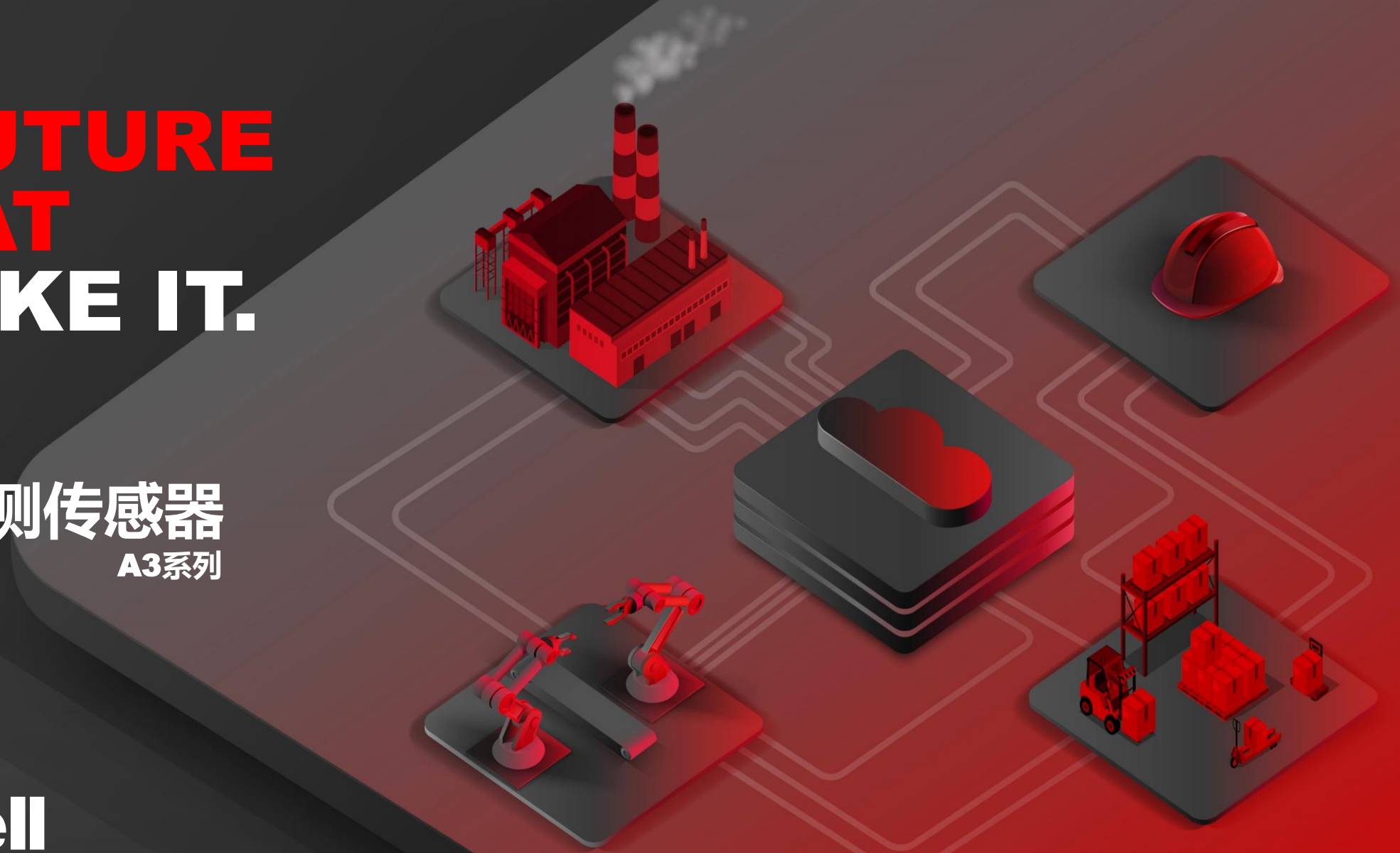
THE FUTURE IS WHAT WE MAKE IT.



大气质量检测传感器

A3系列

Honeywell

室外空气质量监测手段

光学法——光学站

定点监测

- 高成本
- 固定式、占地面积大
- 耗电量较大

电化学法——电化学监测设备

网格化监测

- 低成本
- 可移动、易安装、体积小
- 省电

作为光学站的补充设施，电化学监测设备应用前景广阔

电化学法室外空气质量监测设备

满足网格化监测需求的AAQ产品

USEPA New Generation Air Monitoring Roadmap 2013

《美国环保署新一代空气监测系统发展规划书2013》

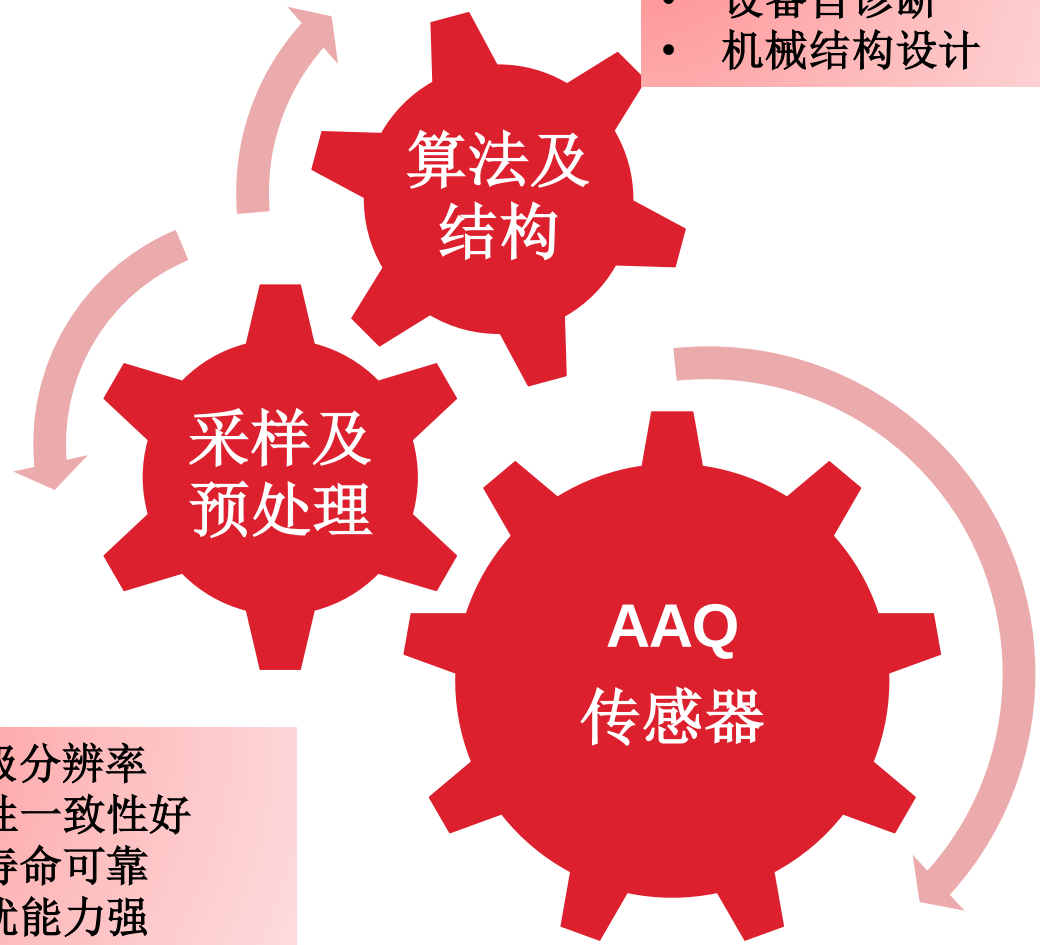
"Current sophisticated, expensive ambient air pollution monitoring technology is not economically sustainable as the sole approach and cannot keep up with current needs, specifically new monitoring networks and special purpose monitoring"

"昂贵的（光学）空气质量监测技术由于造价原因无法满足当前的监测需求，尤其是网络布点监控以及特种监控等任务"

- 一种重要的补充手段
- 难以达到**ppb**级别分辨率
- 难以在复杂环境中连续稳定工作
- 成本相对较低（**10~20**万人民币**/**套）
- 可大批量布设

AAQ产品开发要点

- 温湿度及压力补偿
- 设备自诊断
- 机械结构设计



- 高速、精准采样
- 除尘除湿
- 减少、消除干扰

- **ppb**级分辨率
- 稳定性一致性好
- 现场寿命可靠
- 抗干扰能力强

我们的解决方案 - A3系列

SO_2传感器A3STF

量程：0-10 ppm

灵敏度：0.60 ± 0.12 µA/ppm

分辨率：0.01-0.015 ppm

T90：< 40 秒

使用寿命：空气中2年

四电极用于降低环境温湿度变化对传感器输出的影响

NO_2/O_3传感器A3OZ

量程：0-10 ppm

灵敏度：2.2 ± 0.5 µA/ppm

分辨率：0.02 ppm

T90：< 40 秒

使用寿命：空气中2年

四电极用于降低环境温湿度变化对传感器输出的影响

CO传感器A3CO

量程：0-500 ppm

灵敏度：0.20 ± 0.04 µA/ppm

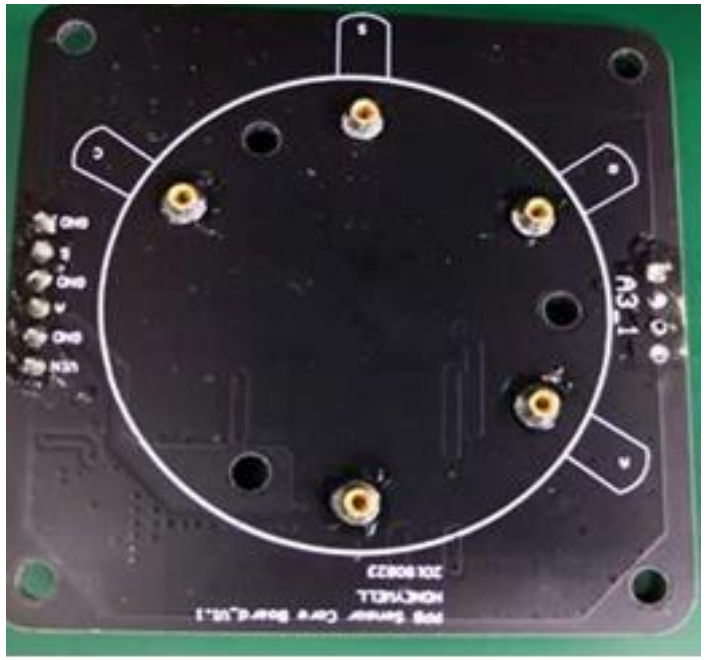
分辨率：0.1 ppm

T90：< 40 秒

使用寿命：空气中2年

四电极用于降低环境温湿度变化对传感器输出的影响

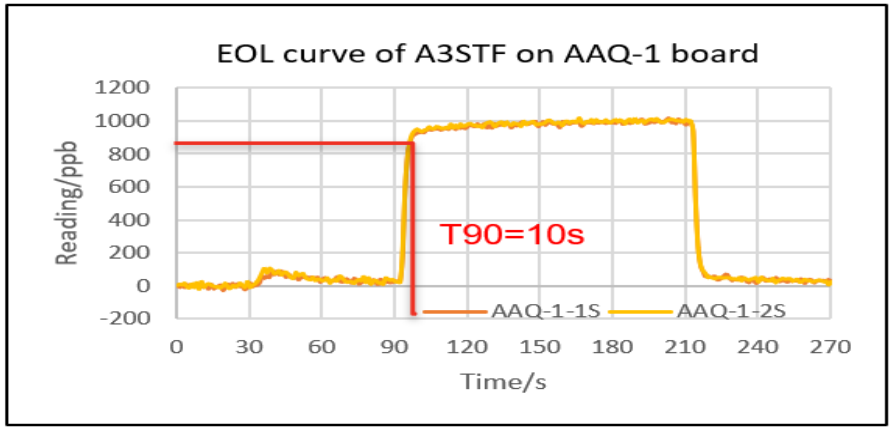
我们的解决方案 - A3系列

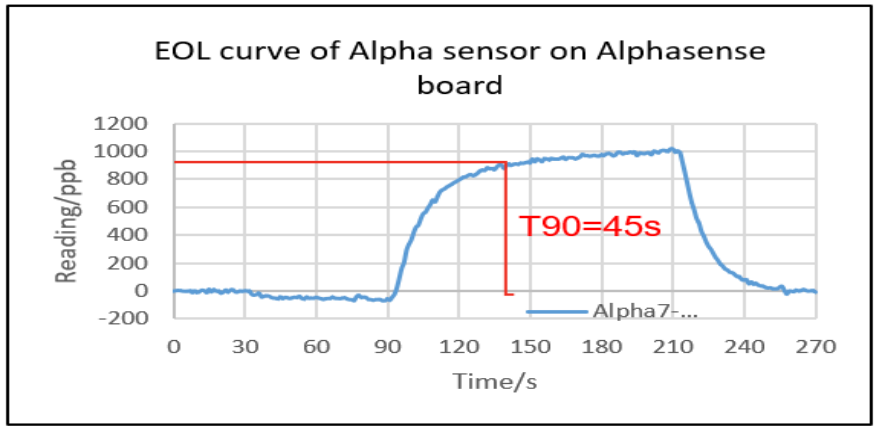


VIN
GND
Sensing/working
GND
Auxiliary
GND

SO2 SENSOR A3STF/SO2B4—EOL TEST

测试方式: 1.5min ambient air + 3min 1ppm SO2 gas + 1min ambient air



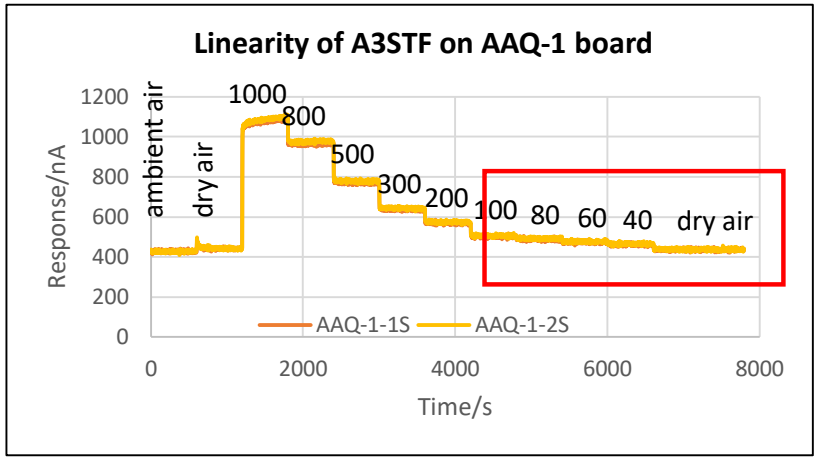


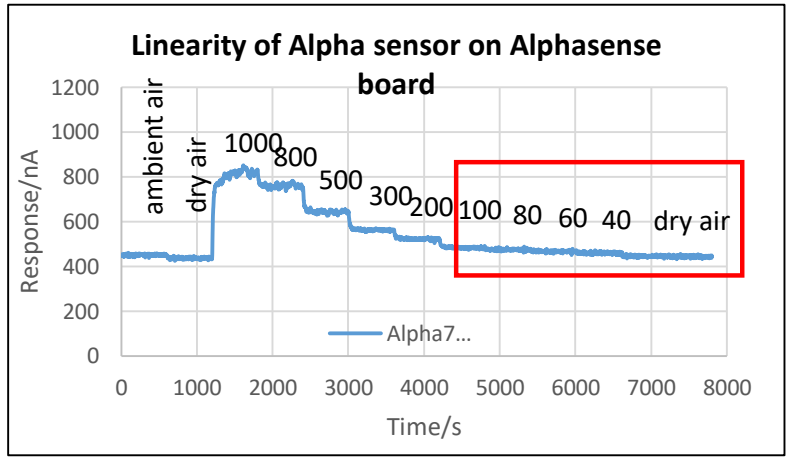
Resolution = 3 * STDEV of Baseline (Sensing Electrode) / Sensitivity.

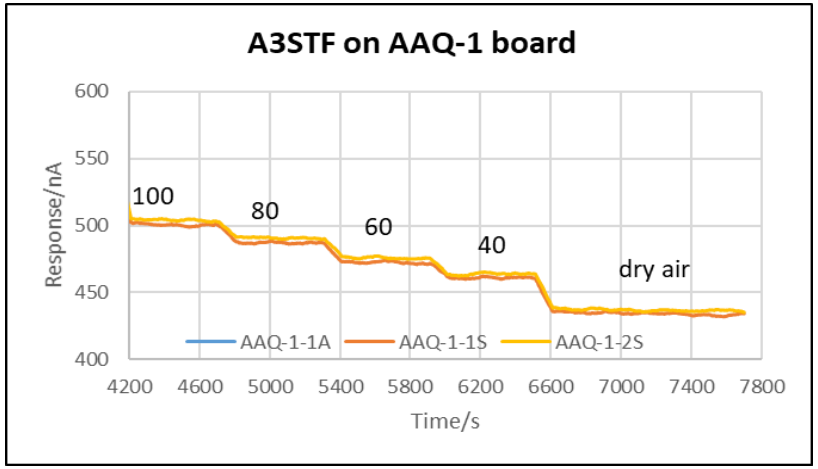
A3STF T90更快，且输出值稳定。另外A3STF高分辨能更好的测试低浓度SO2气体

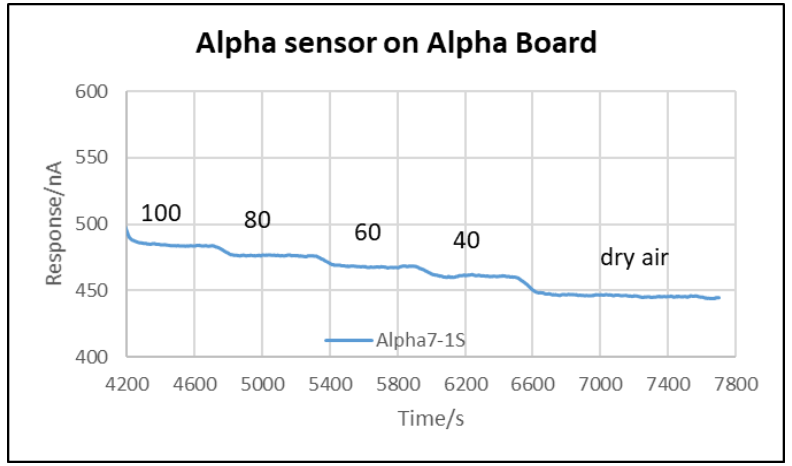
SO2 SENSOR A3STF/SO2B4—LINEARITY/LOW LIMIT

测试方式: 3min ambient air + 3min dry air + 3min 1000ppb to 40ppb + 3min dry air





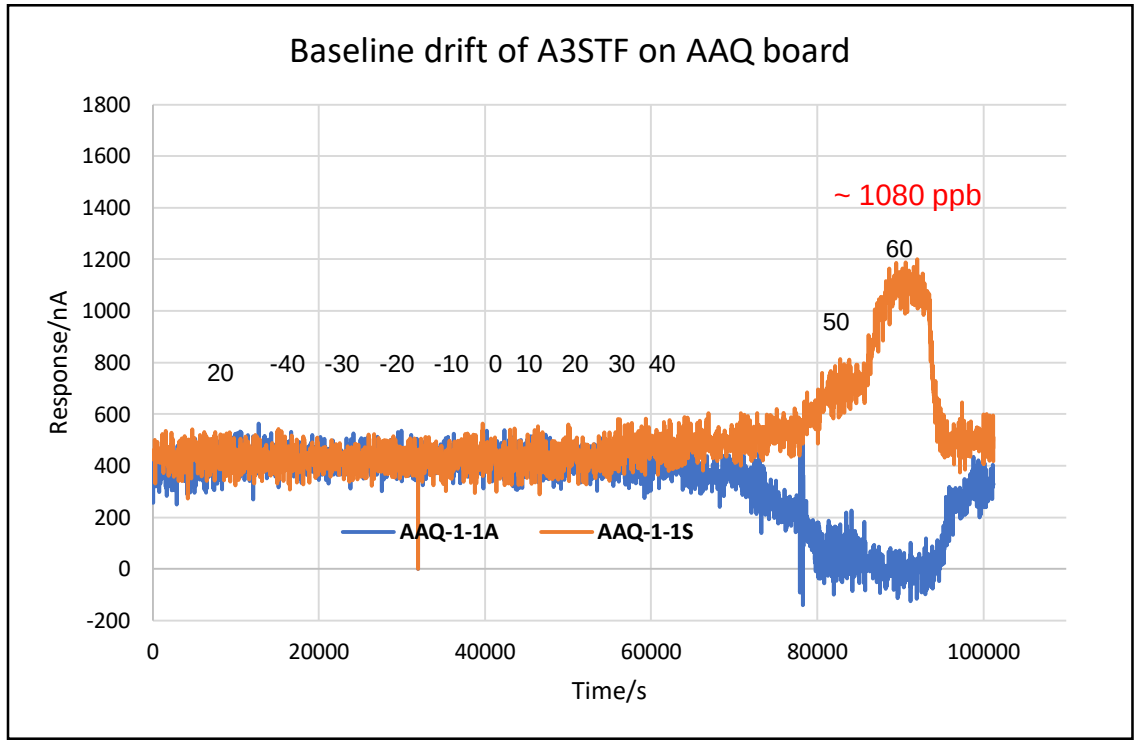


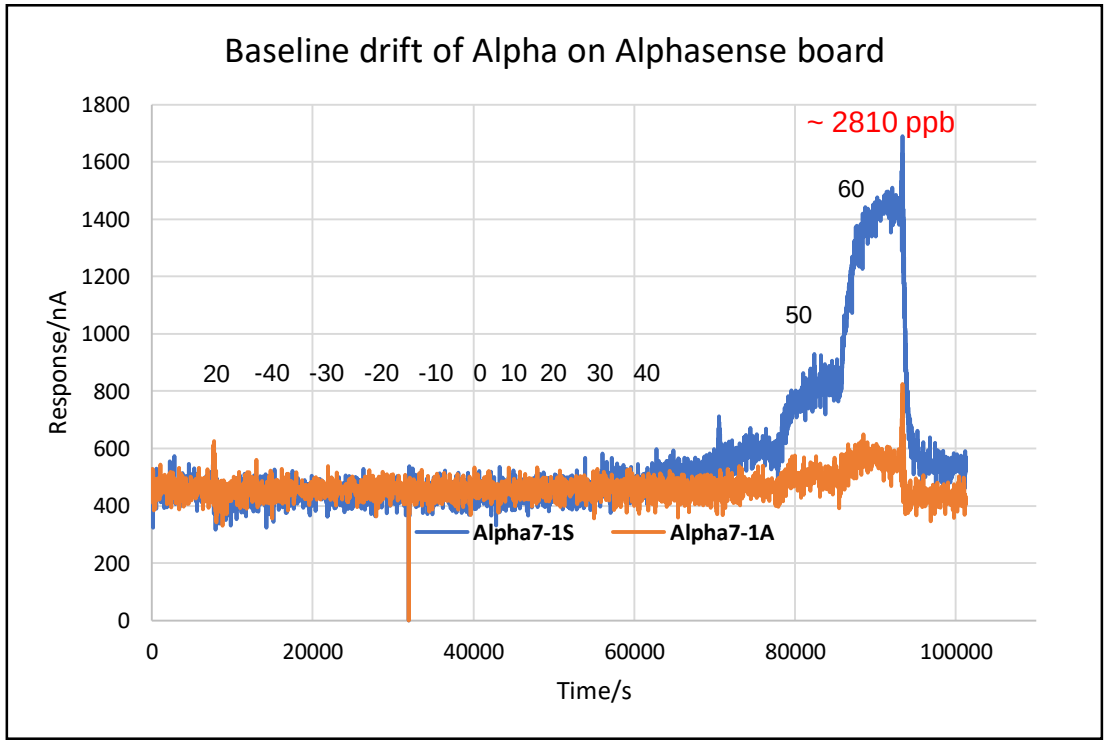


A3STF在低浓度响应更好，通过曲线平滑处理后传感器检测下线可达10ppb。

SO2 SENSOR A3STF/SO2B4—TEMPERATURE EFFECT

测试方式: Baseline drift at different temperatures（-40℃ to 60℃），sensors will be kept at each temperature for 2 hours

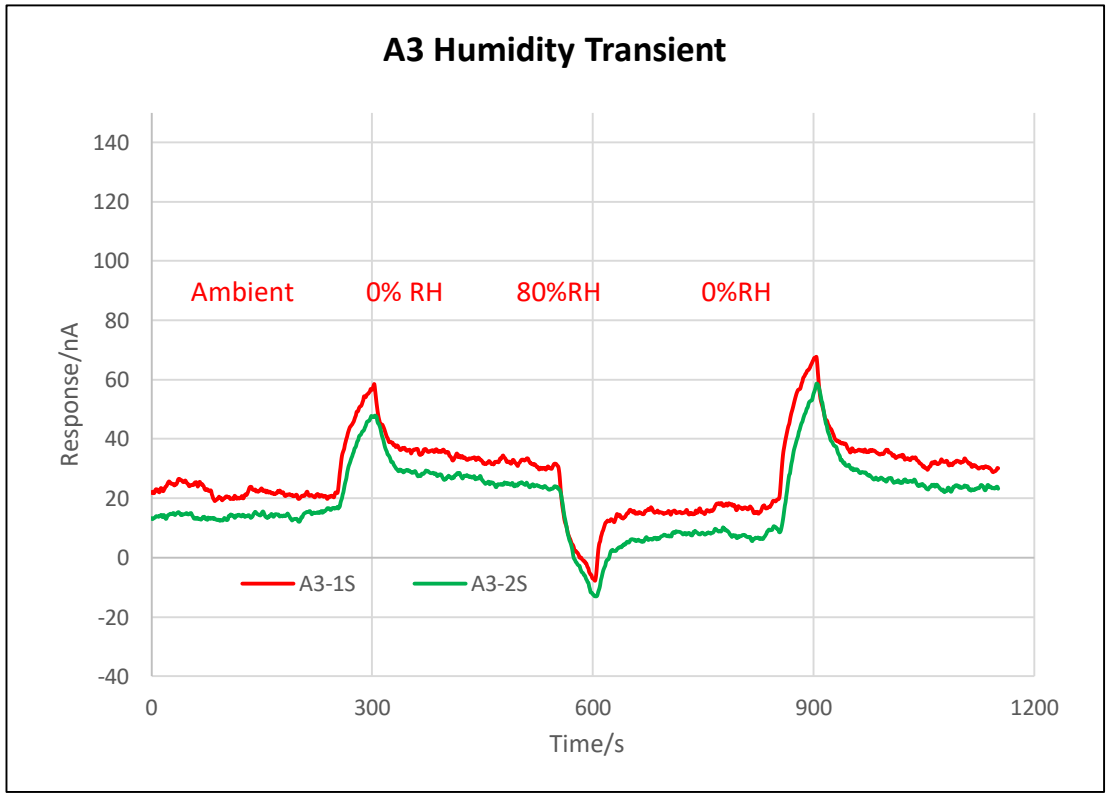


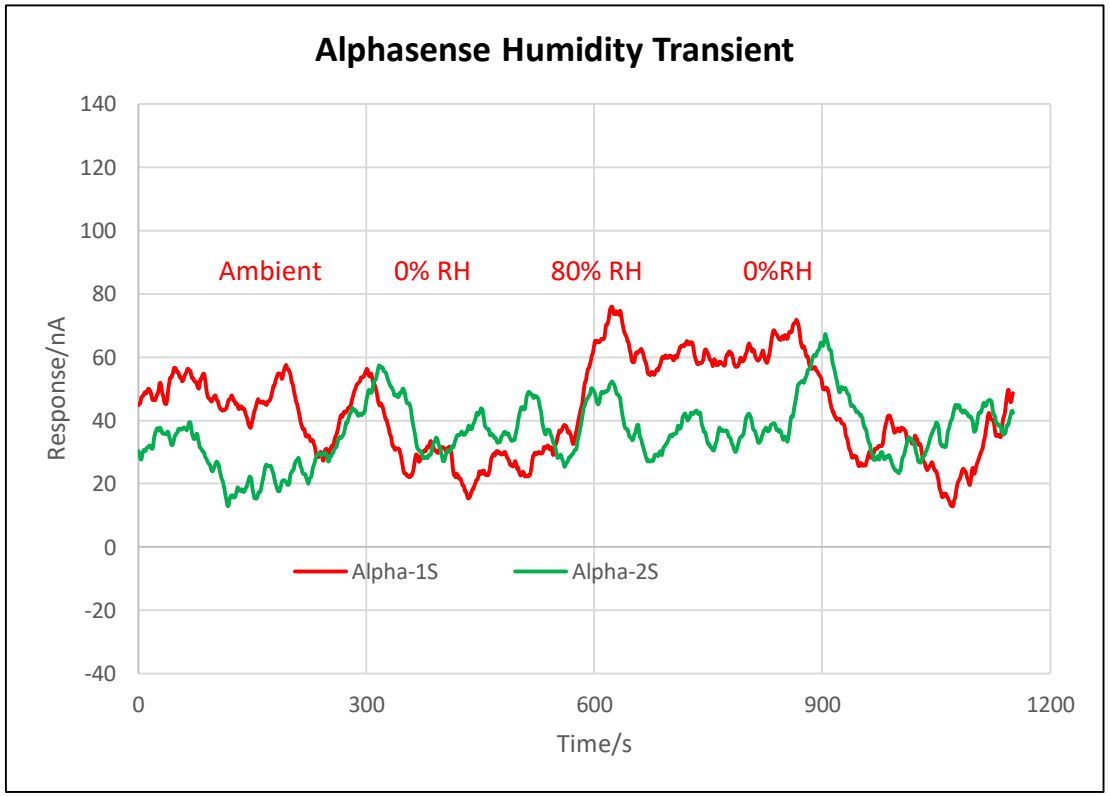


A3STF在40℃以上受到温度影响相对于SO2B4较小，温度补偿的难度较小

SO2 SENSOR A3STF/SO2B4—HUMIDITY EFFECT

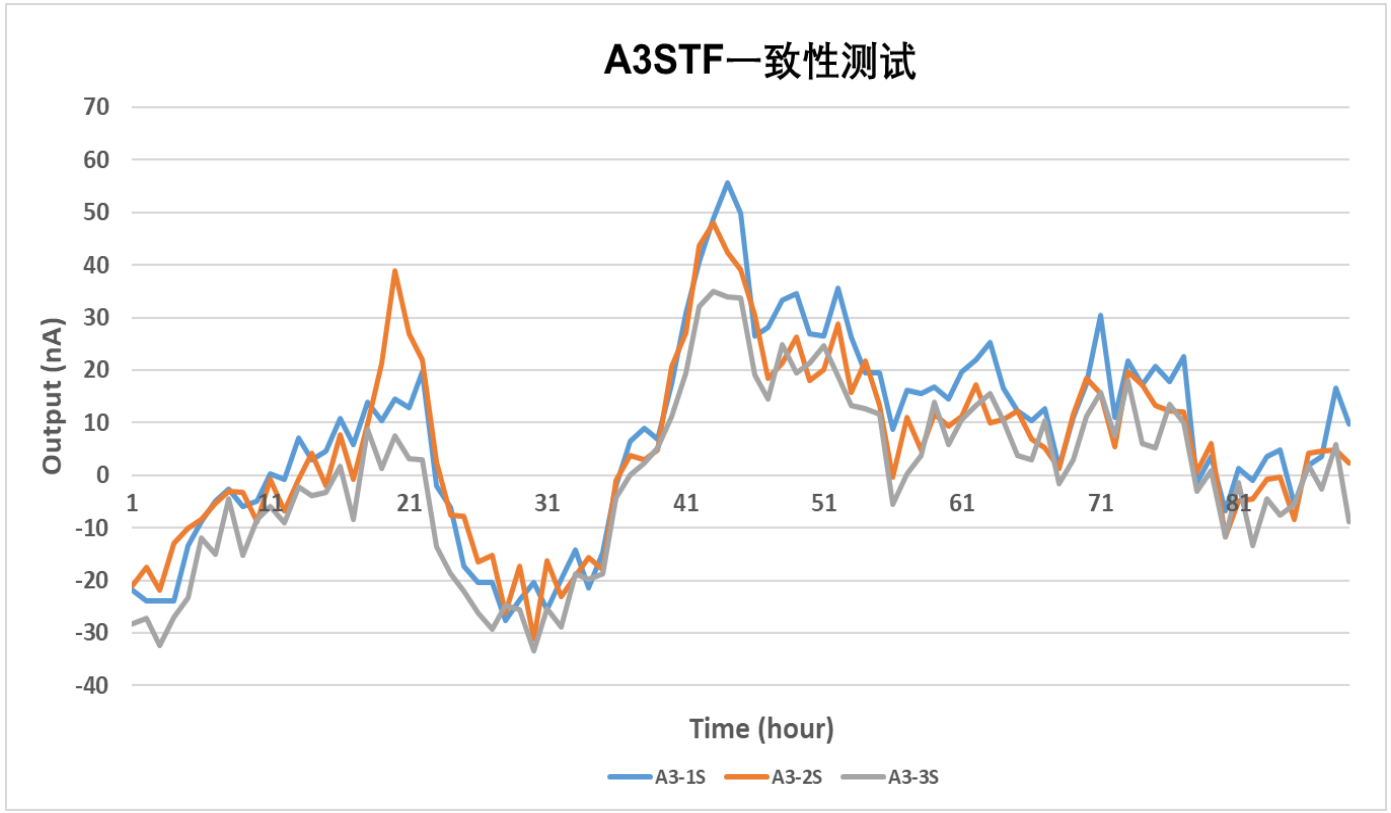
测试方式: 5min ambient air + 5min 0%R.H. + 5min 80%R.H. + 5min 0%R.H.

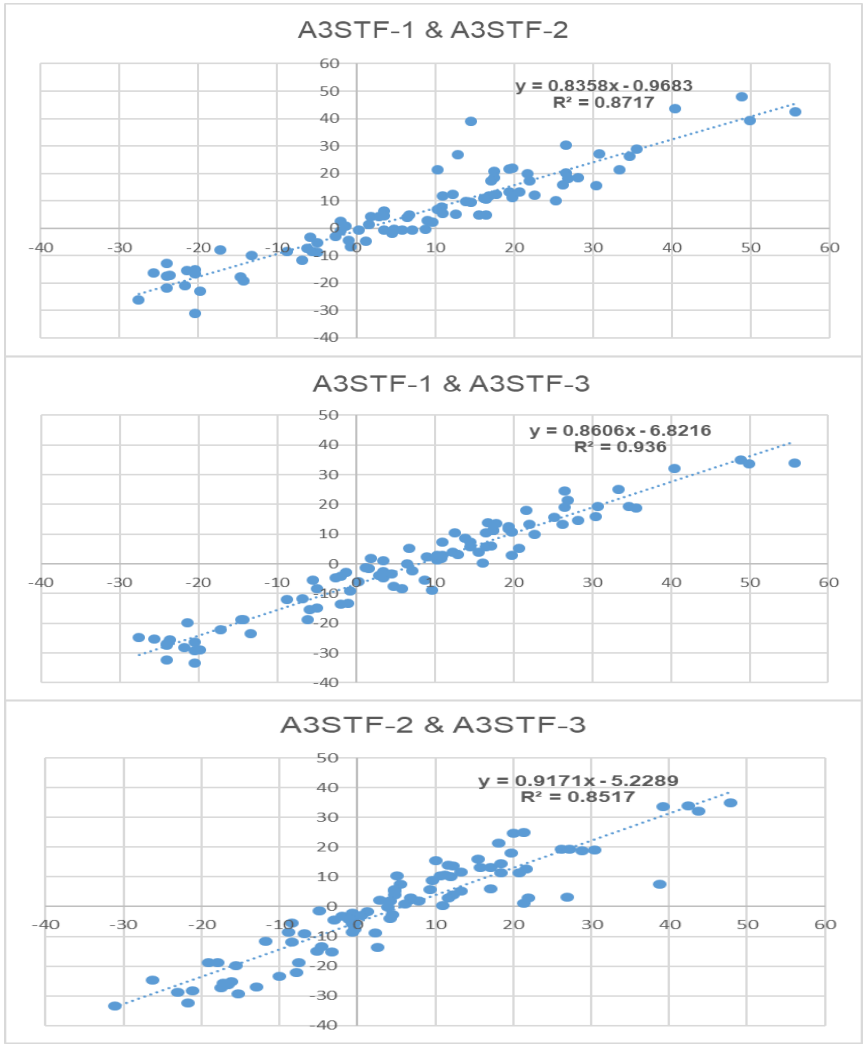




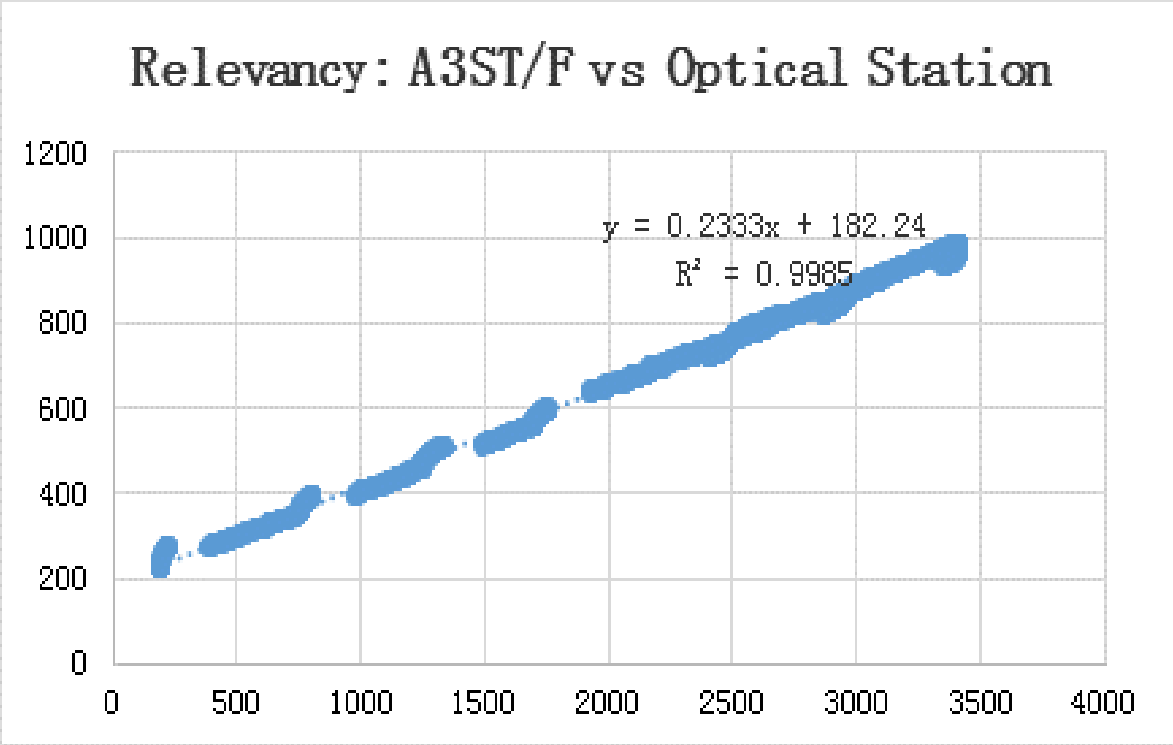
A3STF在湿度极端突变时，会有一个输出峰，但是很快能回到基线值

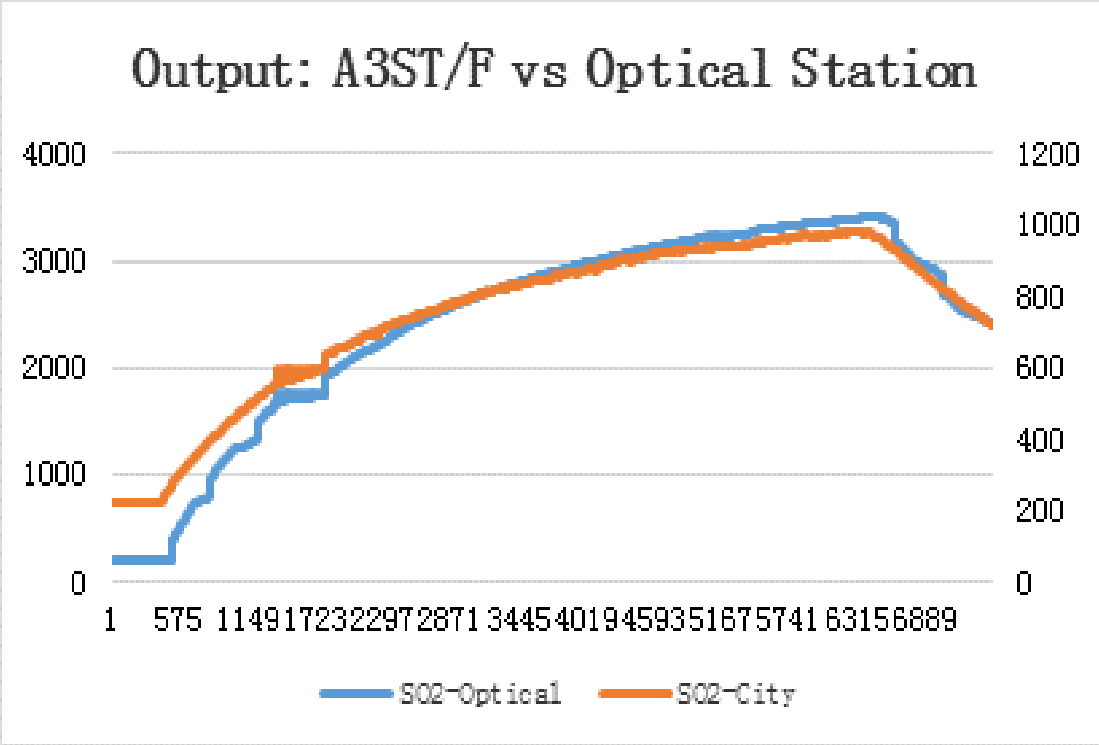
A3STF一致性测试





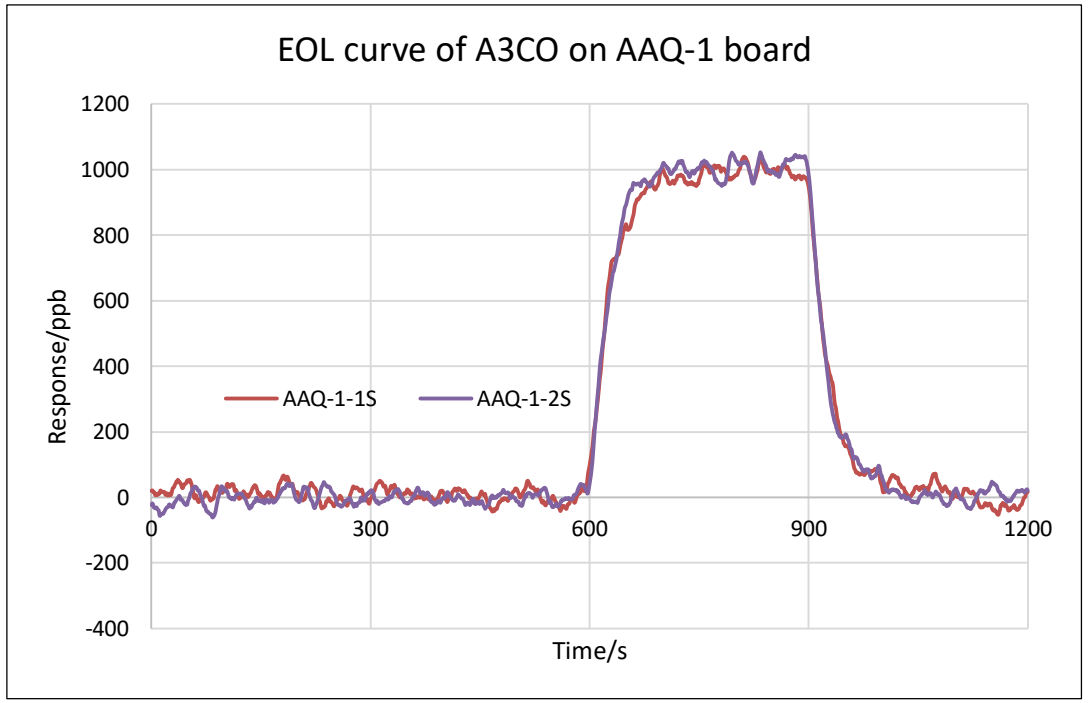
A3STF真实的光学站对比数据

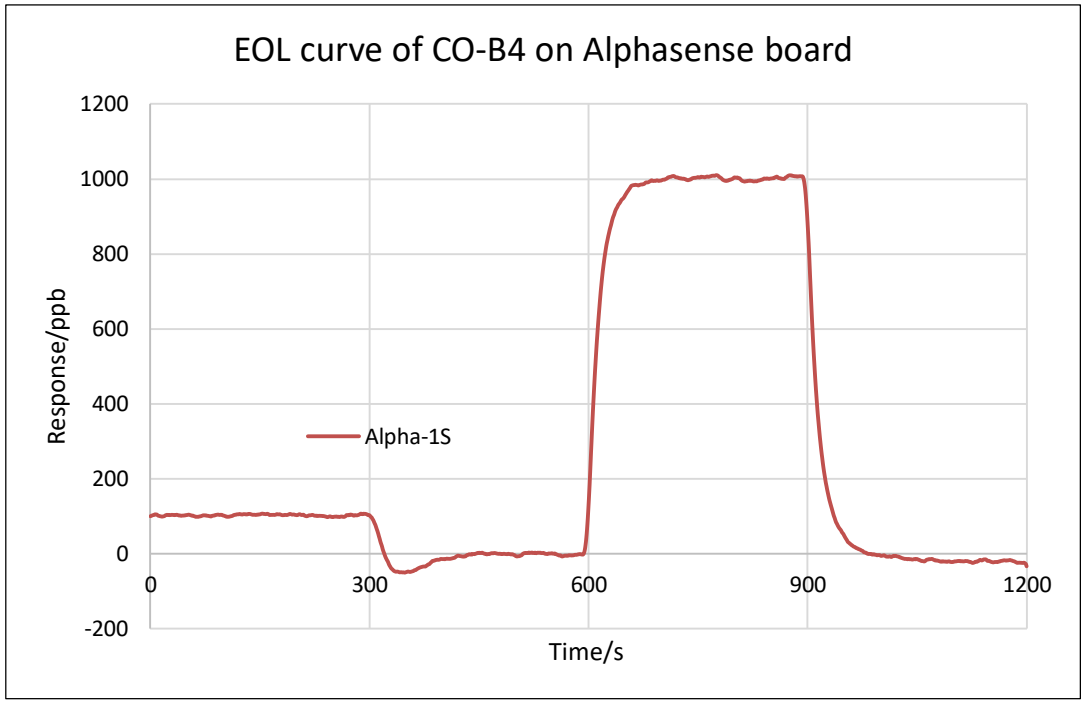




CO SENSOR A3CO/COB4—EOL TEST

测试方法: 10min ambient air + 5min 1ppm CO gas + 5min ambient air

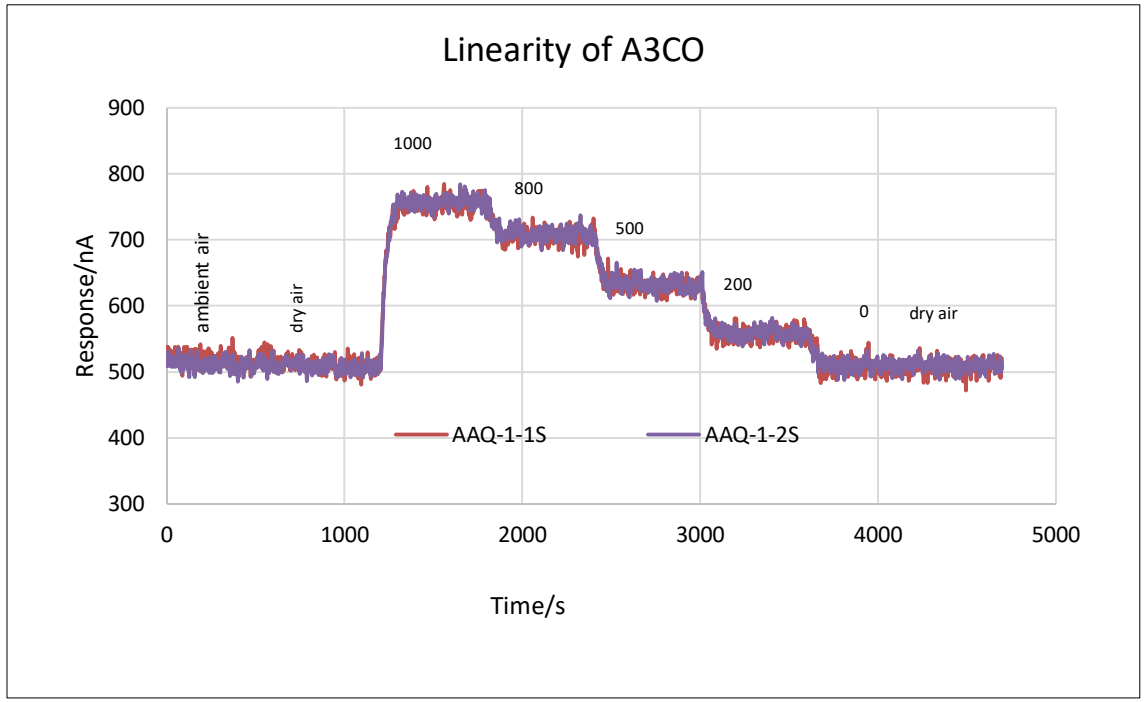


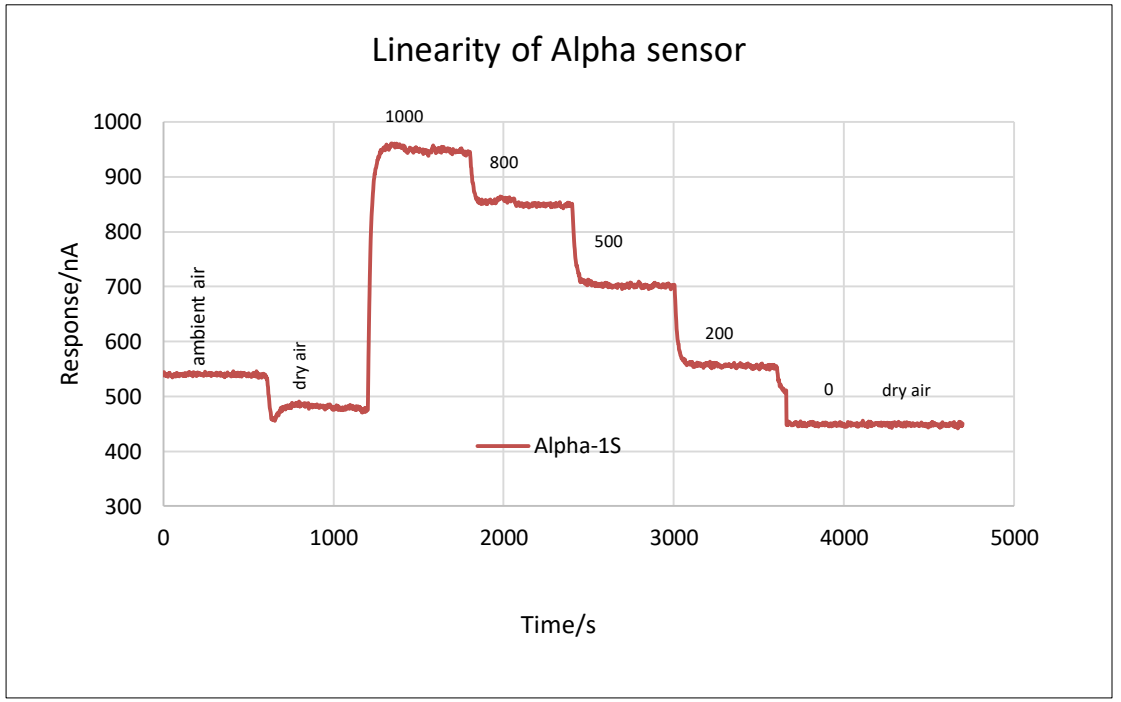


A3CO 数据平滑处理后，分辨率可达40ppb，COB4大概在20ppb。

CO SENSOR A3CO/COB4—LINEARITY

测试方式: 3min ambient air + 3min dry air + 3min 1000ppb to 40ppb + 3min dry air

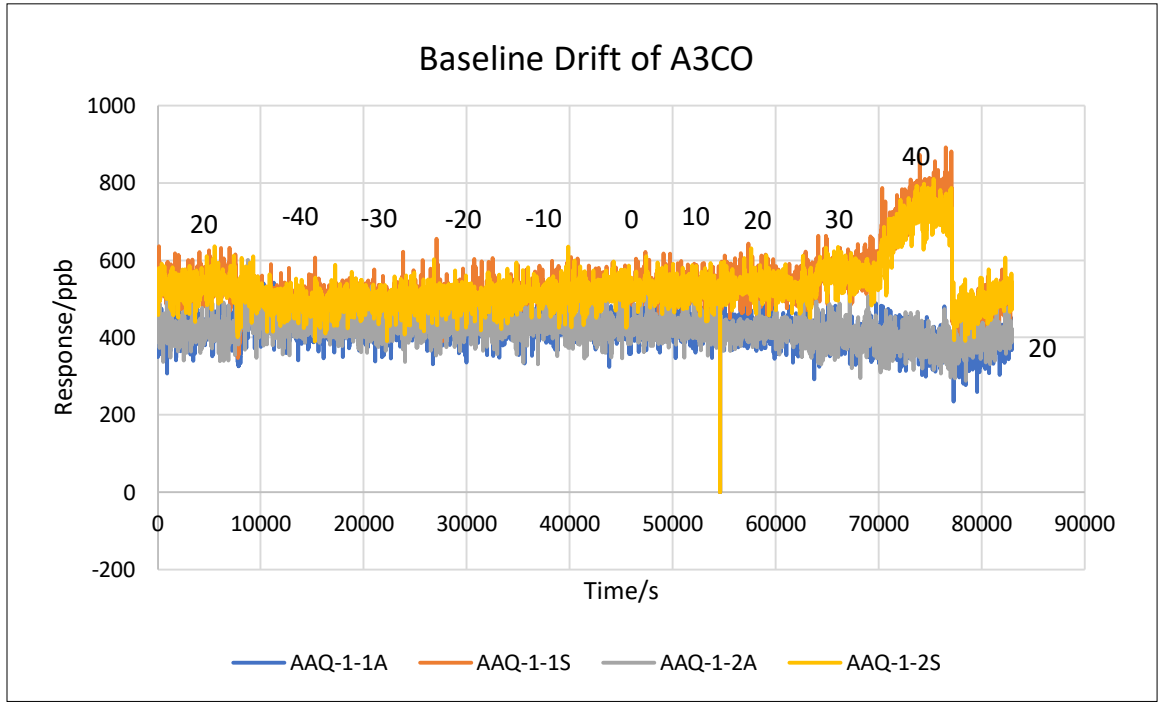


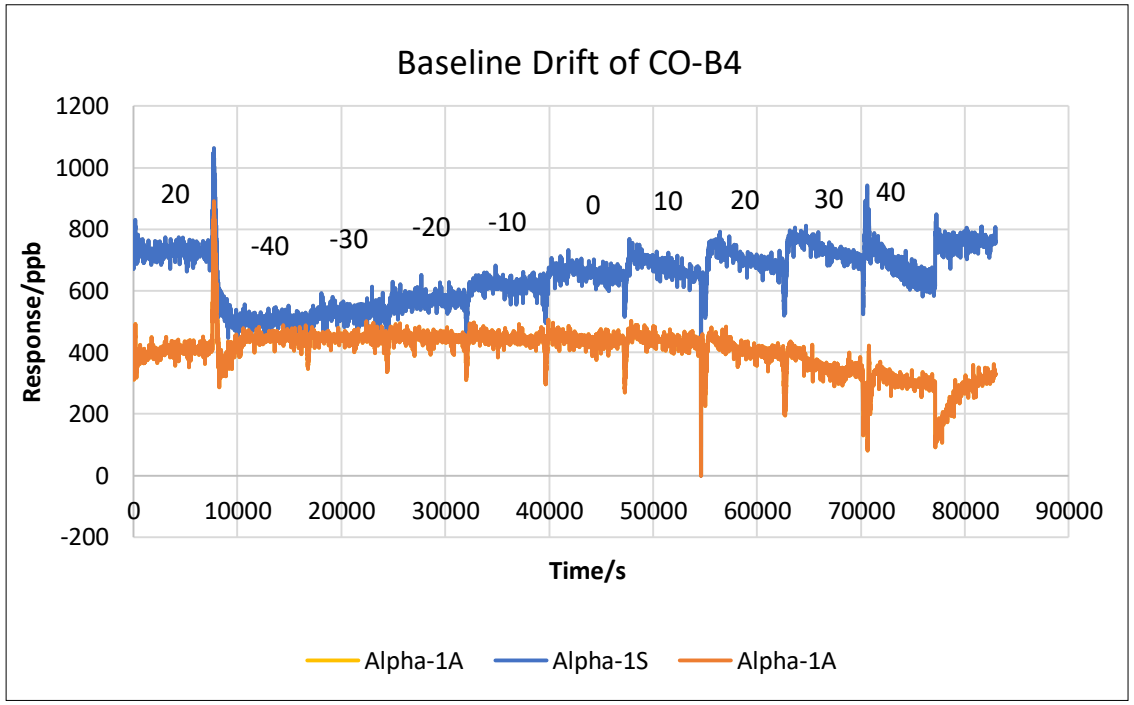


A3CO通过曲线平滑处理后传感器检测下线可达100ppb

CO SENSOR A3CO/COB4—BASELINE DRIFT

测试方法: Baseline drift at different temperatures（-40℃ to 40℃），sensors will be kept at each temperature for 2 hours

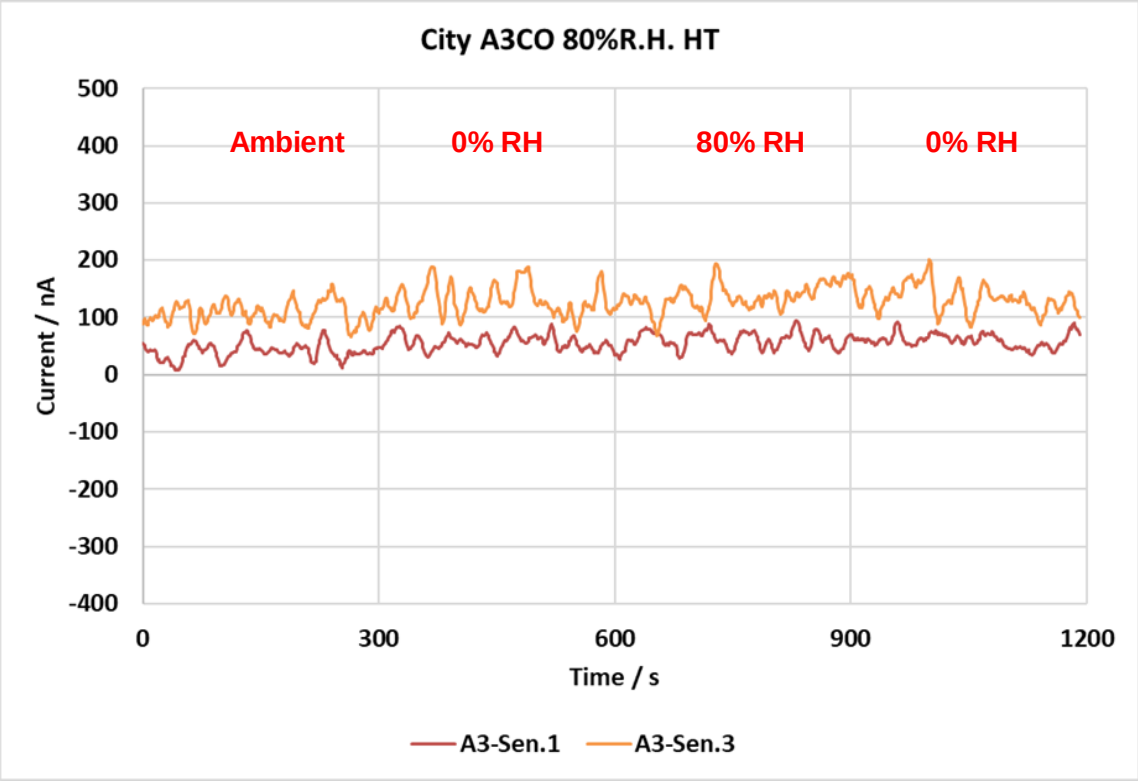


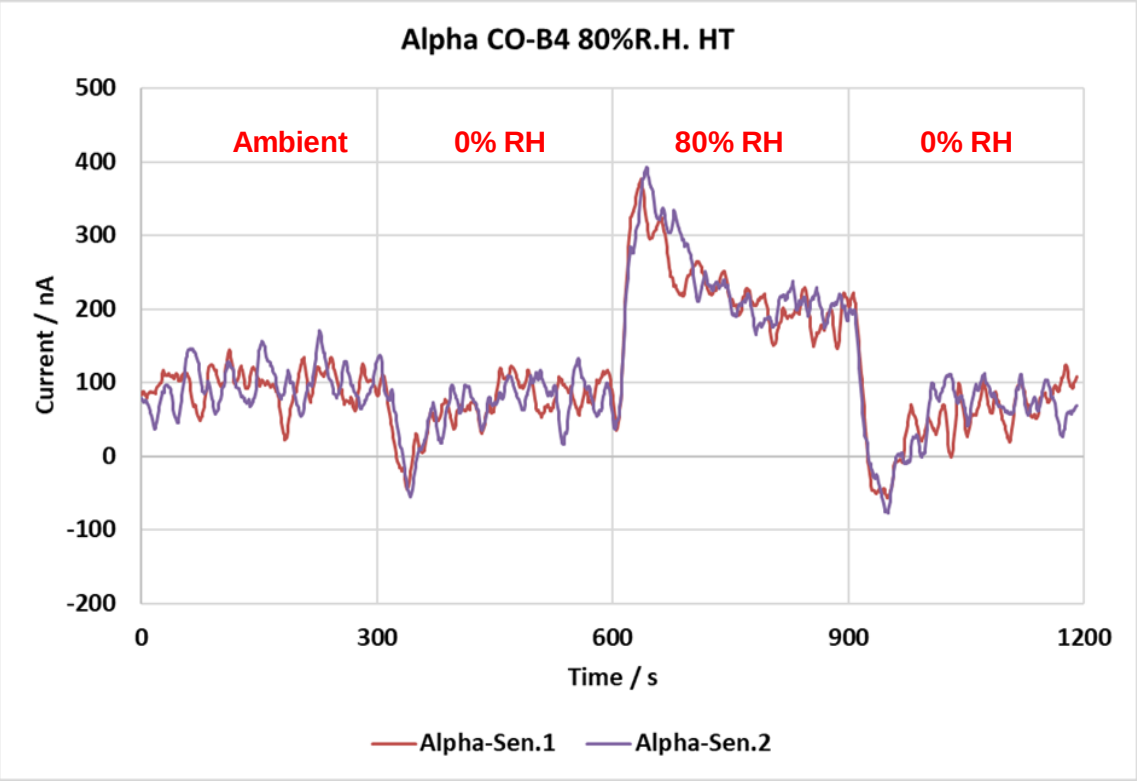


A3CO在-40℃ to 30℃温度区间输出值几乎不受温度变化的影响

CO SENSOR A3CO/COB4—HUMIDITY TRANSIENT

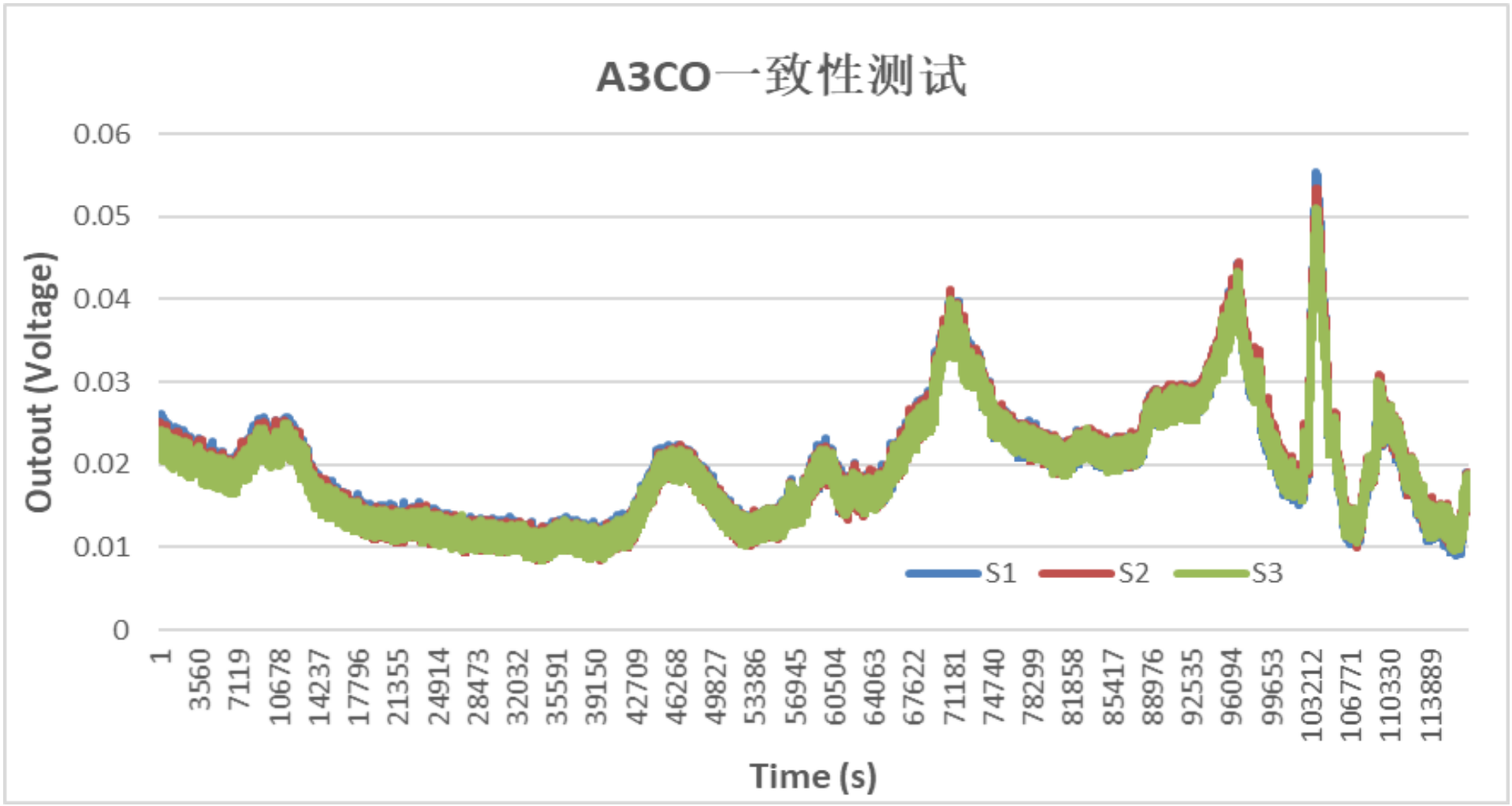
测试方法: 5min ambient air + 5min 0%R.H. + 5min 80%R.H. + 5min 0%R.H.





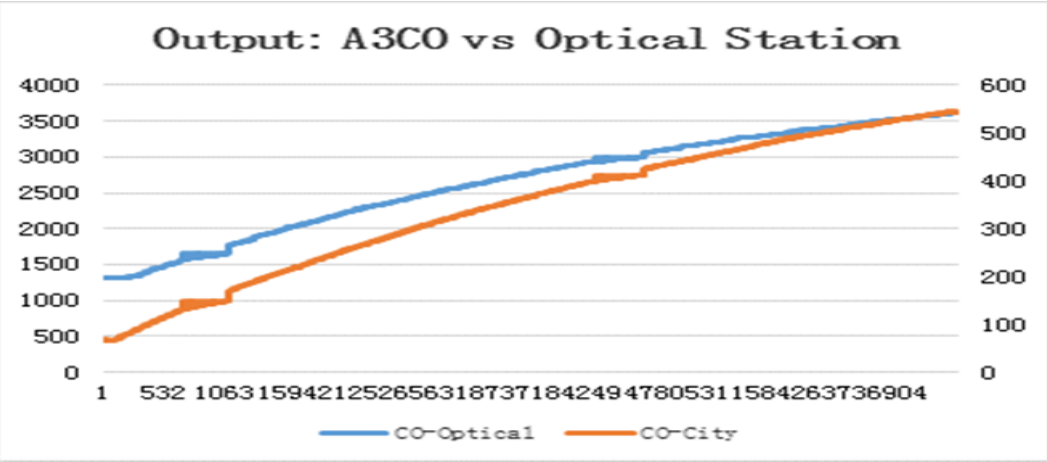
A3CO输出值几乎不受湿度变化的影响

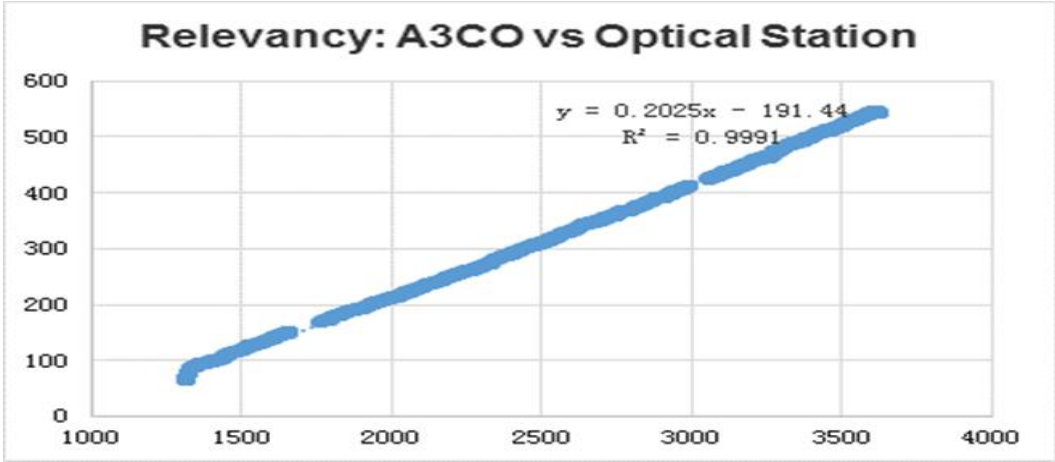
A3CO一致性测试



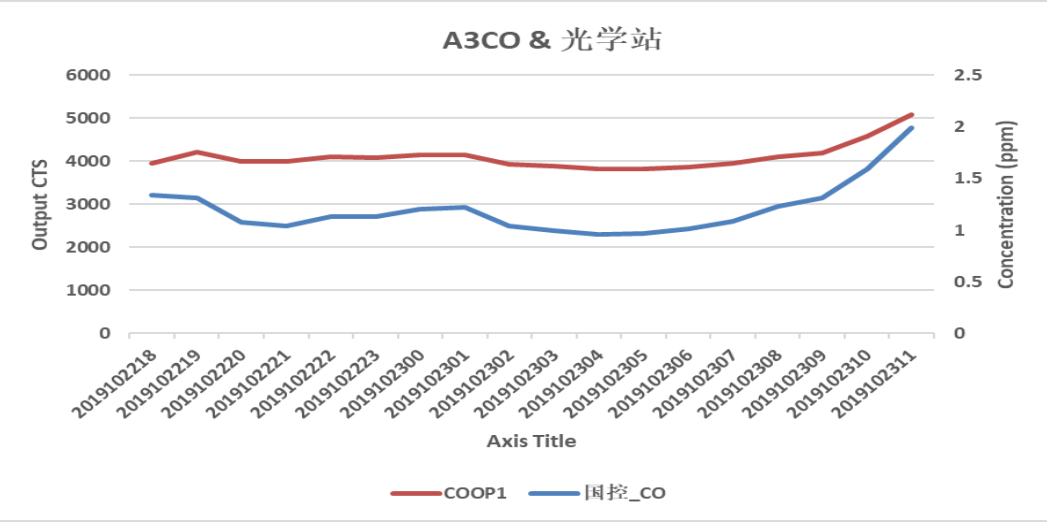
A3CO VS 光学站对比测试

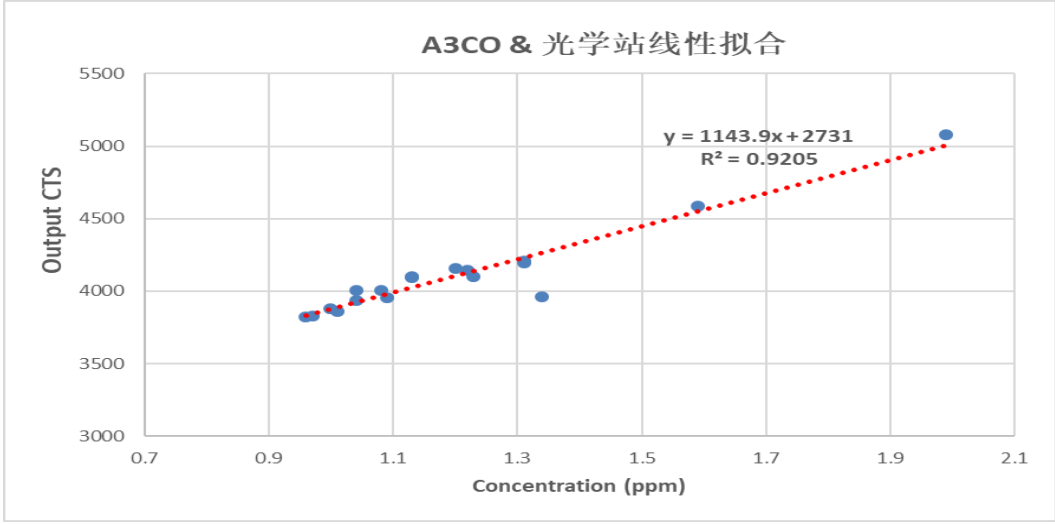
实验室测试





现场测试





A3系列：两只A3OZ测试NO_2/O_3

Replaceable Filter Unit

#1 A3OZ输出信号= Con.(NO_2) + Con. (O_3)

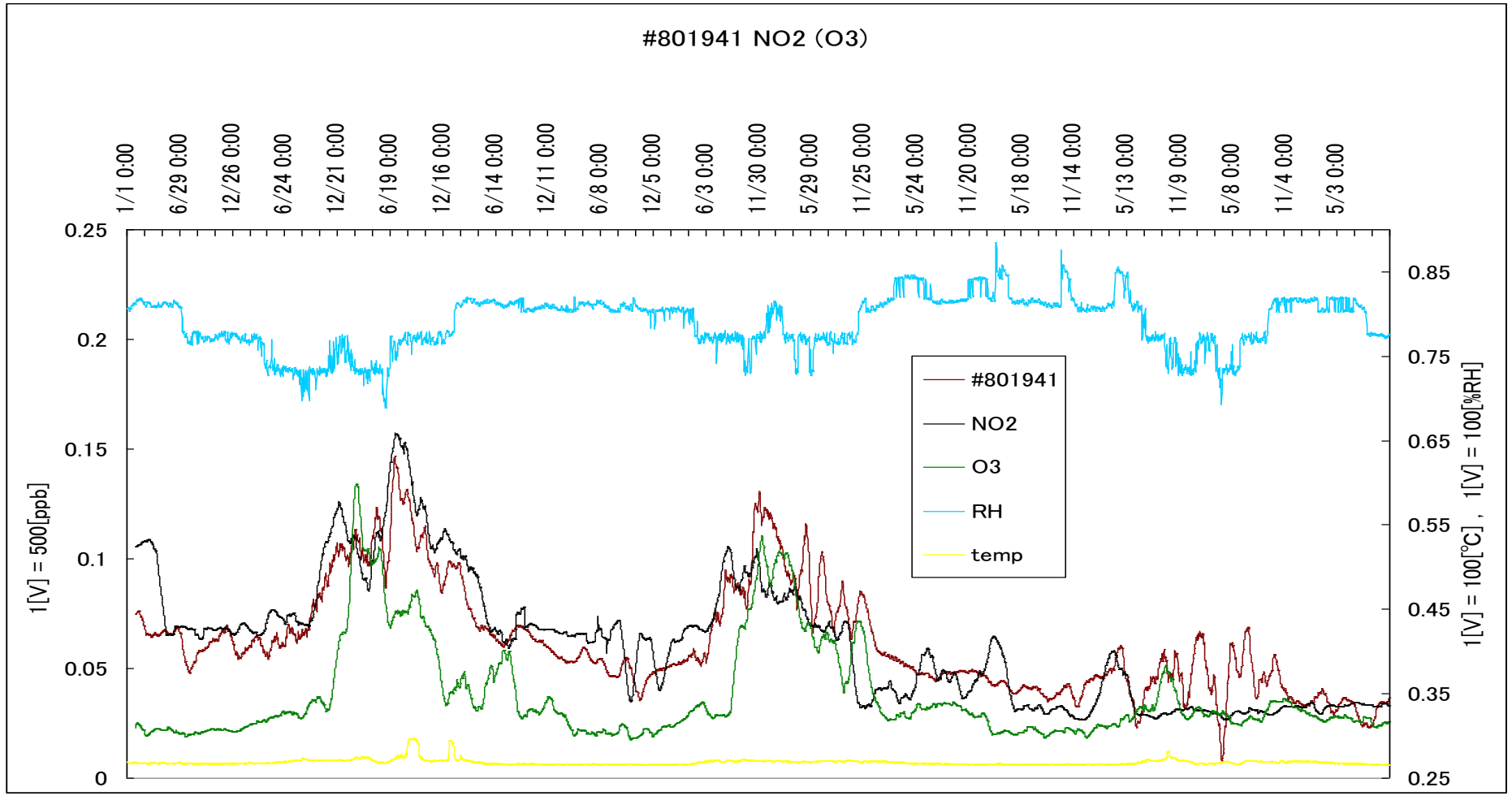
过滤器能够有效去除O_3气体，
同时NO_2气体损失量较少

#2 A3OZ输出信号= Con.(NO_2)

Con. (O_3) = #1 A3OZ信号— #2 A3OZ信号

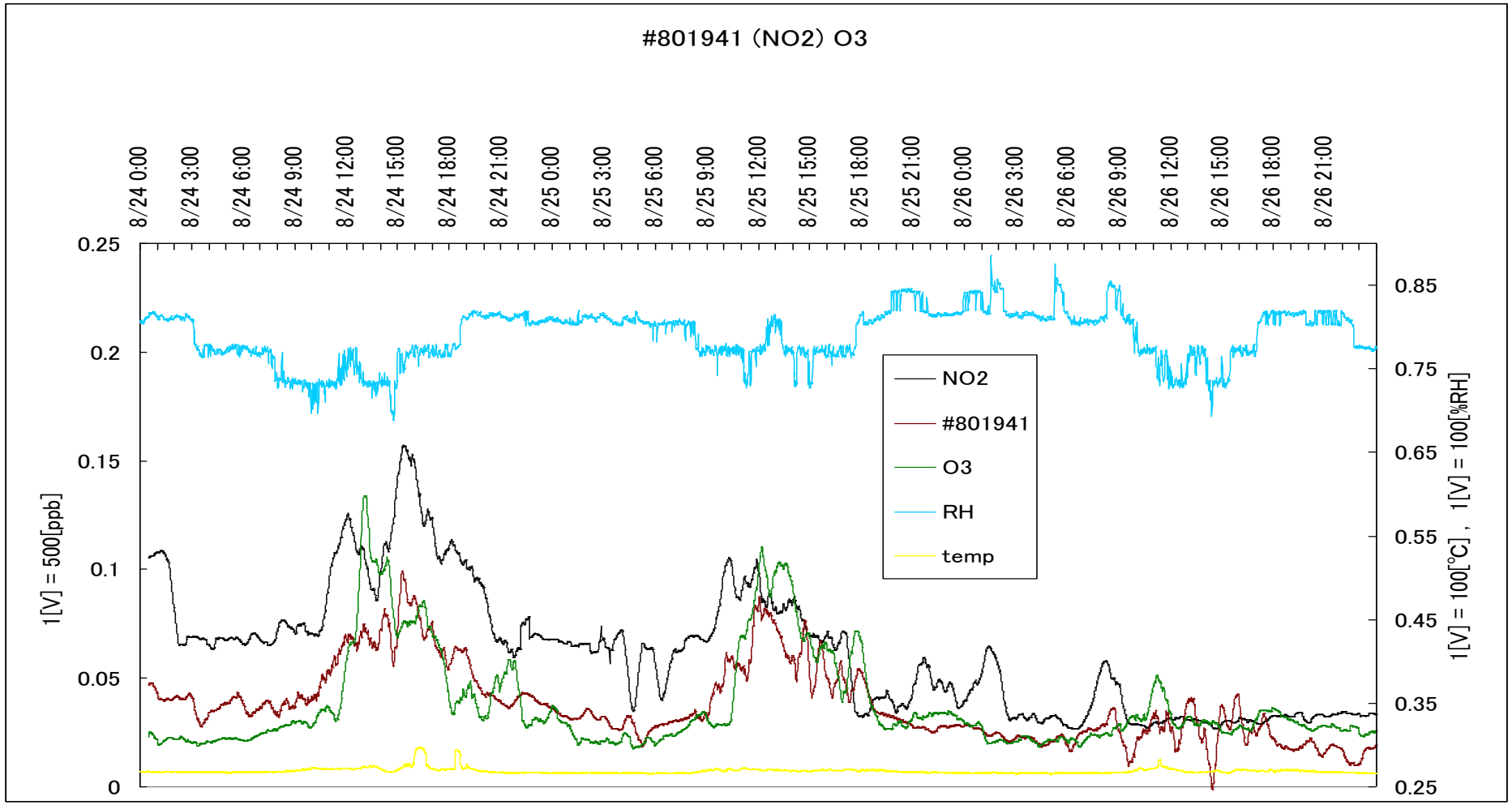
外置过滤器有效消除交叉干扰

A3系列：A3OZ测试NO_2浓度



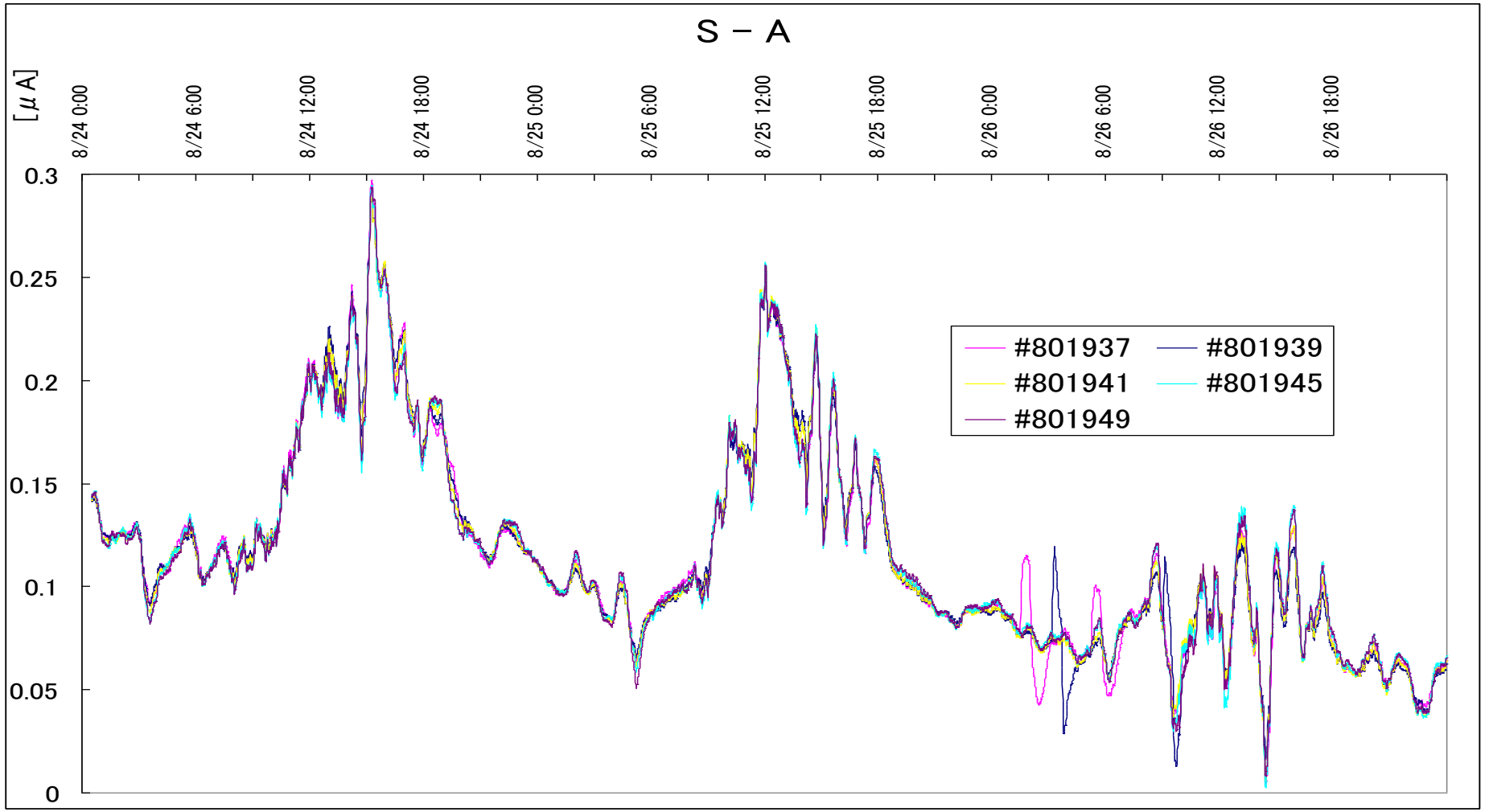
*数据来自日本某客户

A3系列：A3OZ测试O_3浓度



*数据来自日本某客户

A3系列：A3OZ测试一致性



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