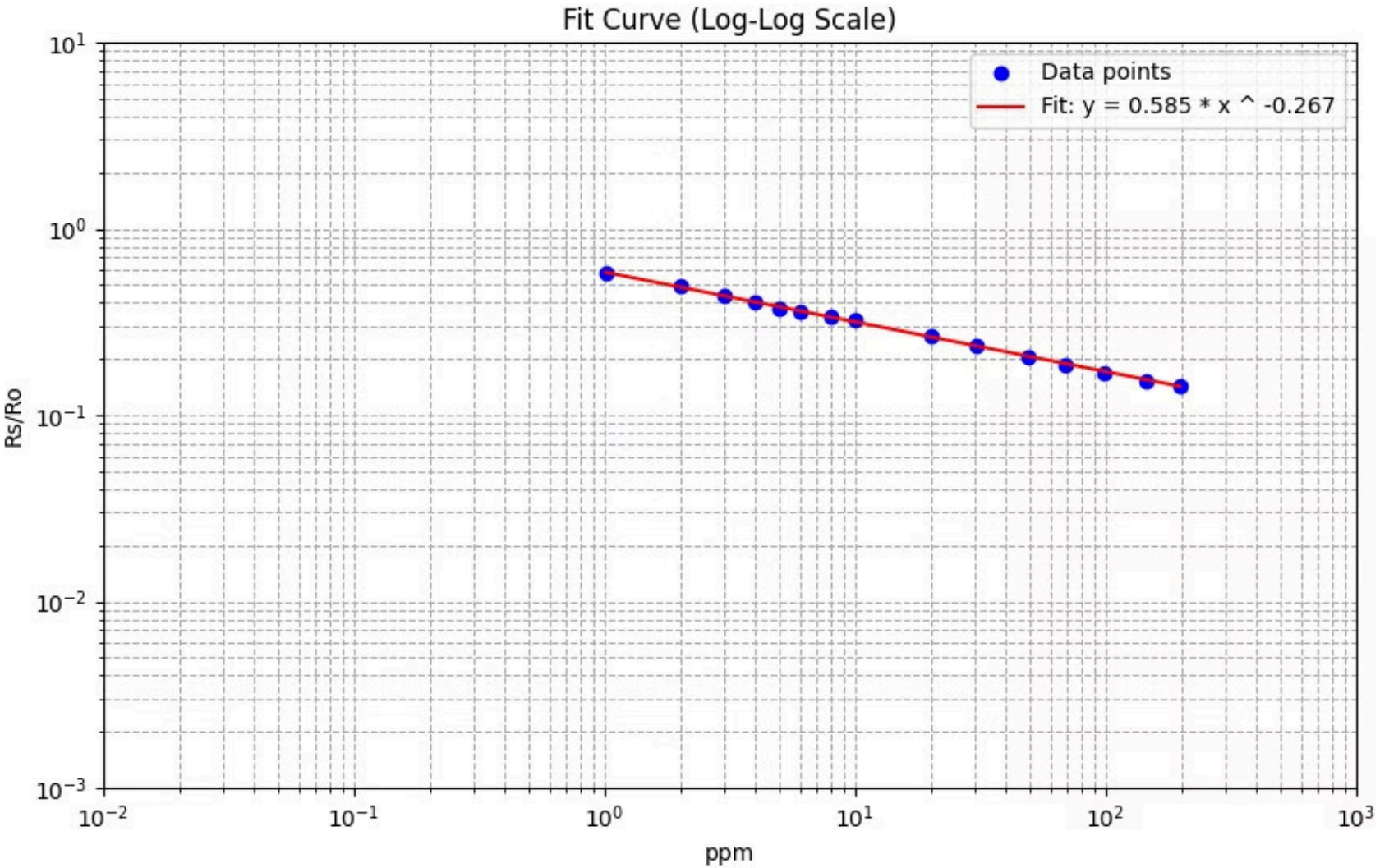


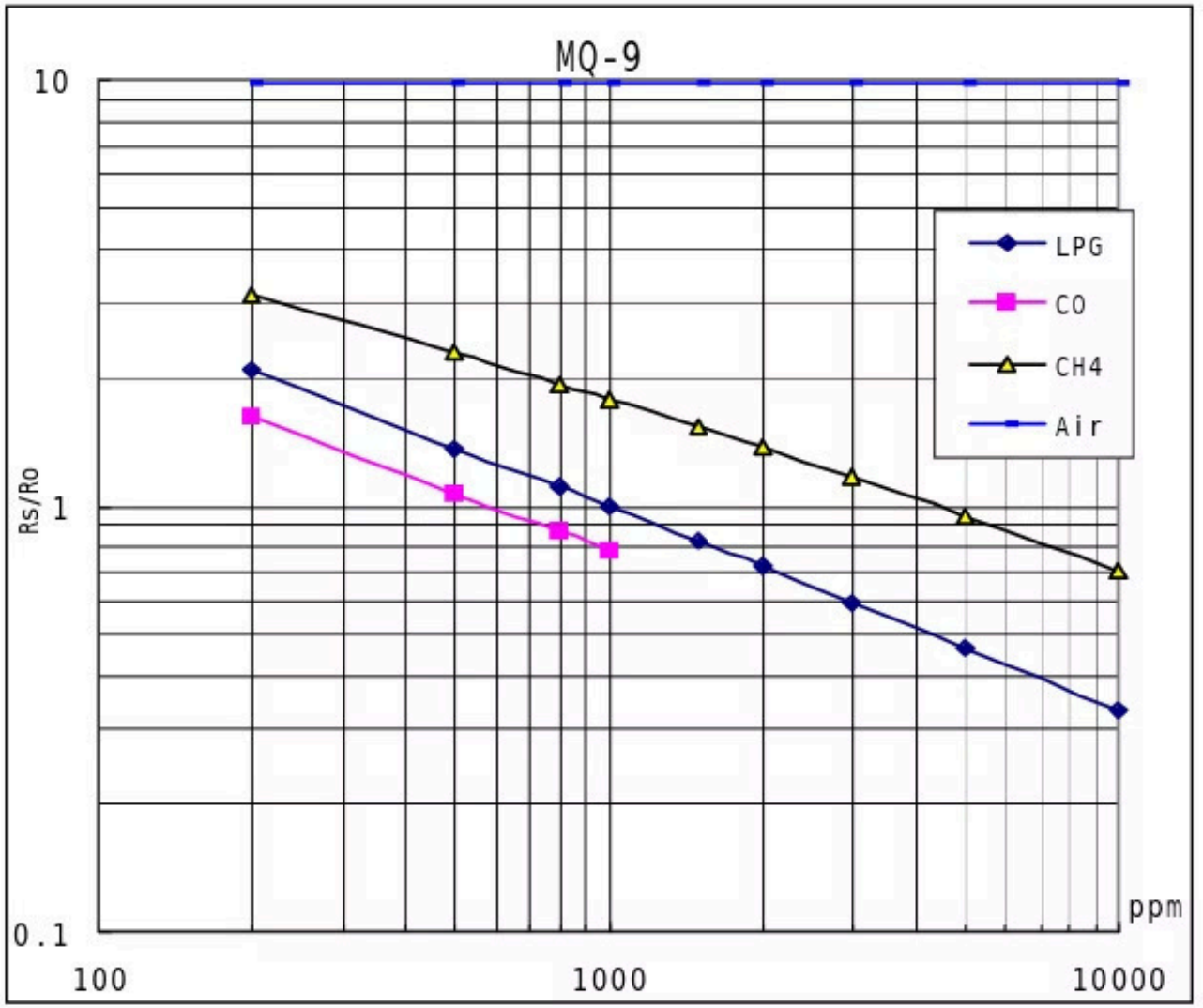
Fig3.Typical Sensitivity Curve

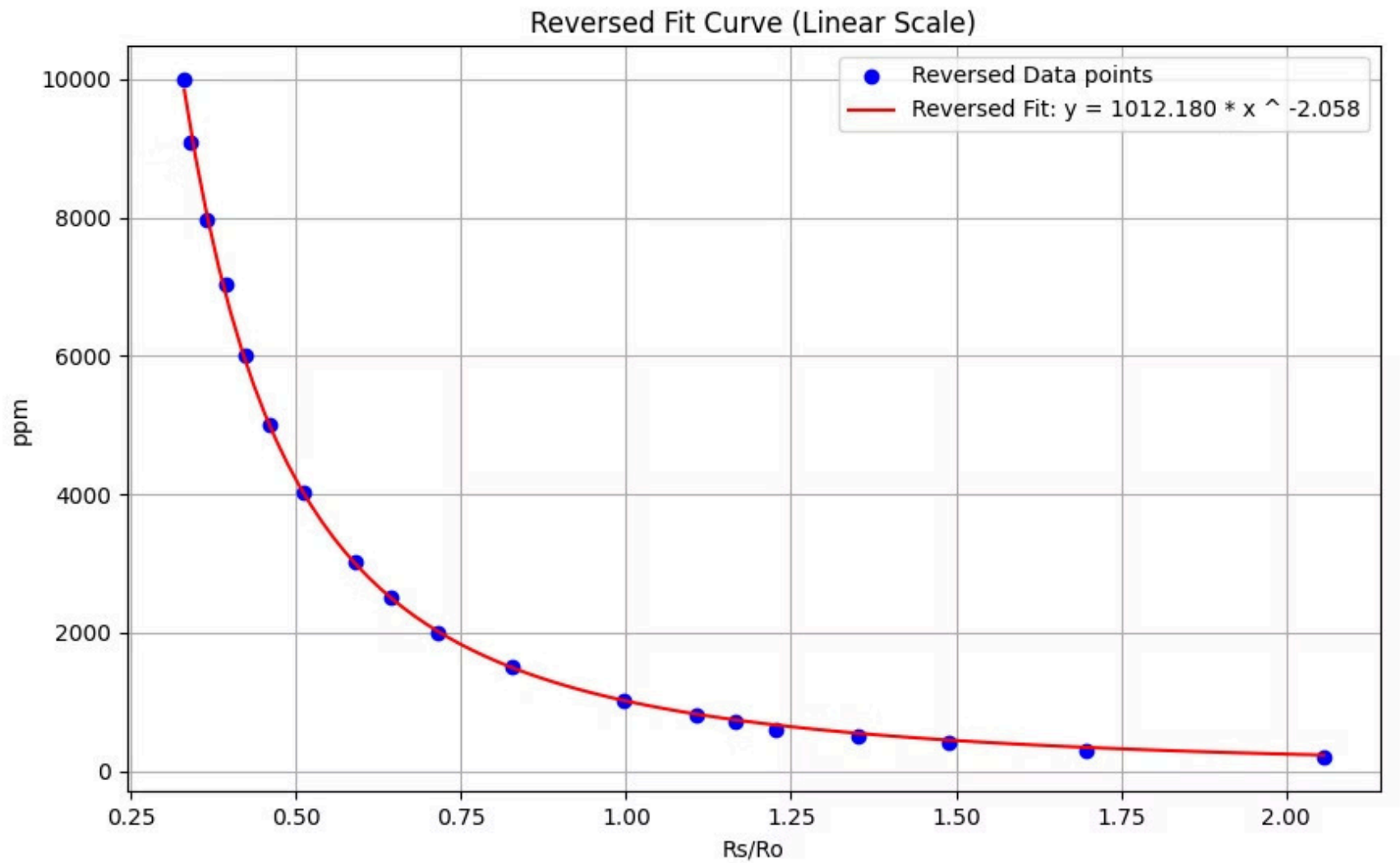


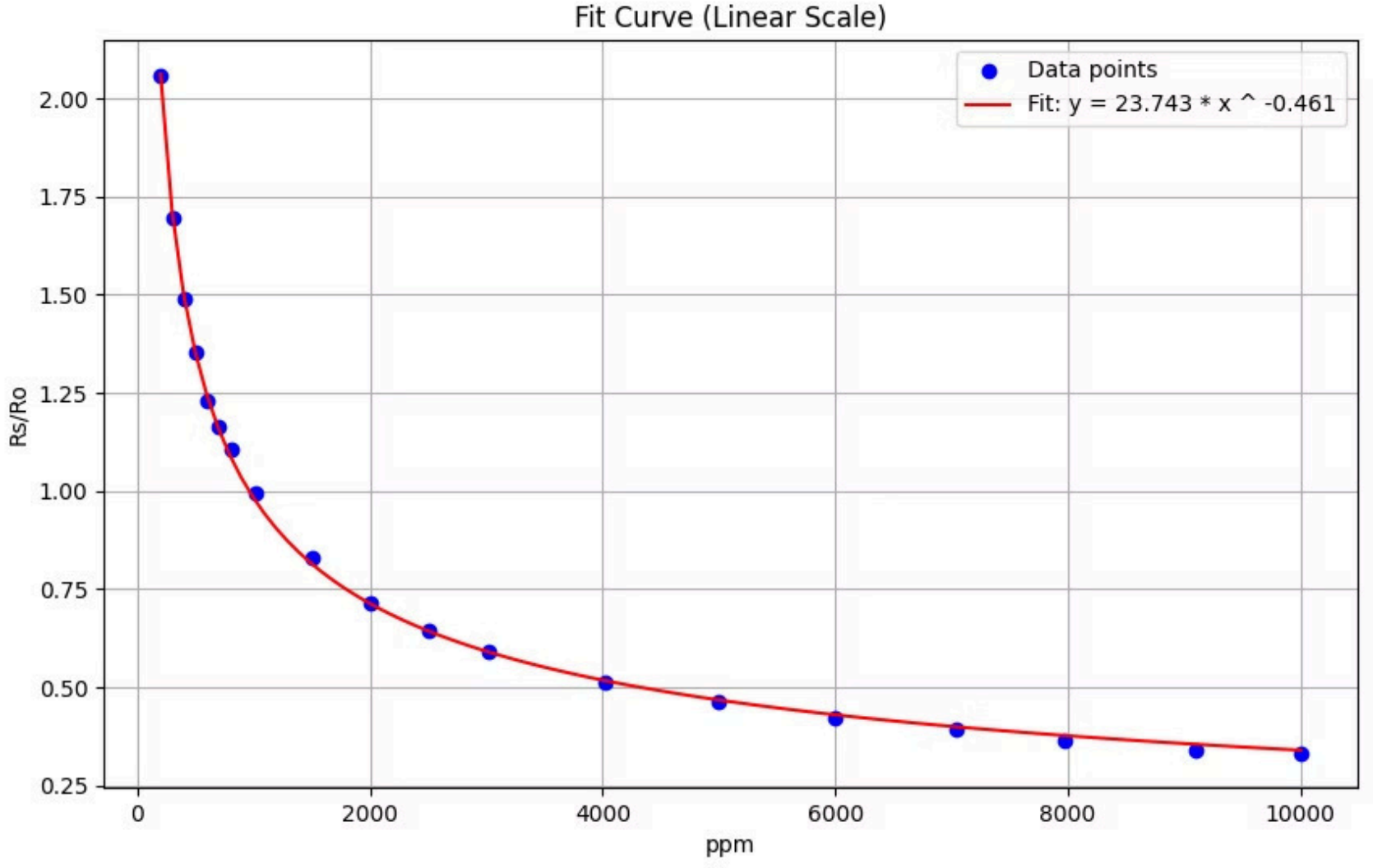


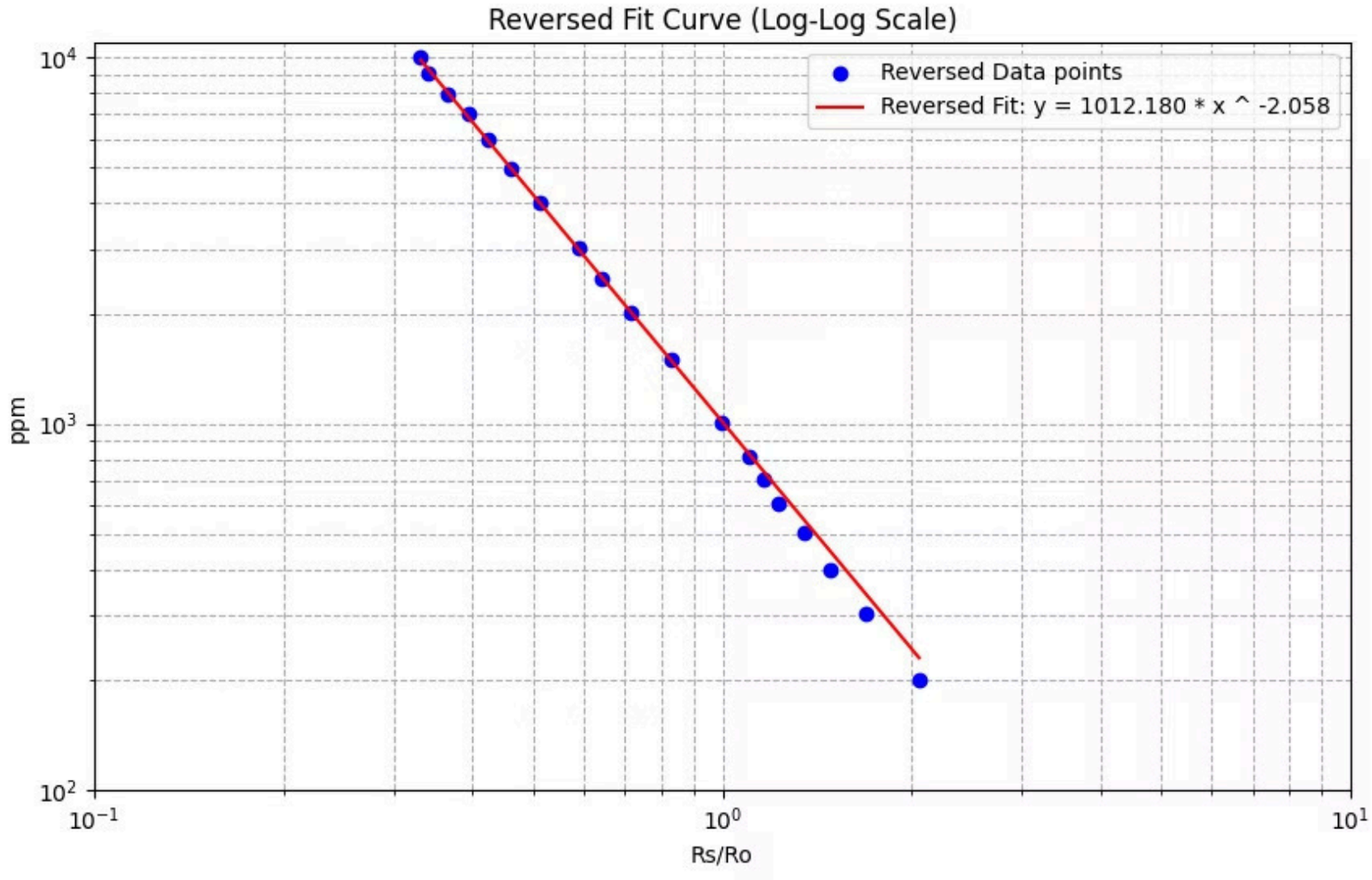


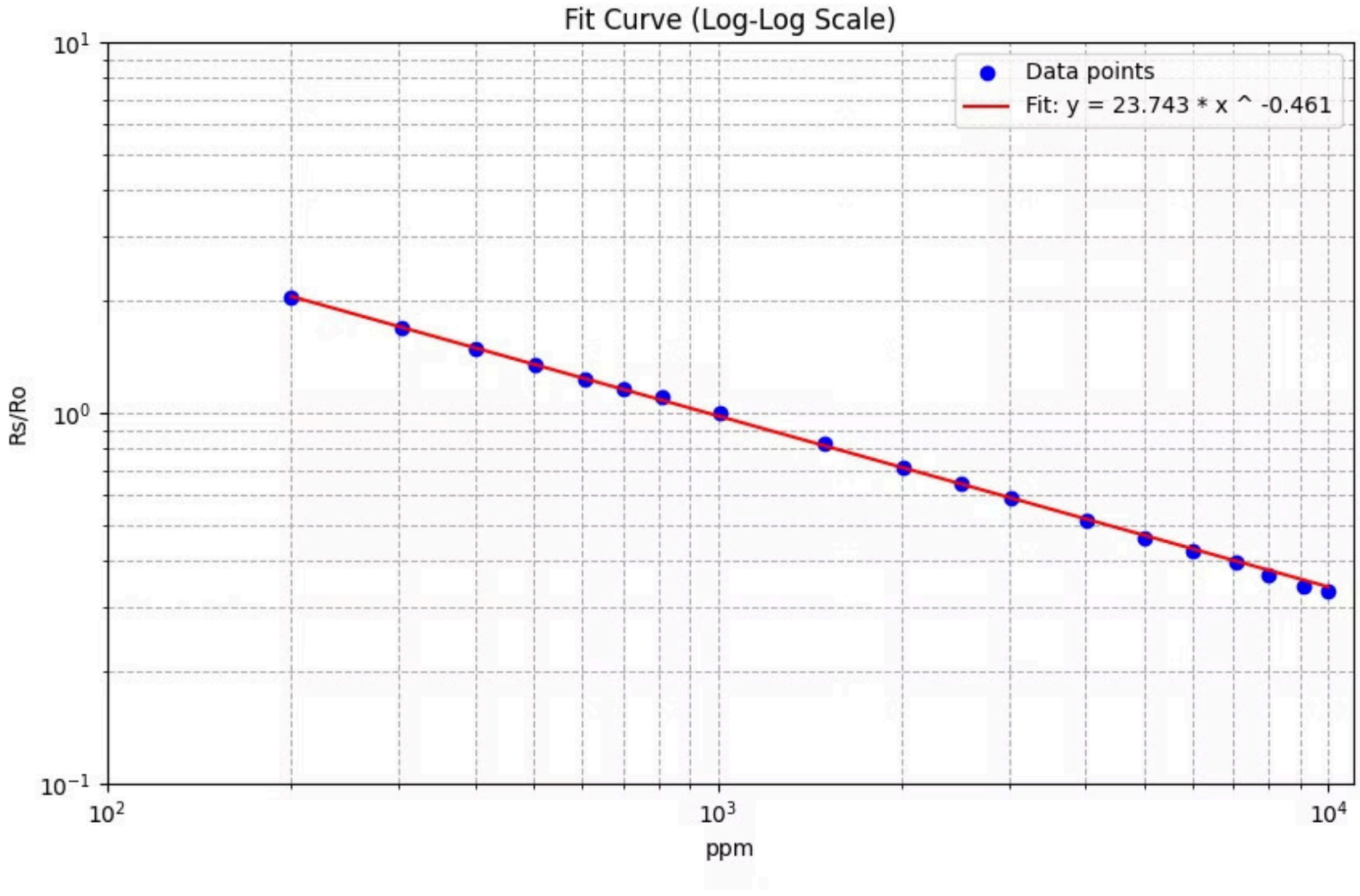












$$R_L = \frac{V_{RL}}{V_C}$$

$$1 + \frac{R_s}{R_L} = \frac{V_C}{V_{RL}}$$

$$R_s = \left(\frac{V_C - V_{RL}}{V_{RL}} \right) \times R_L$$

The sensor voltage is typically $V_C = 5V$ or $3.3V$. Additionally, the relation for V_{RL} is:

$$V_{RL} = \text{Sensor Reading} \times \left(\frac{V_C}{4095.0} \right)$$

$$V_C = I(R_s + R_L)$$

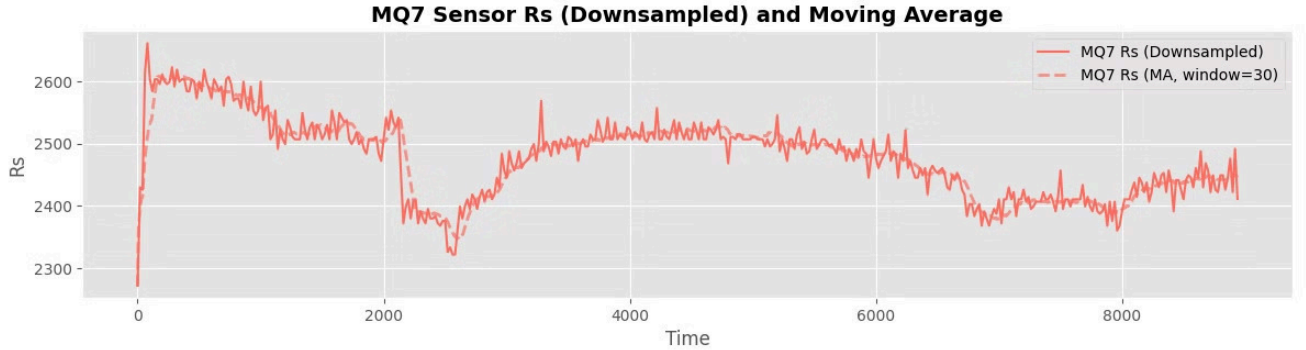
$$P_s = \frac{V_C^2 \times R_s}{(R_s + R_L)^2} = I^2 R_s$$

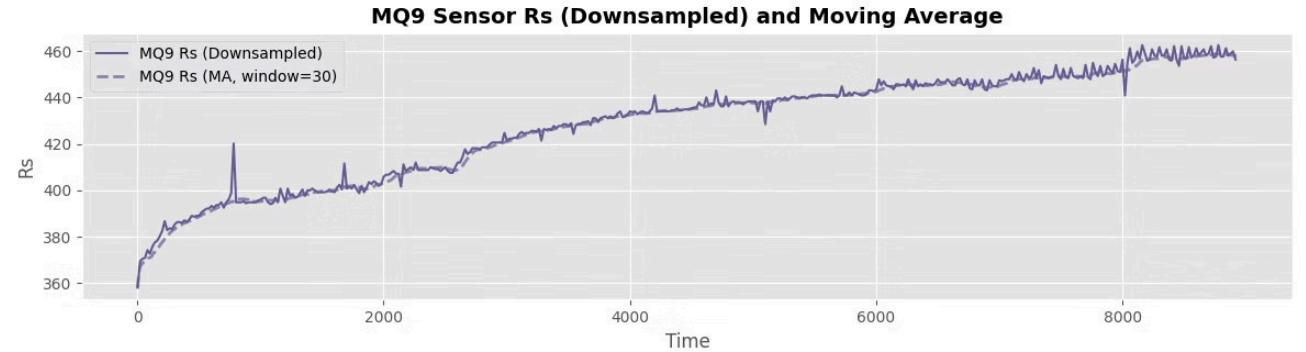
The voltage across the load resistance V_{RL} is:

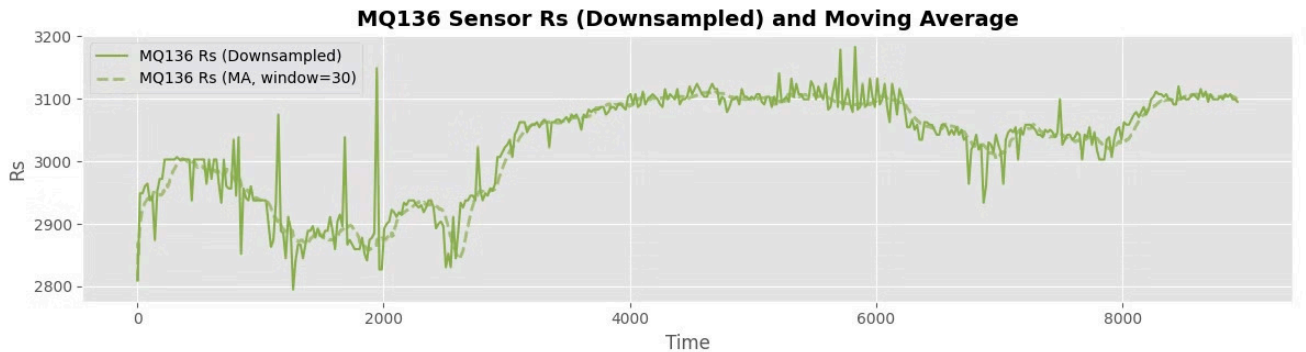
$$V_{RL} = IR_L = \frac{V_C \times R_L}{R_s + R_L}$$

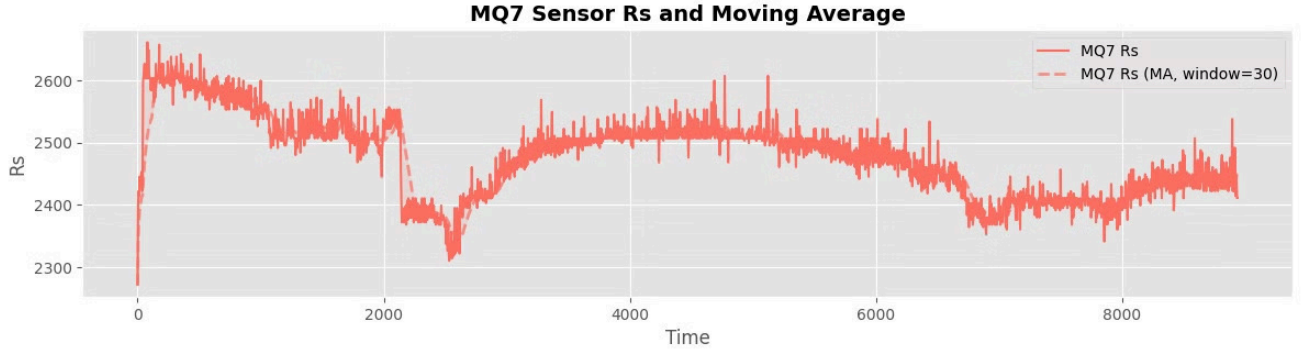
Solving for the sensor resistance R_s:

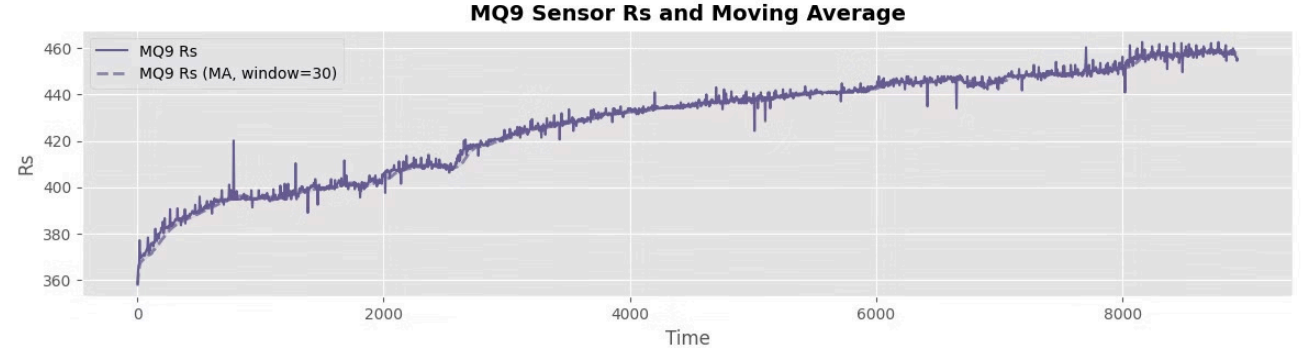
$$R_s = \left(\frac{V_C - V_{RL}}{V_{RL}} \right) \times R_L$$

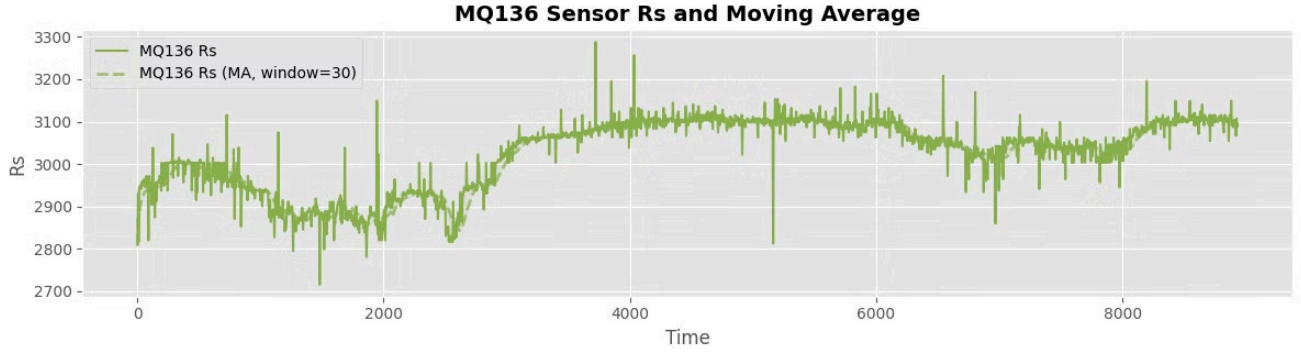


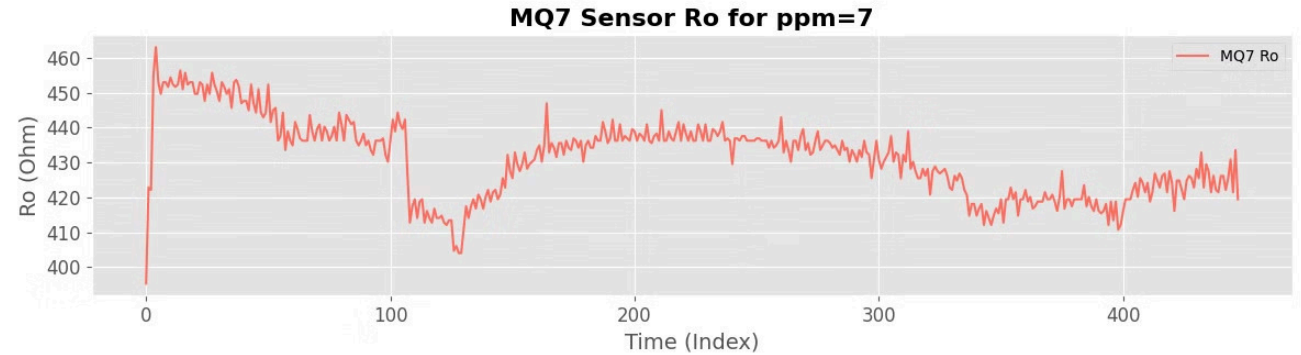


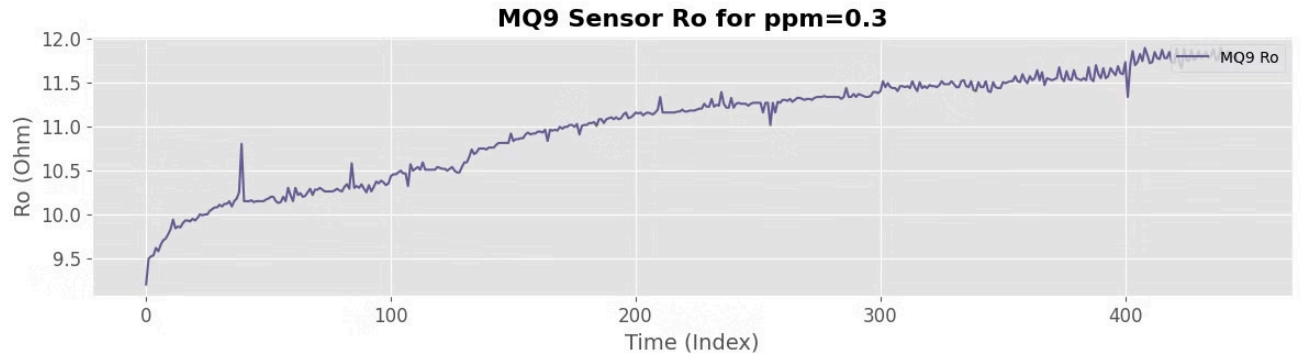


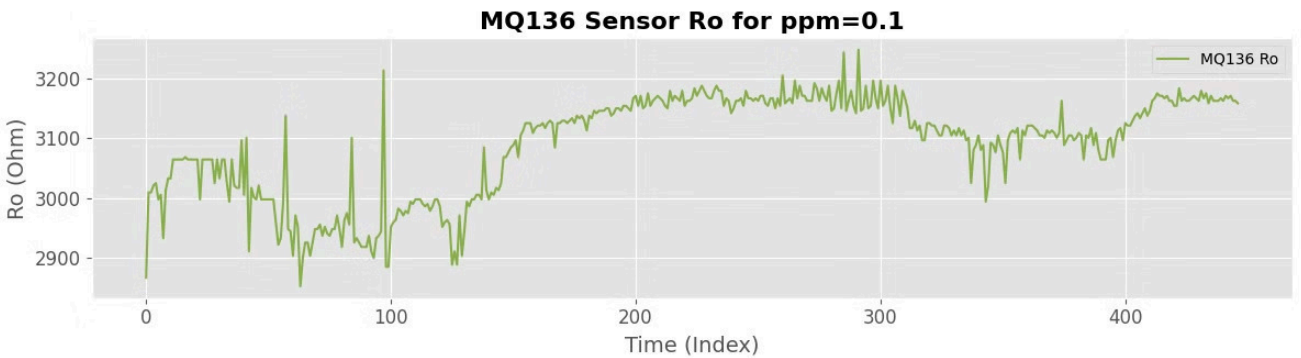


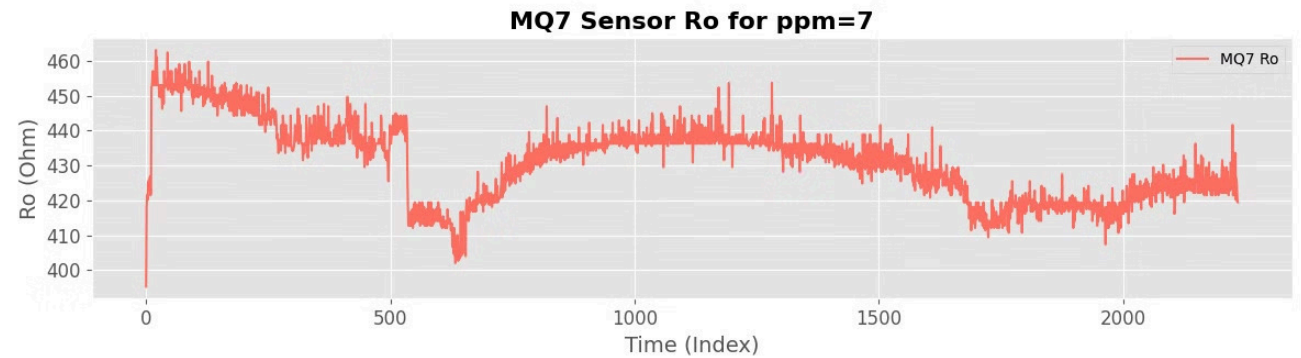


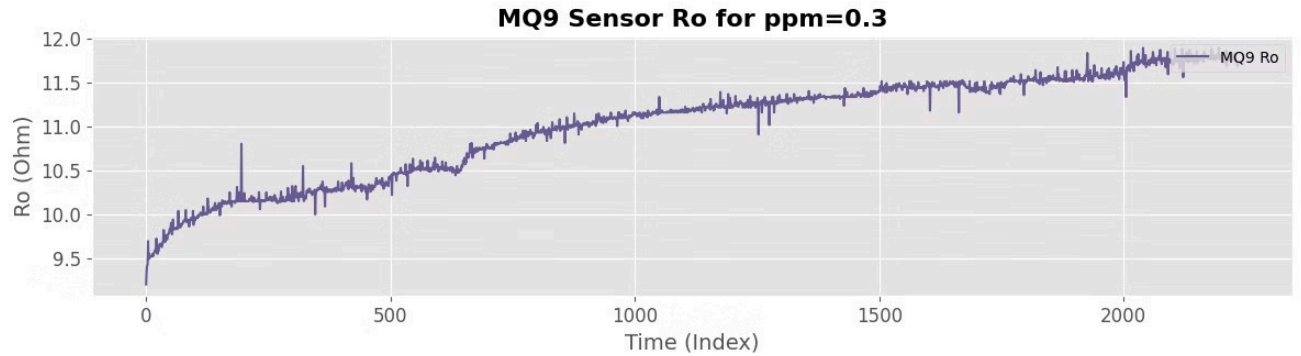


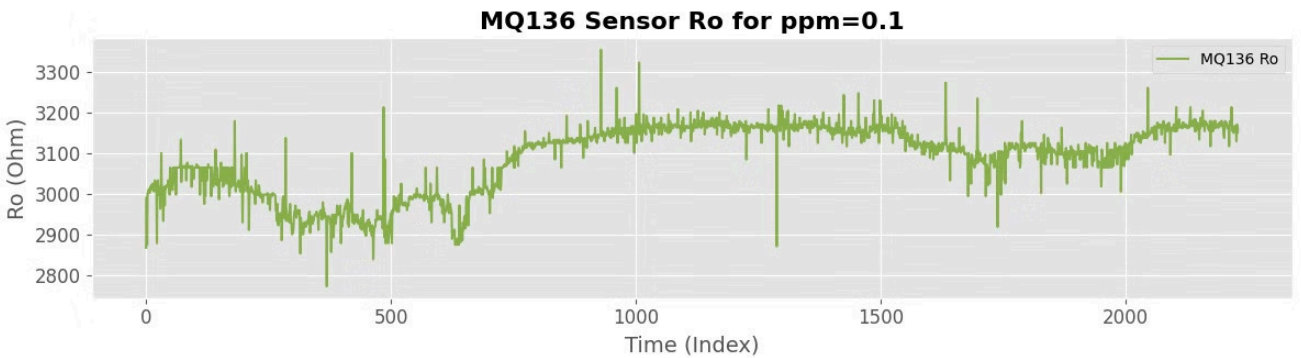


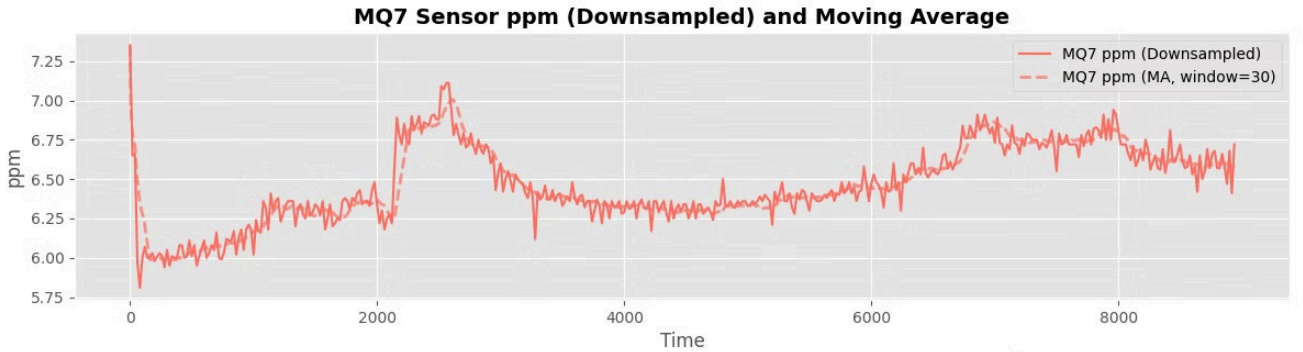


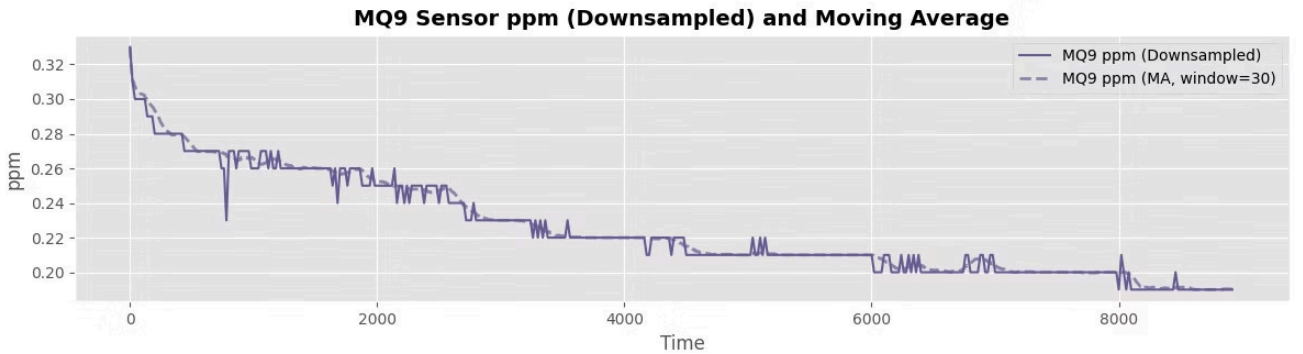


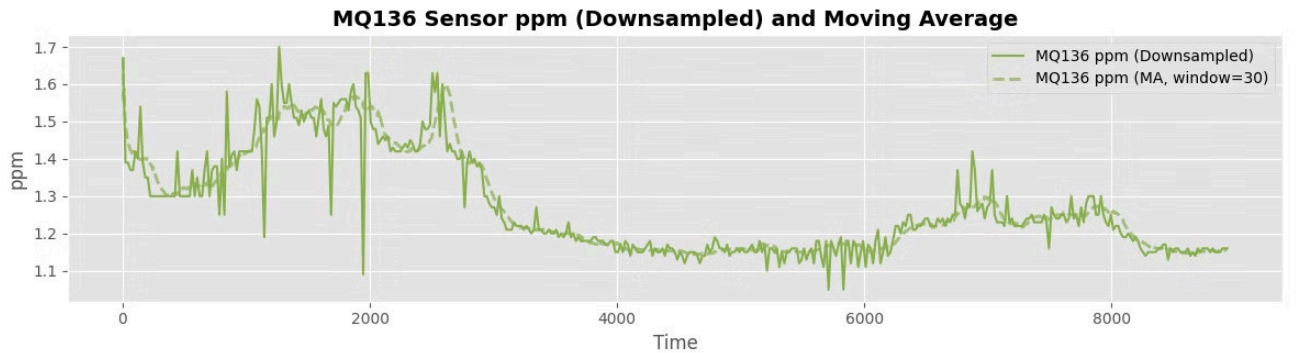


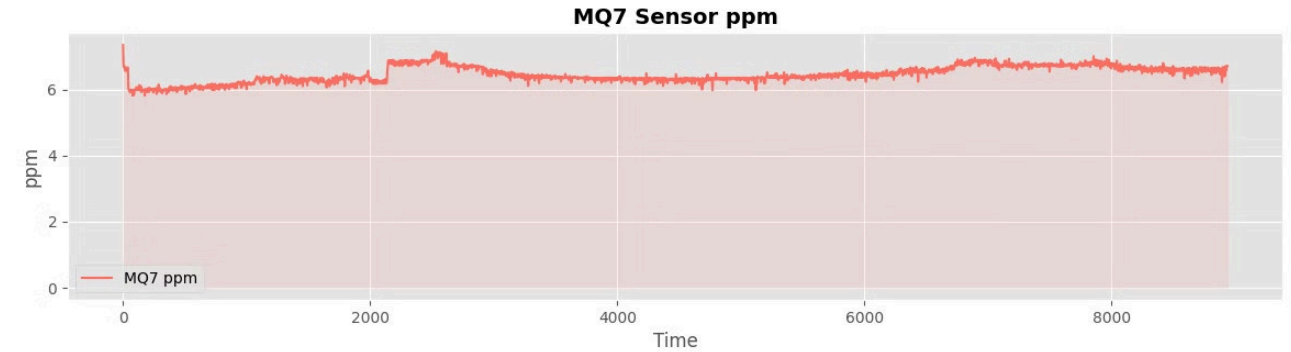


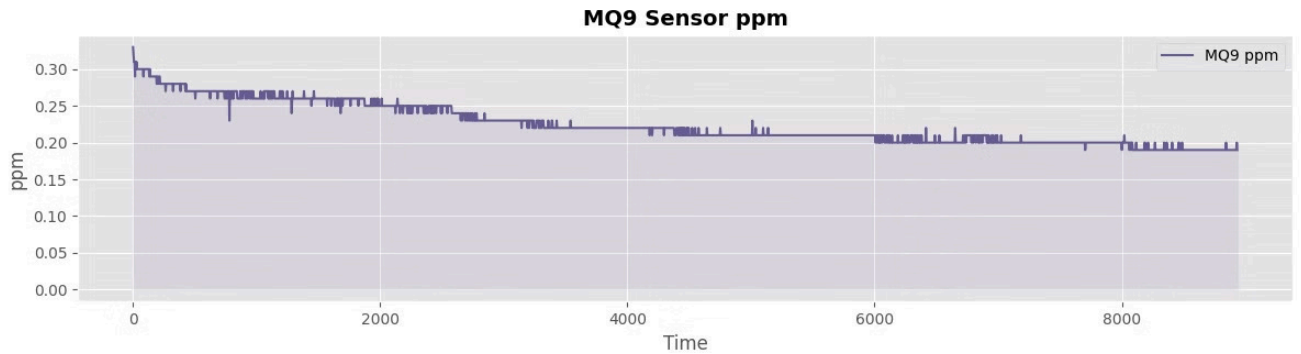


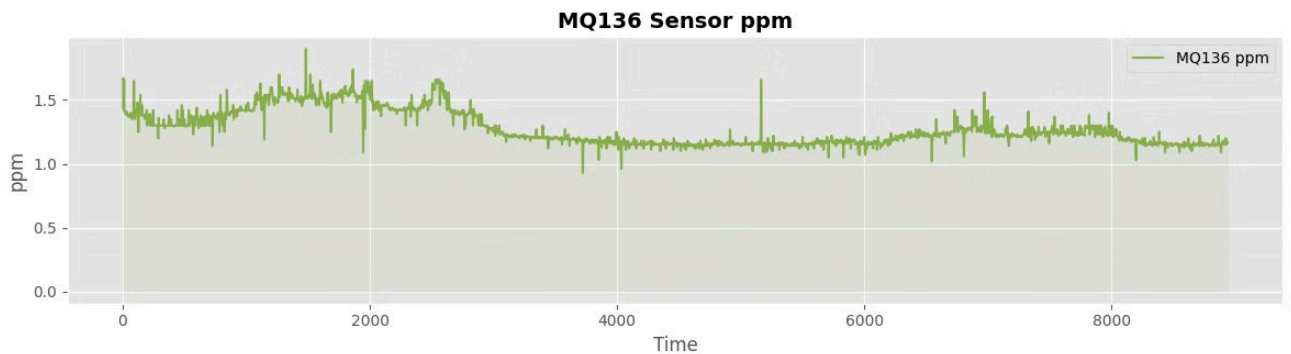


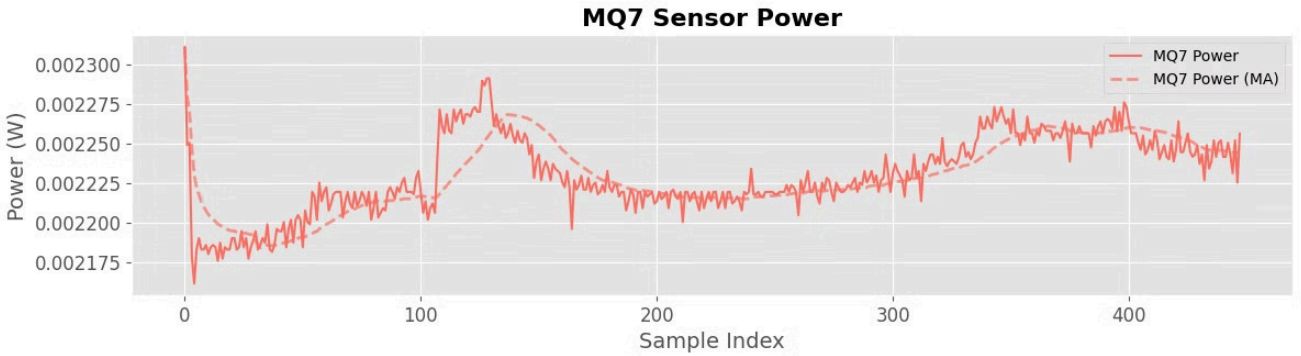


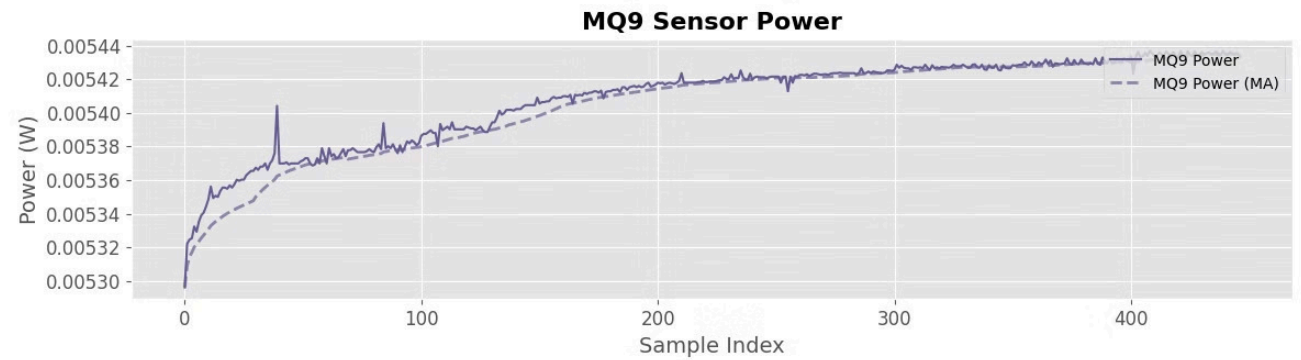


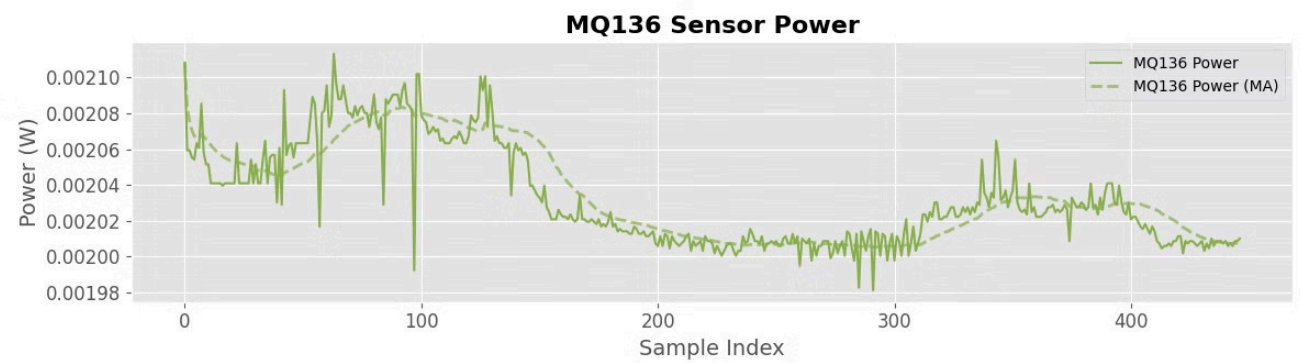


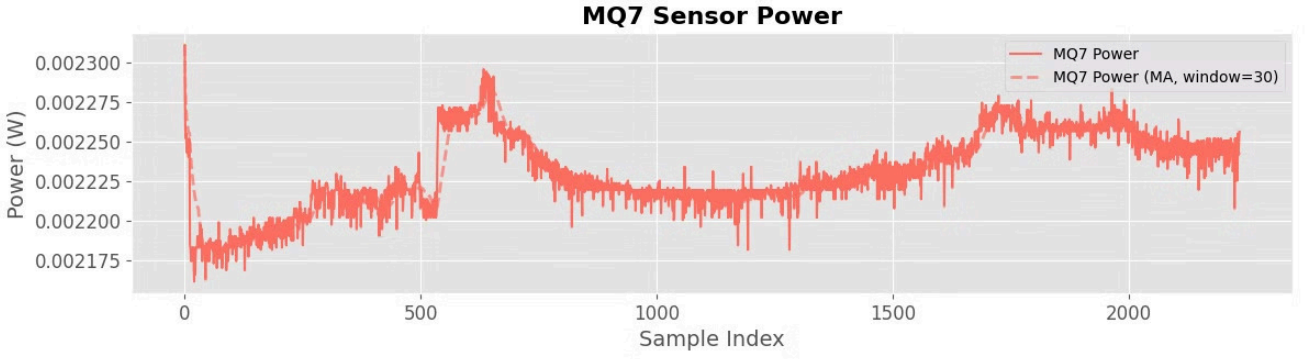


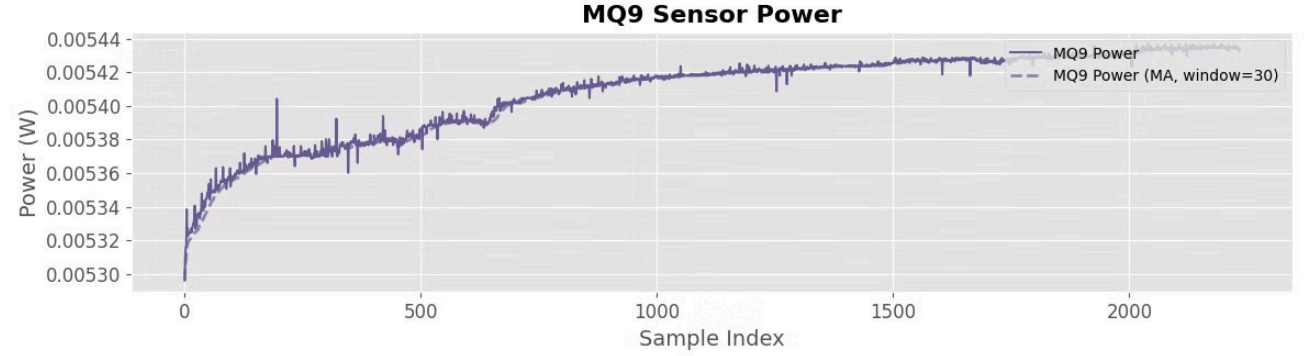


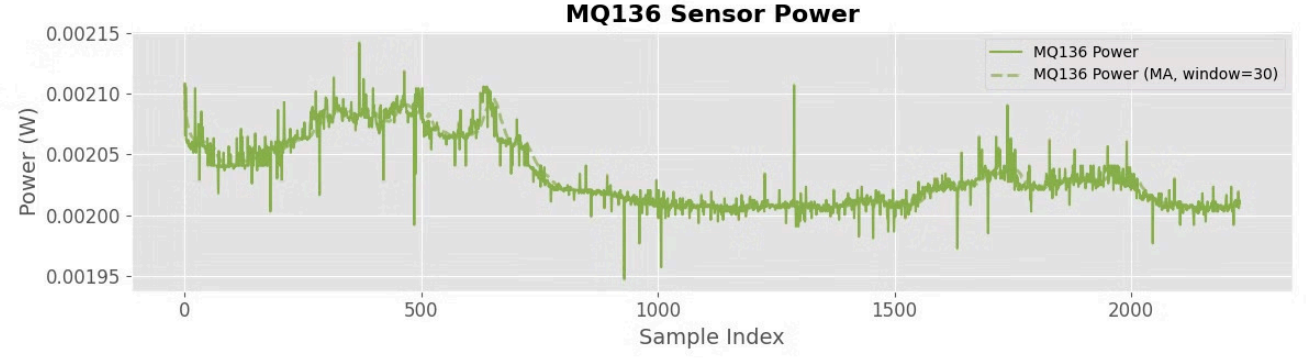


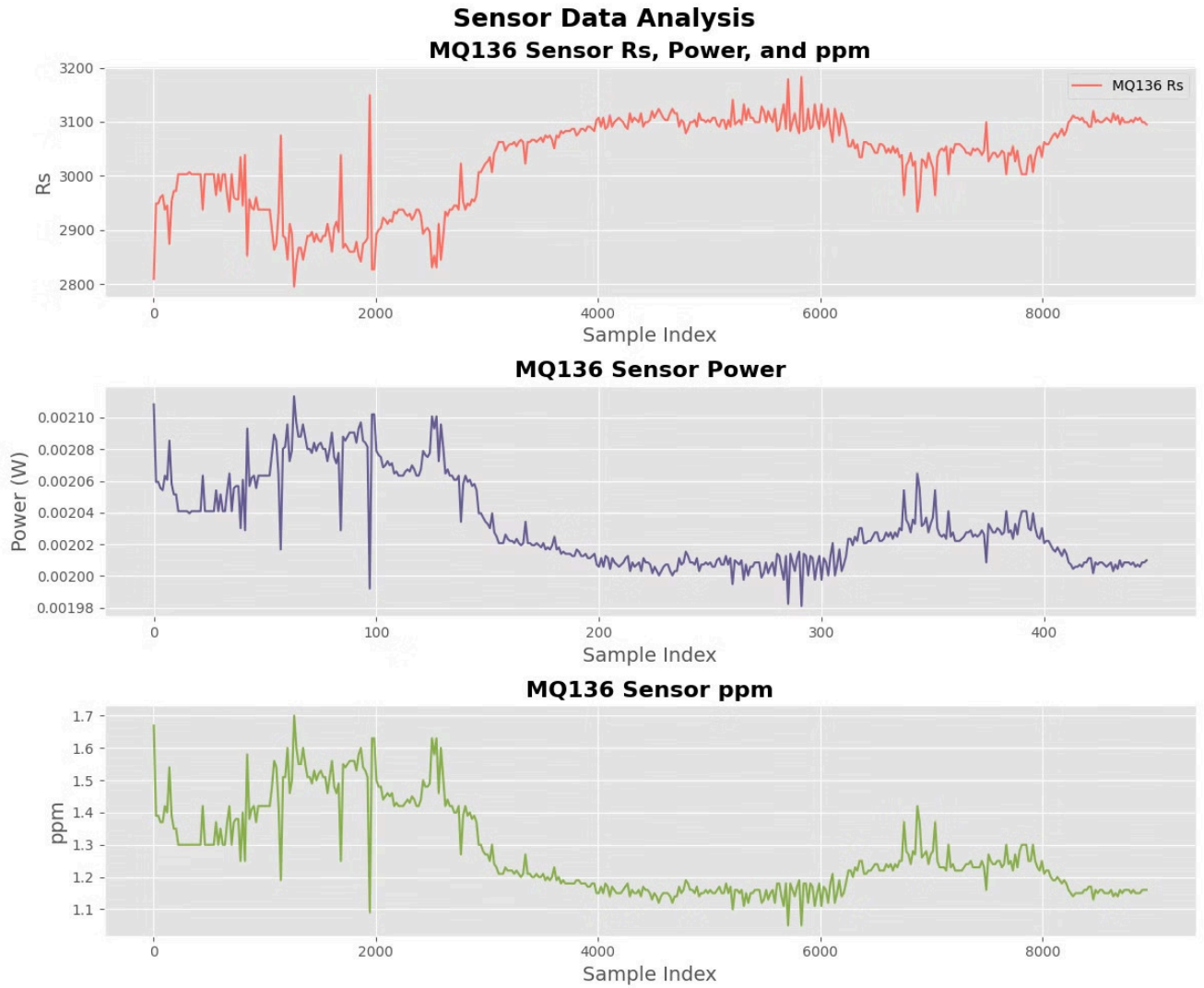


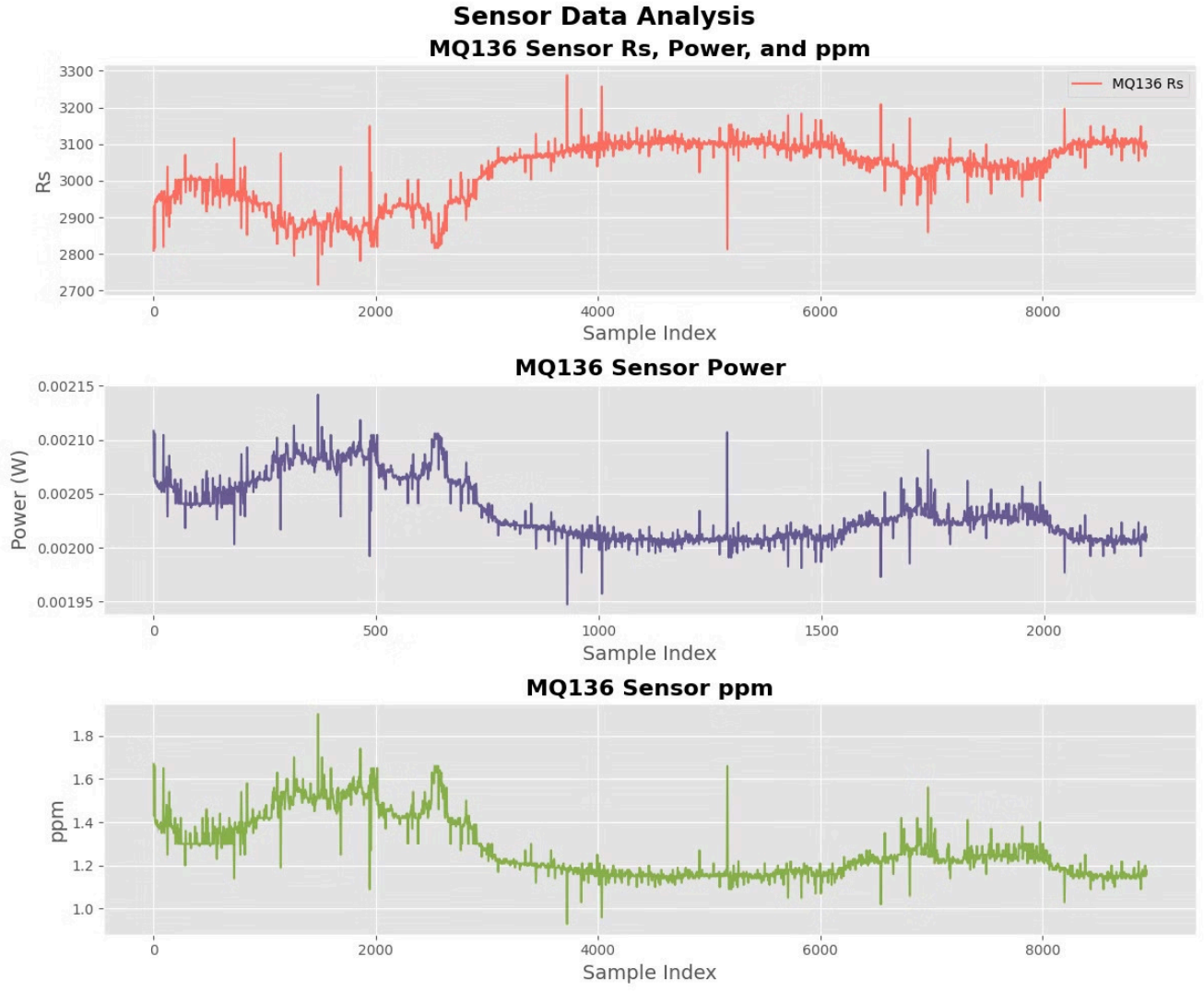


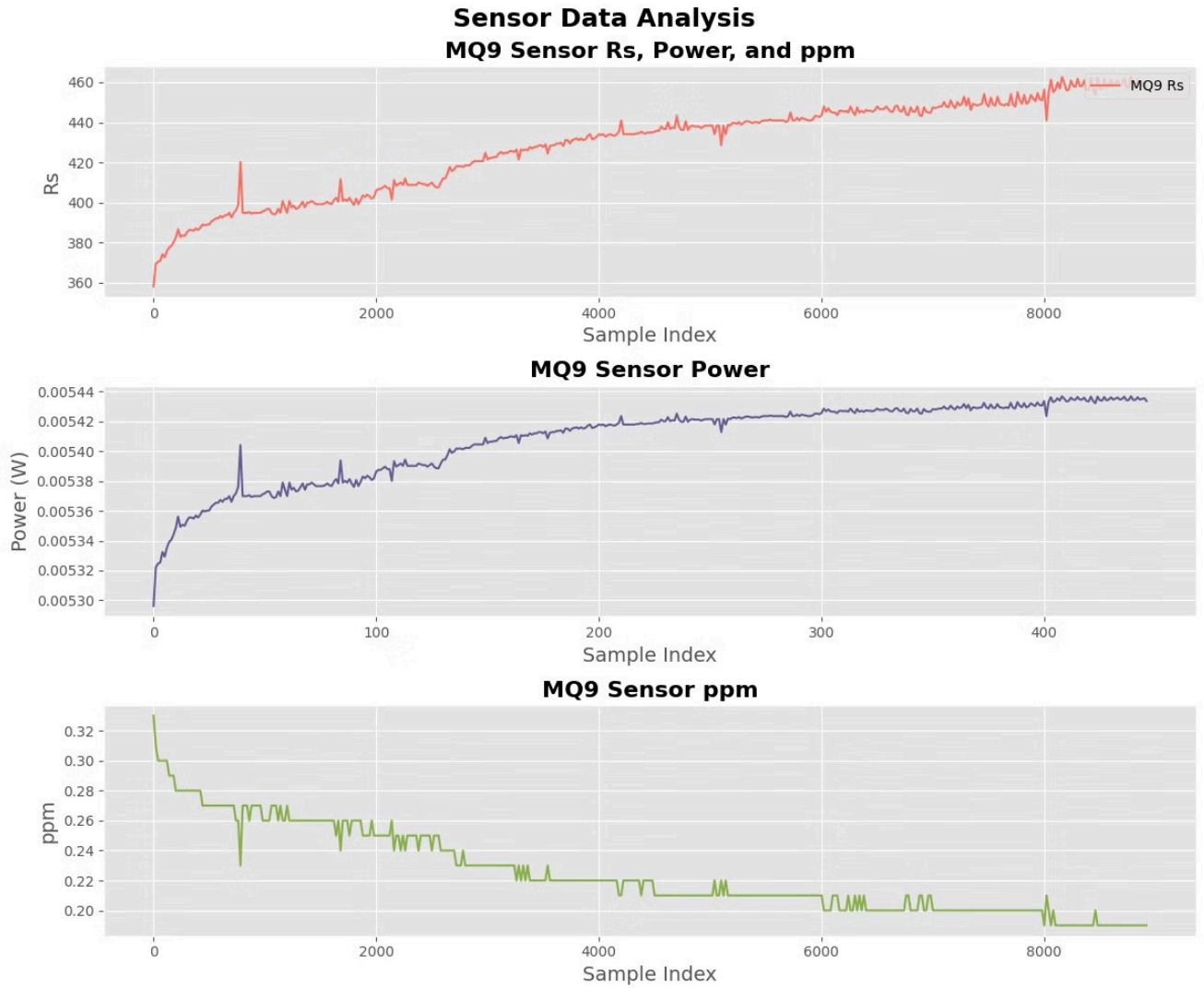


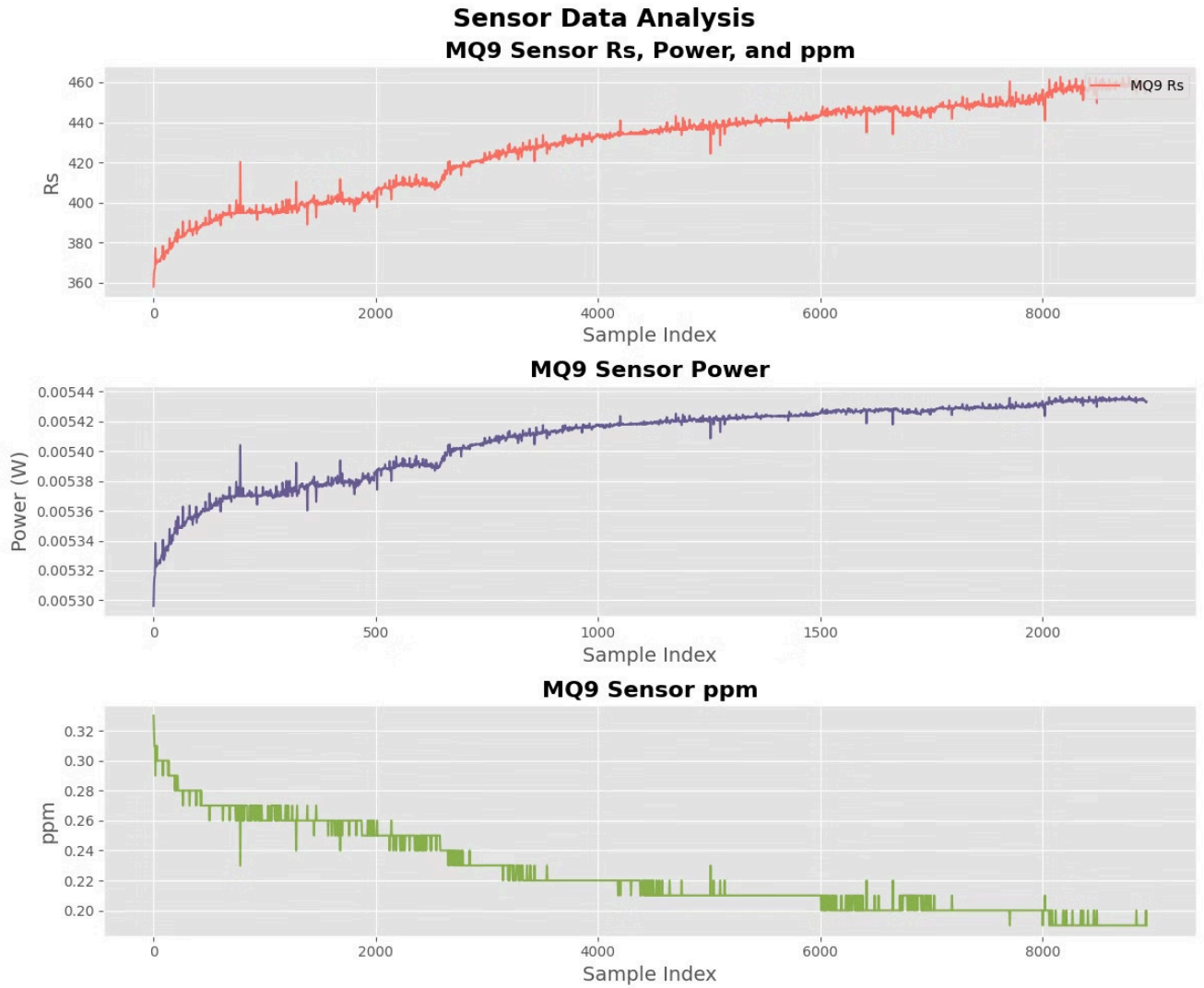


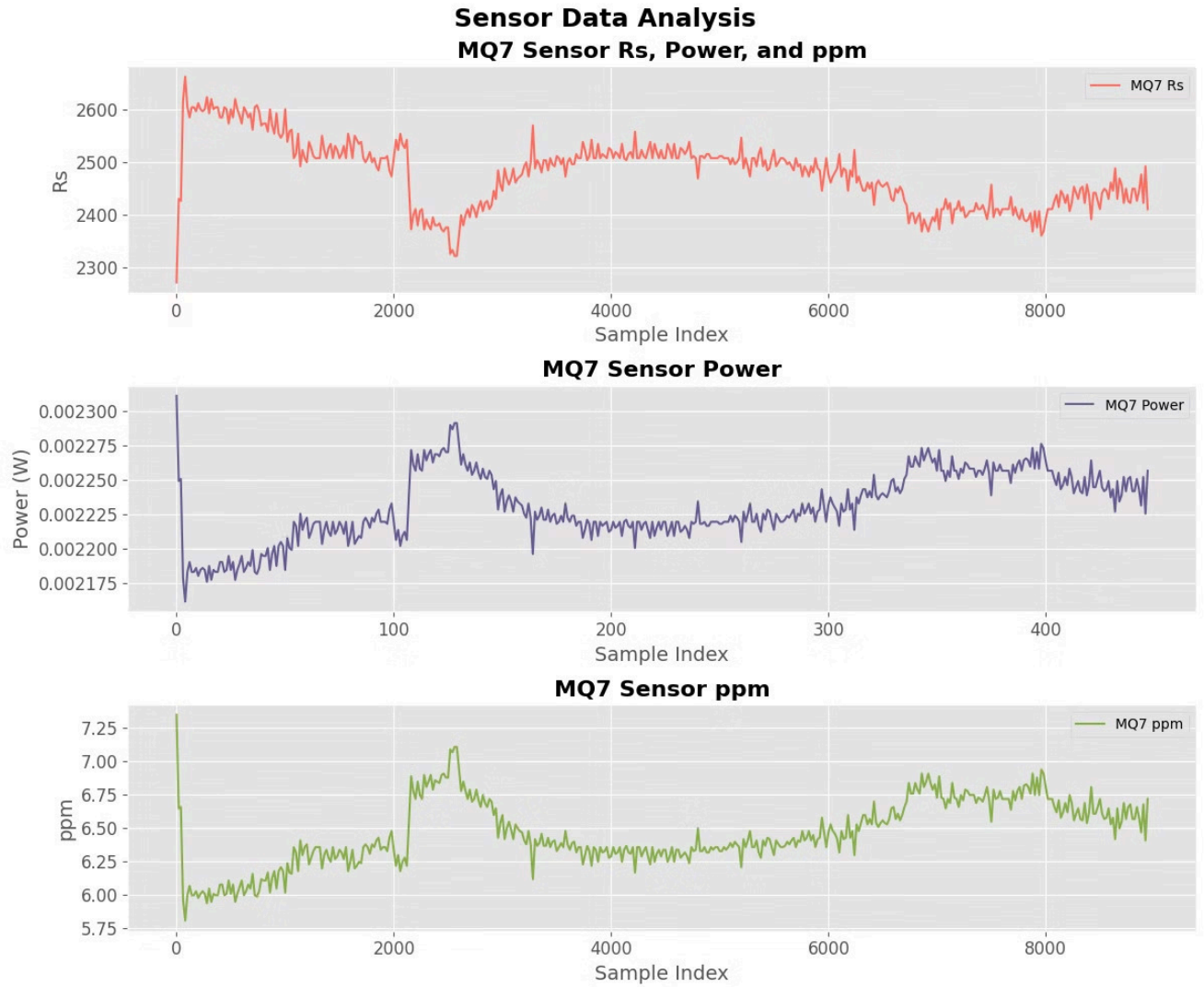


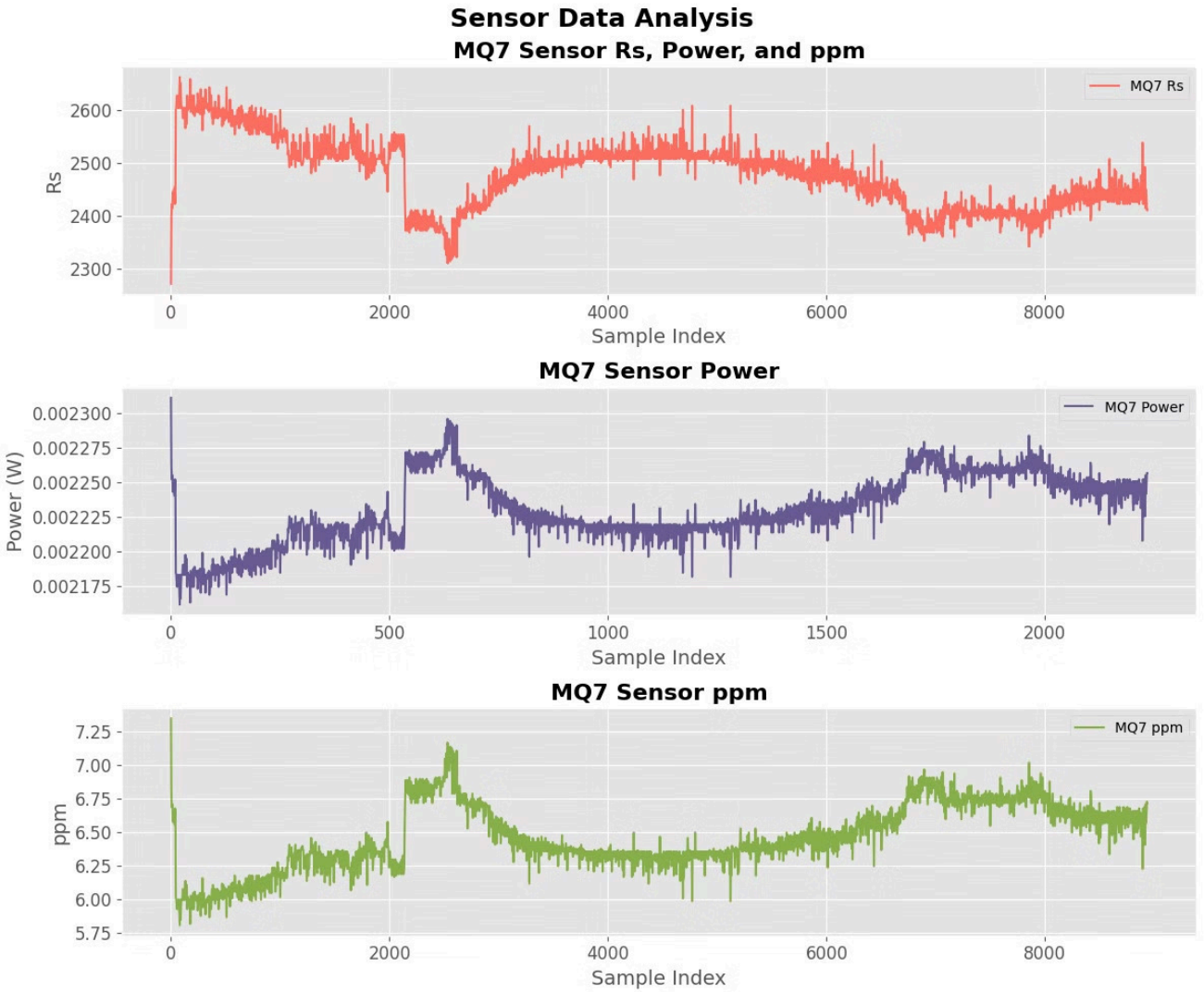












Planned Work for Next Week

- **GPS Integration**:
  - Implement GPS functionality to enhance the current system by providing real-time location data. This will allow for accurate geo tagging, making it possible to correlate gas concentration data with specific locations. The integration will involve configuring the GPS module, establishing communication protocols, and ensuring seamless data retrieval.
- **Heavy Testing of Sensors (MQ9, MQ136, MQ7)**:
  - Conduct extensive testing of the MQ9, MQ136, and MQ7 gas sensors to validate their accuracy, reliability, and performance under various environmental conditions. The focus will be on:
    - **Calibration**: Ensuring each sensor is calibrated for precise measurements.
    - **Data Collection**: Collecting data over extended periods to analyze consistency and sensor behavior.
    - **Environmental Impact Analysis**: Testing the sensors under different temperature and humidity levels to determine how these factors affect sensor readings.
    - **Cross-Sensitivity Evaluation**: Examining each sensor's sensitivity to multiple gases and their ability to distinguish between different gas types.

Moreover, a key feature we plan to implement is the ability for users to calibrate the sensors directly through the GUI at their site. This will make the system more adaptable and user-friendly, allowing on-the-spot adjustments for improved accuracy without requiring technical expertise. This user-centric approach will enhance the system’s versatility, ensuring it meets diverse operational needs across different scenarios.