

# Field Evaluation of 2B Technologies Personal Ozone Monitor (POM)



# Background

- From 07/29/2015 to 09/09/2015, three **2B Technologies Personal Ozone Monitor (POM)** units were deployed at one of SCAQMD's stationary ambient monitoring sites in Rubidoux and run side-by-side with a Federal Equivalent Method (FEM) instrument measuring the same pollutant
- 2B Technologies POM (3 units tested):
  - Gaseous sensors [UV absorption; Federal Equivalent Method (FEM: EQOA-0815-227)]
  - Each unit measures: Ozone (ppb)  
Unit cost: ~\$4,500
  - Time resolution: 10-sec to 1-hr
  - Units IDs: 1043, 1105 and 1106
- SCAQMD FEM instrument:
  - Ozone instrument; cost: ~\$7,000
  - Time resolution: 1-min

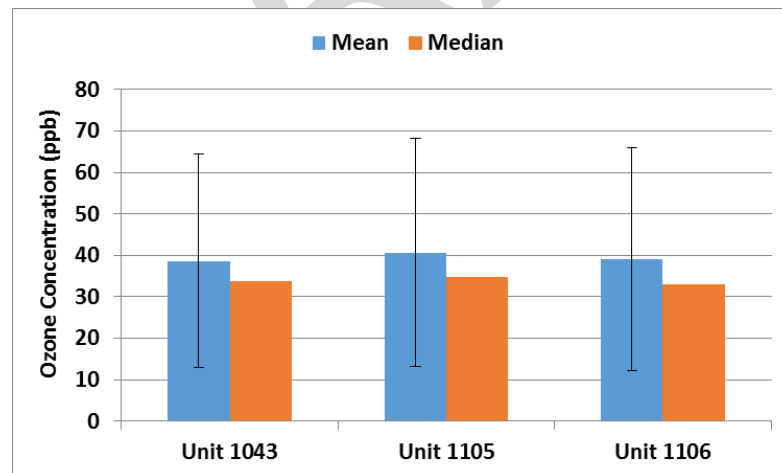


# Data validation & recovery

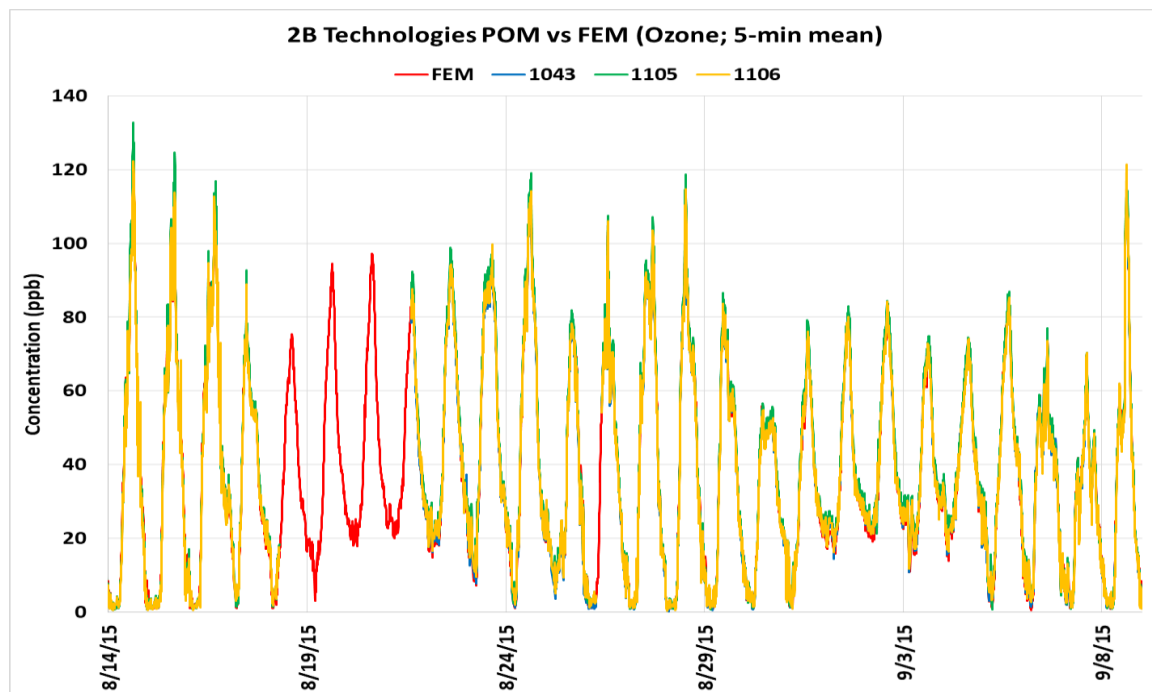
- Basic QA/QC procedures were used to validate the collected data (i.e. obvious outliers, negative values and invalid data-points were eliminated from the data-set)
- Data recoveries from units 1043, 1105, and 1106 were 99, 92, and 91%, respectively

## 2B Technologies POM; intra-model variability

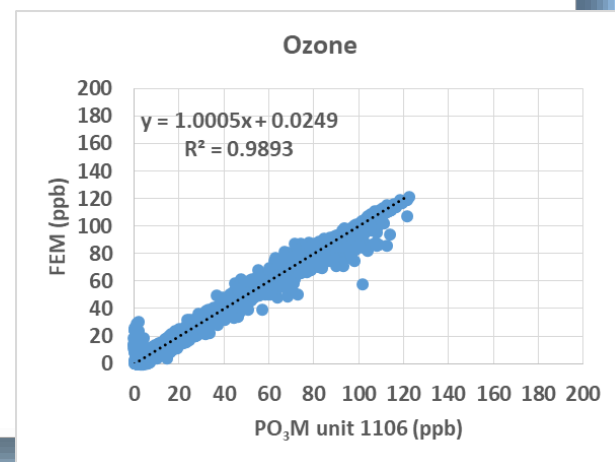
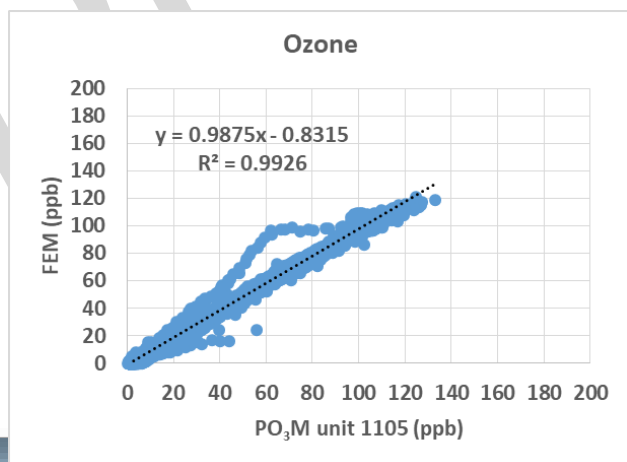
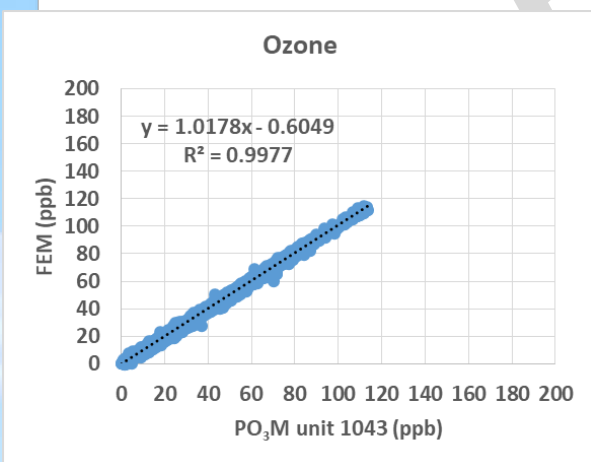
- Low measurement variability was observed between the three POM units



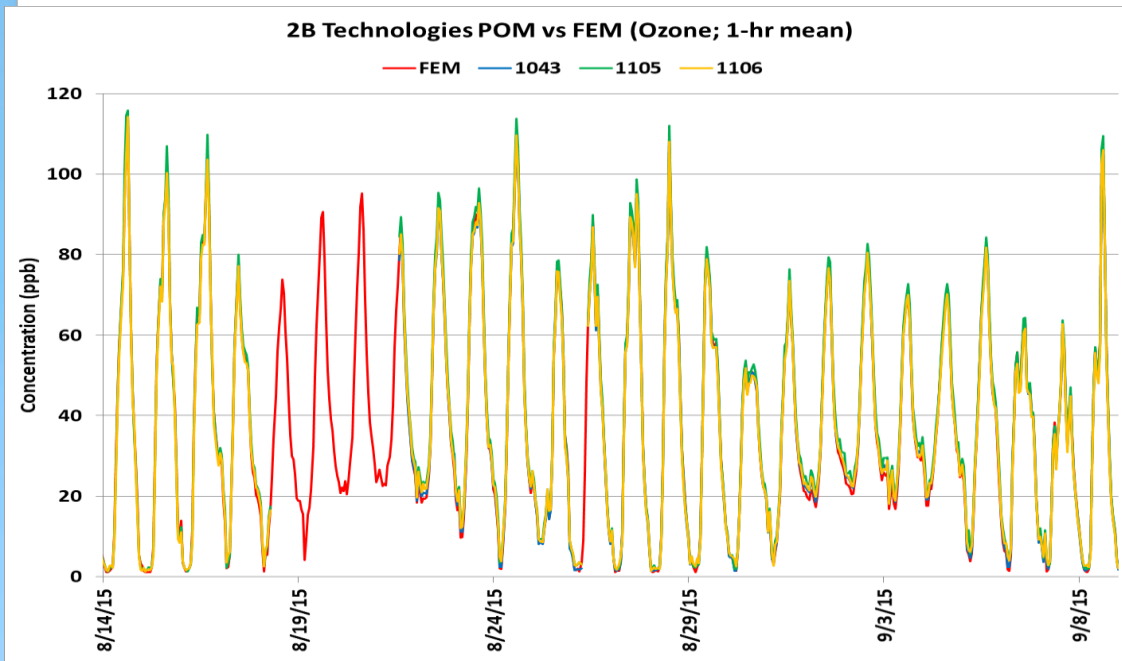
# 2B Technologies POM vs FEM (Ozone; 5-min mean)



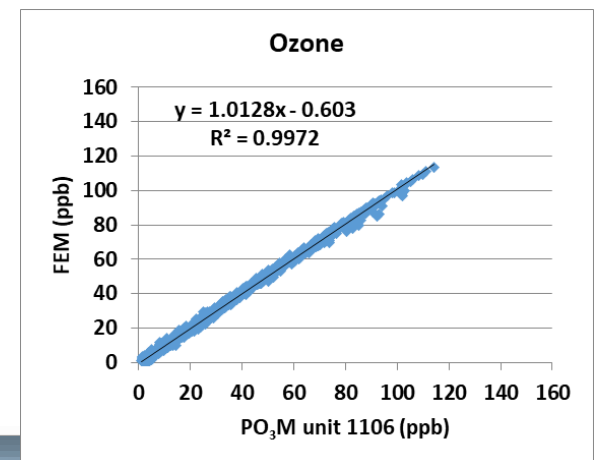
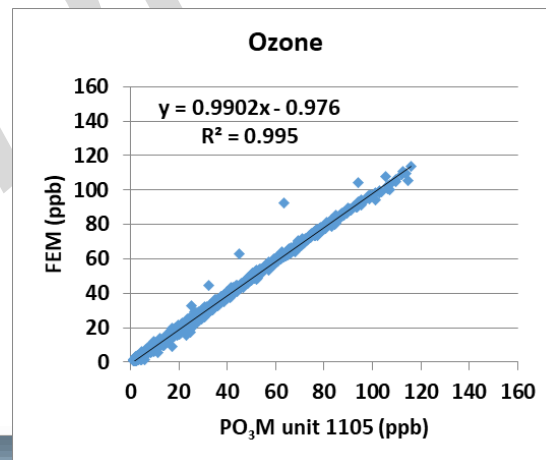
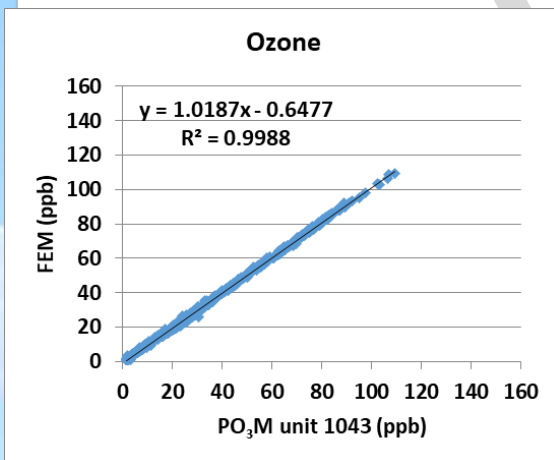
- Ozone measurements from the three POMs show an excellent correlation with the corresponding FEM data ( $R^2 \sim 1.00$ ).



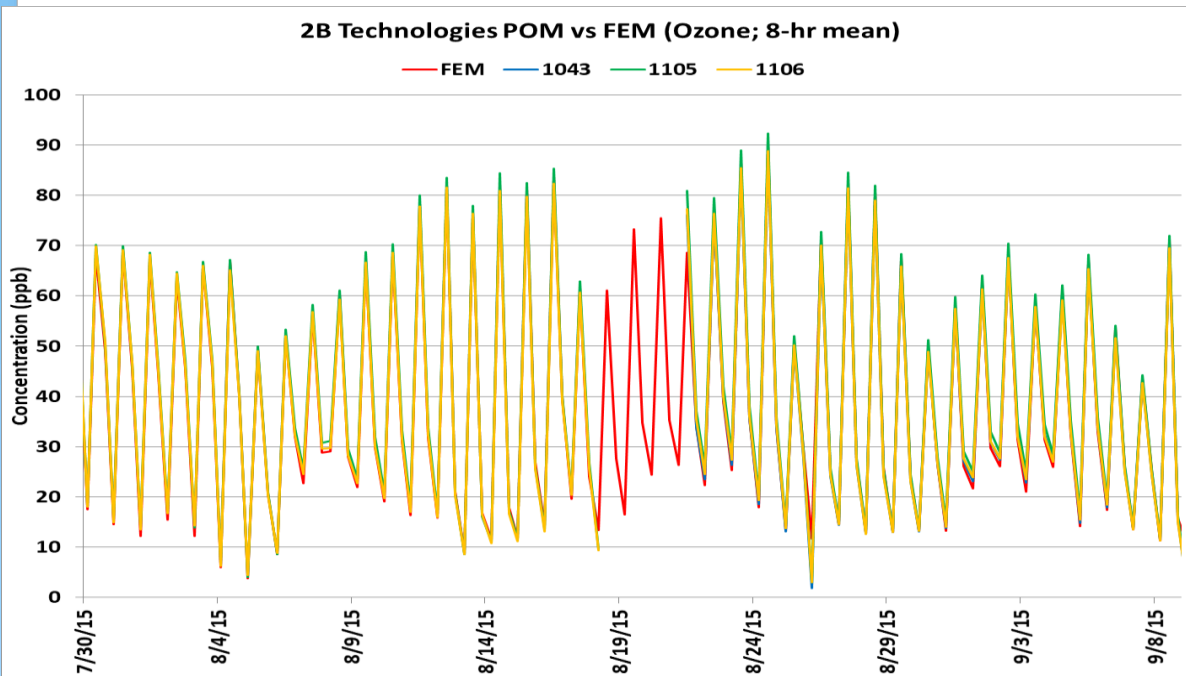
# 2B Technologies POM vs FEM (Ozone; 1-hr mean)



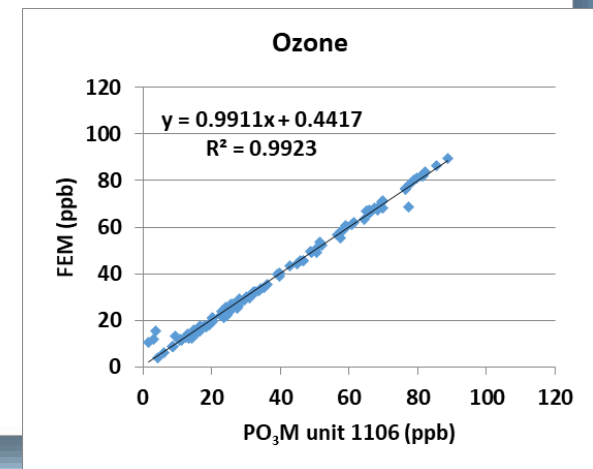
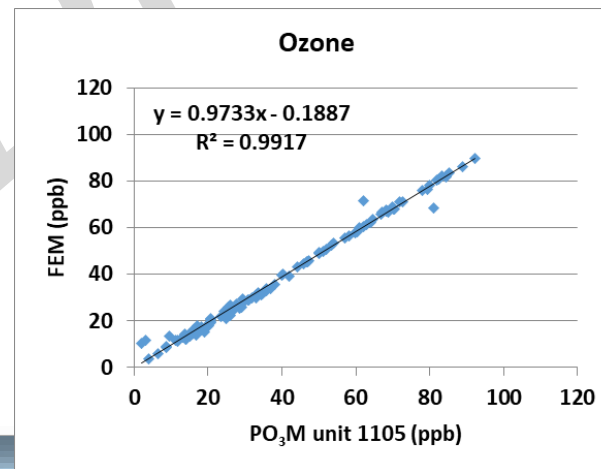
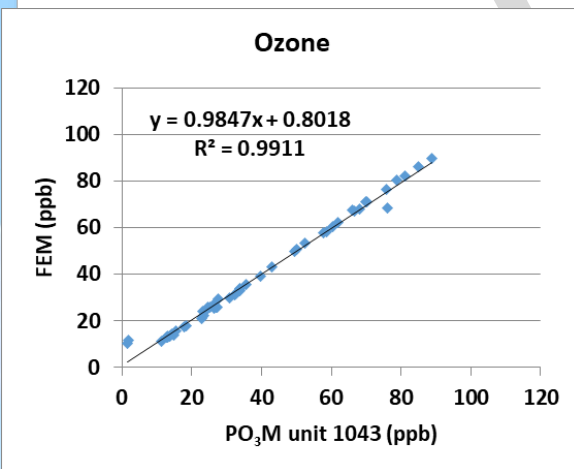
- Ozone measurements from the three POMs show an excellent correlation with the corresponding FEM data ( $R^2 \sim 1.00$ ).



# 2B Technologies POM vs FEM (Ozone; 8-hr mean)



- Ozone measurements from the three POMs show an excellent correlation with the corresponding FEM data ( $R^2 \sim 1.00$ ).



# Discussion

- Overall, the three **2B Technologies POM** Ozone sensors (**FEM: EQOA-0815-227**) performed very well and showed:
  - Minimal down-time; data recovery from each unit was higher than 90%
  - Very low intra-model variability
- All three POM units showed excellent correlation with a more expensive FEM instrument ( $R^2 \sim 1.00$ )
- No sensor calibration by AQ-SPEC was performed prior to the beginning of this field testing
- Laboratory chamber testing is necessary to fully evaluate the performance of these sensors under controlled temperature and relative humidity conditions, and in the presence of interfering species such as  $\text{NO}_2$
- These results are still preliminary