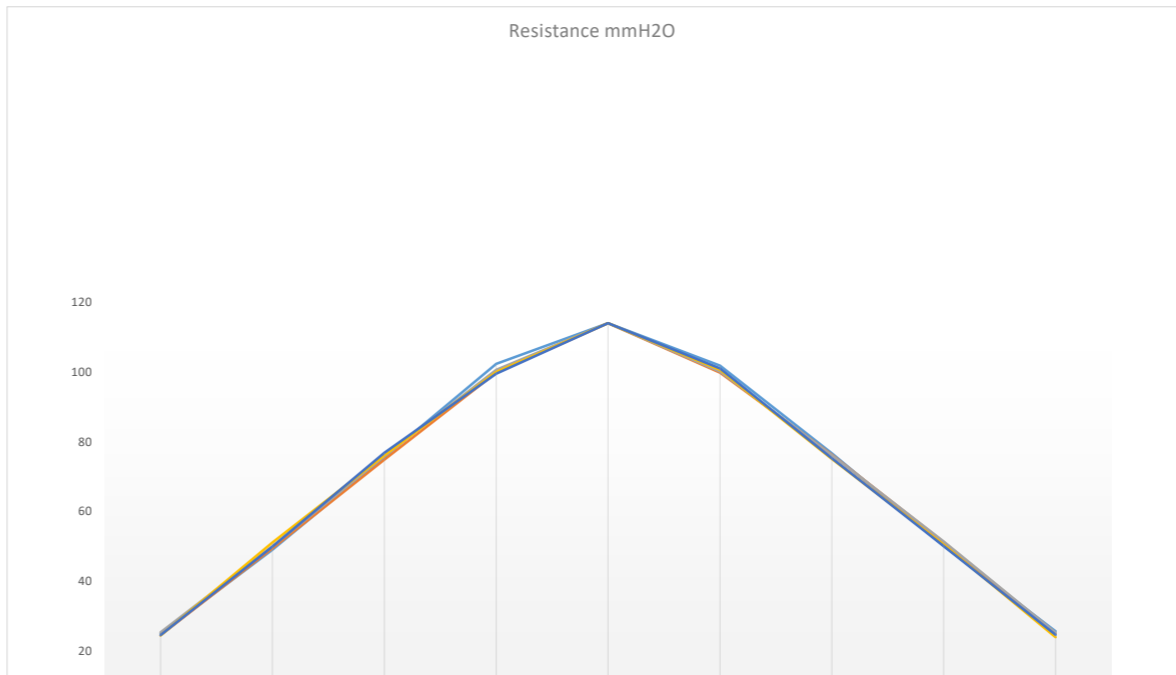
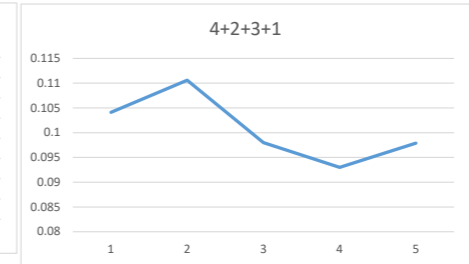
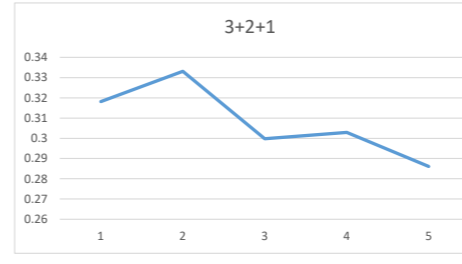
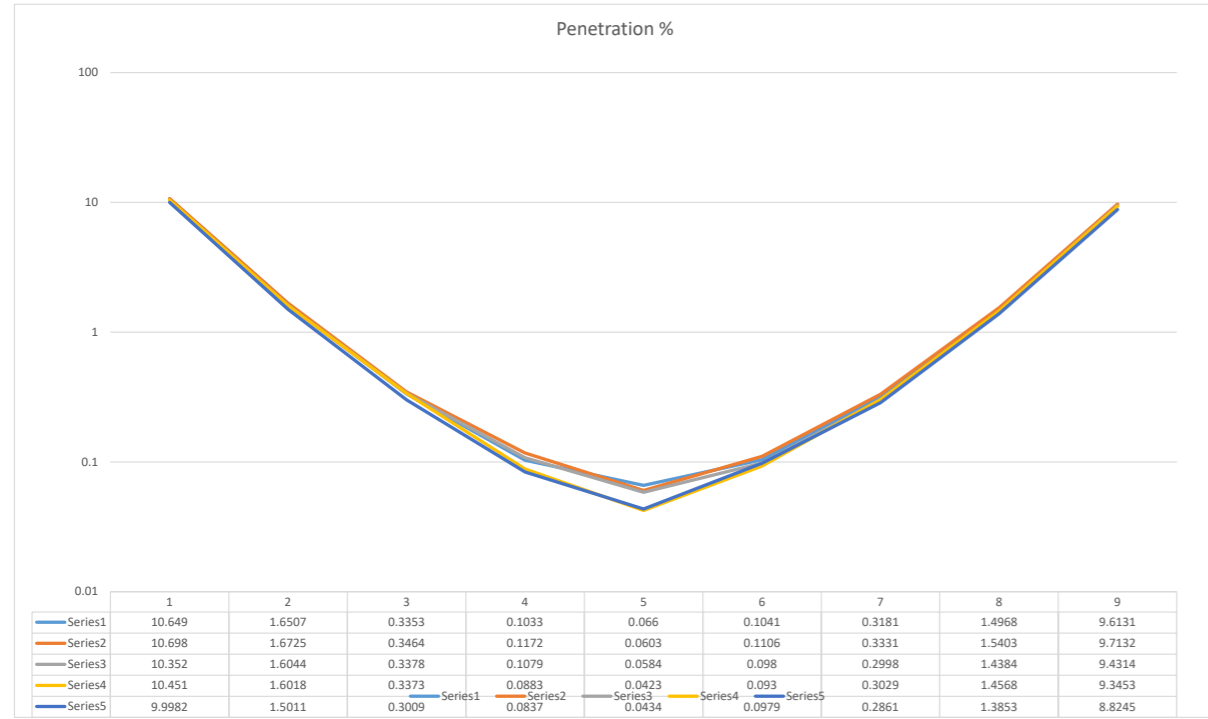
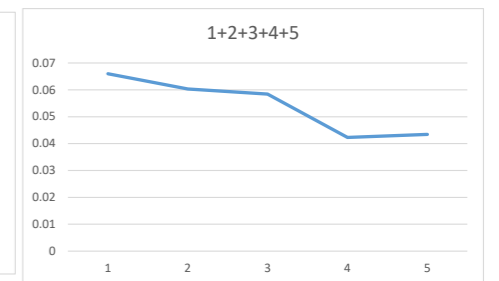
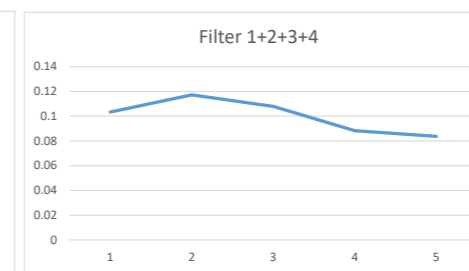
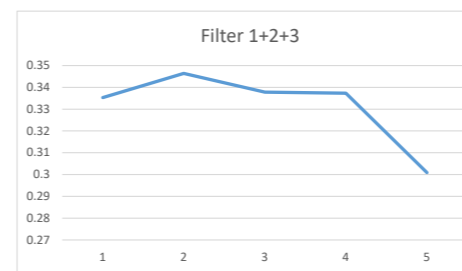
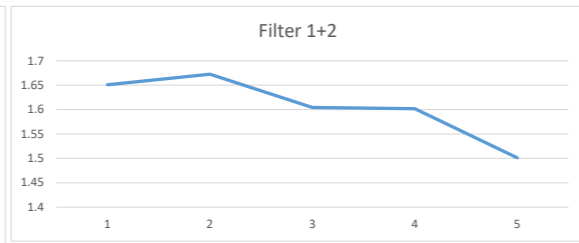
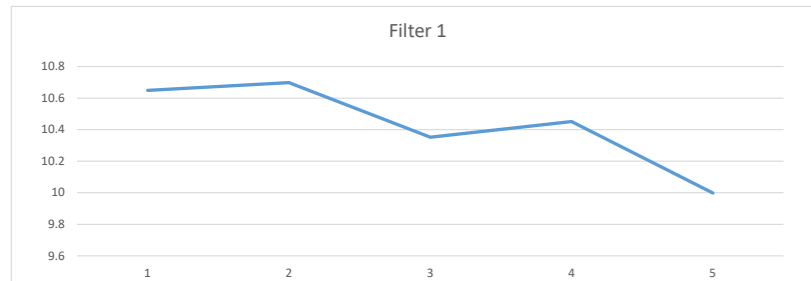


9:45 to 10:22

| Filters | Set A | Set B | Set C | Set D | Set E | MEAN | SDEV | SDEV as % Avg Penetration | Set A | Set B | Set C | Set D | Set E | MEAN | SDEV | SDEV as % Avg Penetration | set f | 10 |
|-----------|--------|--------|--------|--------|--------|-------|------|---------------------------|-------|-------|-------|-------|-------|--------|------|---------------------------|--------|--------|
| | % | % | % | % | % | | | | mmH2O | mmH2O | mmH2O | mmH2O | mmH2O | | | | new | pencal |
| 1 | 10.649 | 10.698 | 10.352 | 10.451 | 9.9982 | 10.43 | 0.28 | 2.68 | 24.9 | 24.5 | 25.3 | 24.4 | 24.5 | 24.72 | 0.38 | 1.52 | | |
| 1+2 | 1.6507 | 1.6725 | 1.6044 | 1.6018 | 1.5011 | 1.61 | 0.07 | 4.11 | 49 | 49.4 | 50 | 51.1 | 49.9 | 49.88 | 0.79 | 1.59 | | |
| 1+2+3 | 0.3353 | 0.3464 | 0.3378 | 0.3373 | 0.3009 | 0.33 | 0.02 | 5.32 | 75.6 | 74.9 | 75.9 | 76.1 | 76.9 | 75.88 | 0.73 | 0.96 | | |
| 1+2+3+4 | 0.1033 | 0.1172 | 0.1079 | 0.0883 | 0.0837 | 0.10 | 0.01 | 13.88 | 102.4 | 99.9 | 100.7 | 100.1 | 99.6 | 100.54 | 1.11 | 1.11 | | |
| 1+2+3+4+5 | 0.066 | 0.0603 | 0.0584 | 0.0423 | 0.0434 | 0.05 | 0.01 | 19.66 | 114.1 | 114.1 | 114.1 | 114.1 | 114.1 | 114.10 | 0.00 | 0.00 | | |
| 4+3+2+1 | 0.1041 | 0.1106 | 0.098 | 0.093 | 0.0979 | 0.10 | 0.01 | 6.73 | 101.9 | 99.9 | 100.2 | 100.7 | 101.1 | 100.76 | 0.79 | 0.78 | | |
| 3+2+1 | 0.3181 | 0.3331 | 0.2998 | 0.3029 | 0.2861 | 0.31 | 0.02 | 5.86 | 76.7 | 76.3 | 76.2 | 75.1 | 75.3 | 75.92 | 0.69 | 0.90 | | |
| 2+1 | 1.4968 | 1.5403 | 1.4384 | 1.4568 | 1.3853 | 1.46 | 0.06 | 4.01 | 50.1 | 51.2 | 51.4 | 50.5 | 50.1 | 50.66 | 0.61 | 1.21 | | |
| 1 | 9.6131 | 9.7132 | 9.4314 | 9.3453 | 8.8245 | 9.39 | 0.35 | 3.68 | 25.6 | 25 | 25.2 | 23.9 | 24.6 | 24.86 | 0.65 | 2.60 | 9.3021 | 24.5 |

To date, no recognized national metrological institute has successfully devised a method of calibrating a forward light scattering photometer. This is primarily due to the difficulty in generating a stable and repeatable aerosol that is capable of providing input at the lowest ranges of photometric detection. Due to the instability of available aerosol generation methods, and the difficulty in quantifying low output levels, an alternate validation method is required.

The "Media Stack" test demonstrates the linearity and repeatability of the forward light scattering technology used to measure aerosol concentration in photometric based applications. This partially alleviates the need of performing multi-point verification throughout the range of response of the forward light scattering detectors in stationary and portable photometers employed in high efficiency filter certification.



T/RH
TIME
DATE

21.3/43.3
8:21
15/07/2021

21.2/45.2
9:50
15/07/2021

| 4% NaCl (batch 20210714/02) | | | | |
|-----------------------------|-----|-------------------|------------------|------------------------------|
| | Run | Weight before (g) | Weight after (g) | Aerosol Concentration (ug/l) |
| Duration | | | | |
| 10 mins | 1st | 2.8009 | 2.8166 | 18.5 |
| 10 mins | 2nd | 2.8166 | 2.833 | 19.3 |
| 10 mins | 3rd | 2.833 | 2.8491 | 18.6 |
| AVERAGE | | 2.817 | 2.833 | 18.8 |

| 0.2% NaCl (batch 20210713/01) | | | | |
|-------------------------------|-----|-------------------|------------------|------------------------------|
| | Run | Weight before (g) | Weight after (g) | Aerosol Concentration (ug/l) |
| Duration | | | | |
| 10 mins | 1st | 2.81 | 2.8109 | 1.1 |
| 20 mins | 2nd | 2.8109 | 2.8126 | 1 |
| 20 mins | 3rd | 2.8126 | 2.8144 | 1.1 |
| AVE | | 2.811 | 2.813 | 1.1 |

| 0.04% NaCl (batch 20210713/06) | | | | |
|--------------------------------|-----|-------------------|------------------|------------------------------|
| | Run | Weight before (g) | Weight after (g) | Aerosol Concentration (ug/l) |
| Duration | | | | |
| 20 mins | 1st | 2.8055 | 2.8056 | 0.1 |
| | 2nd | | | |
| | 3rd | | | |

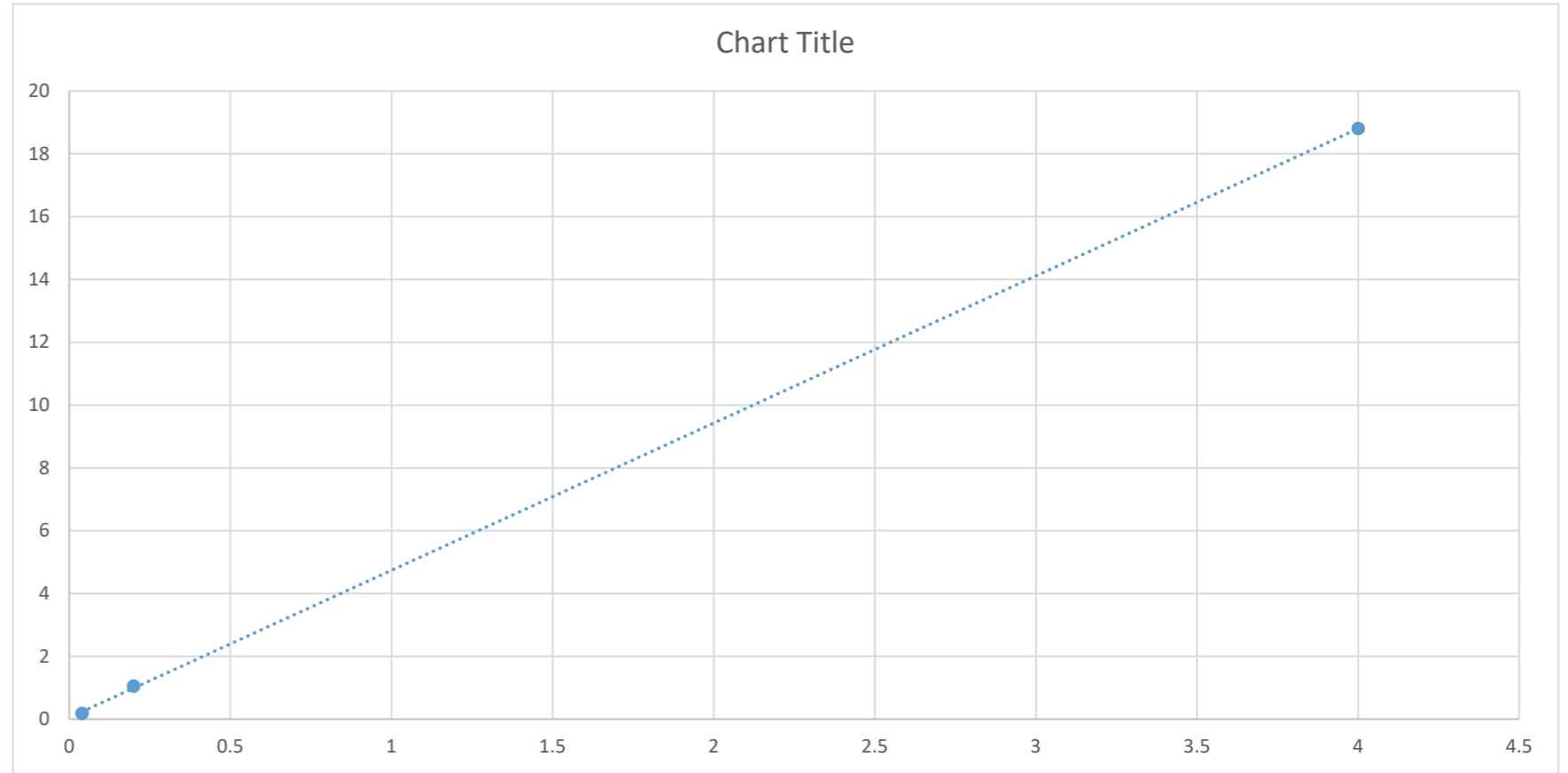
NaCl solution dropped 4mm by end of 3rd test.

Instrument was allowed 20 minutes warm-up prior to test. The same gravimetric filter was re-used throughout each concentration test; 3 filters in all. Filters were acclimatised over night. were re-weighed 3 times and averaged before documenting their weight. 0.9% Replenishment pump was disconnected.

Instrument will not accept longer than 20 mins for gravimetric test.

Precise NaCl solutions were specially made by media prep section using calibrated balance and volumetric glassware. The objective was to fill the ATI 100Xs aerosol generator with different concentrations of salt solution and establish the resulting aerosol concentration via gravimetric weighing.

| | |
|------|------|
| 0.04 | 0.18 |
| 0.2 | 1.05 |
| 4 | 18.8 |



| 4% NaCl (batch 20210714/02) | | | | |
|-----------------------------|-----|-------------------|------------------|------------------------------|
| 4% | | | | |
| | Run | Weight before (g) | Weight after (g) | Aerosol Concentration (ug/l) |
| Duration | | | | |
| 10 mins | 1st | 2.784 | 2.8003 | 19.4 |
| 10 mins | 2nd | 2.8003 | 2.8159 | 18.1 |
| 10 mins | 3rd | 2.8159 | 2.8313 | 18.1 |
| 10 mins | 4th | 2.8313 | 2.8467 | 18.0 |
| 10 mins | 5th | 2.8467 | 2.8613 | 16.9 |
| | 6th | 2.8616 | 2.8766 | 17.6 |
| AVERAGE | | 2.823 | 2.839 | 18.0 |

AVE
SD

Instrument was allowed 15 minutes warm-up prior to test. The sam for each consecutive gravimetric test. The filter was acclimatised ov prior to re-weighing 3 times and averaging before recording weight. sounded after 4th test.

filter
loaded (g)

15 minute warm-up prior to test

0.163

0.156

0.154

0.154

0.9% replenishment pump sounded 2 seconds on completion of test

0.146

0.150

0.153833

0.005742

the gravimetric filter was re-used
over night in ambient conditions
0.9% Replenishment pump