



ANNEX D2

CALIBRATION CERTIFICATES  
(TRANSFER STANDARDS)

## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z11		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800011
Issue Date:	2025-11-14		
Version	V1.0_20251114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Location: HKUST Air Quality Research Supersite Facility Collocation Data Time: 2025-11-06 11:00 to 2025-11-13 11:00

### Calibration Result:

#### RSP:

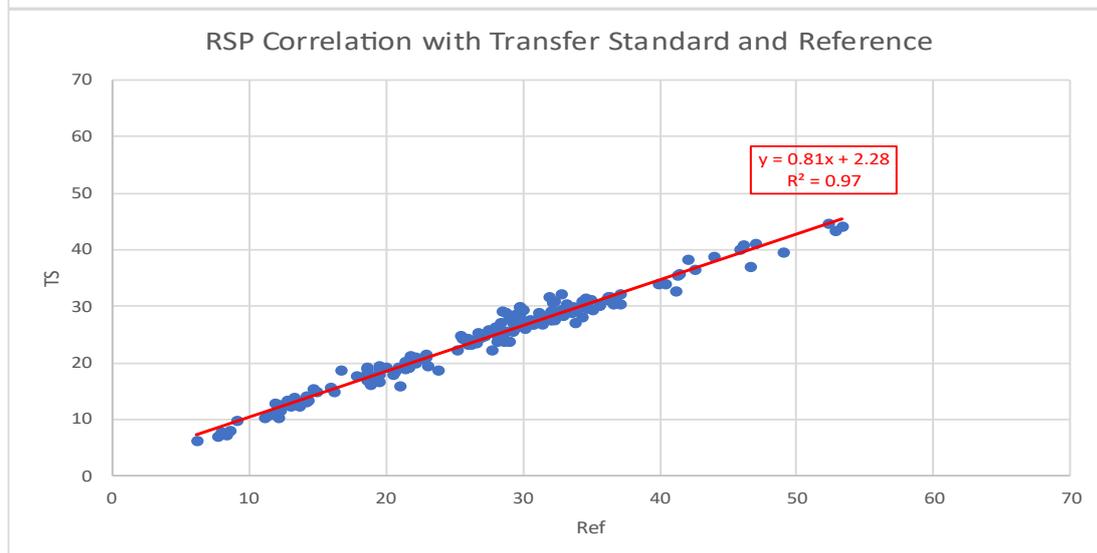
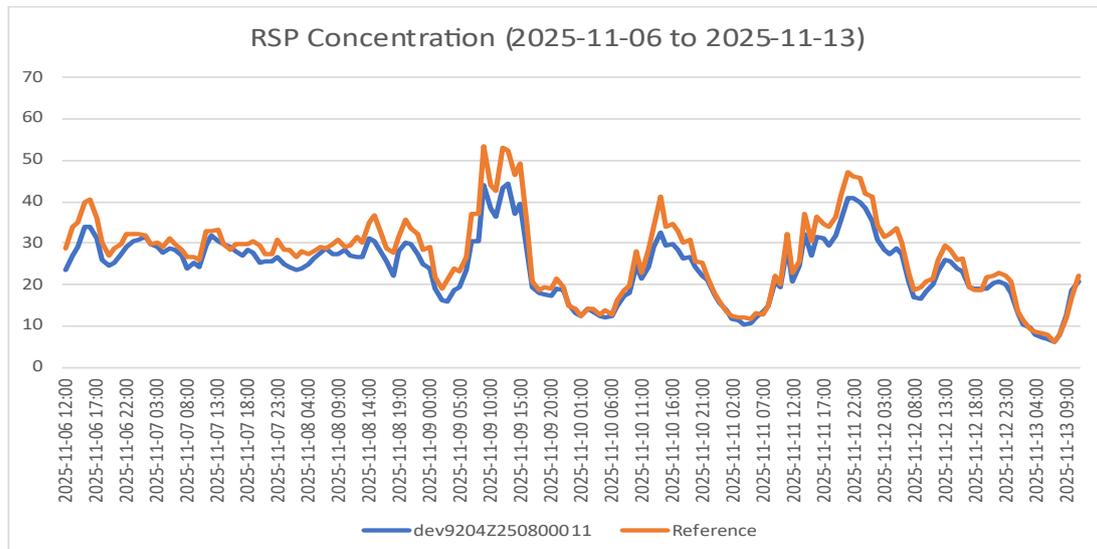
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.81	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.97	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	47.1 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	3.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

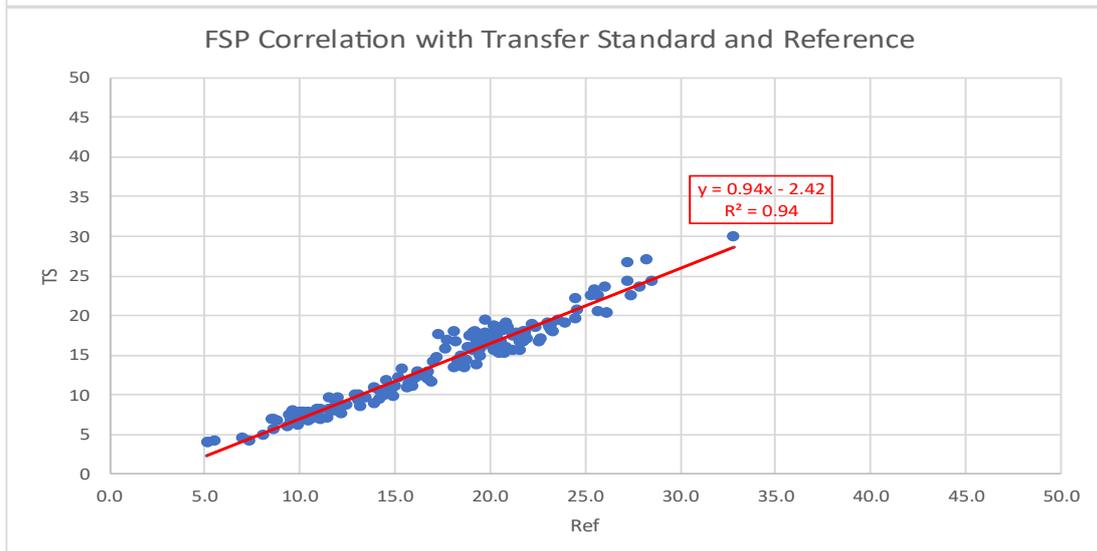
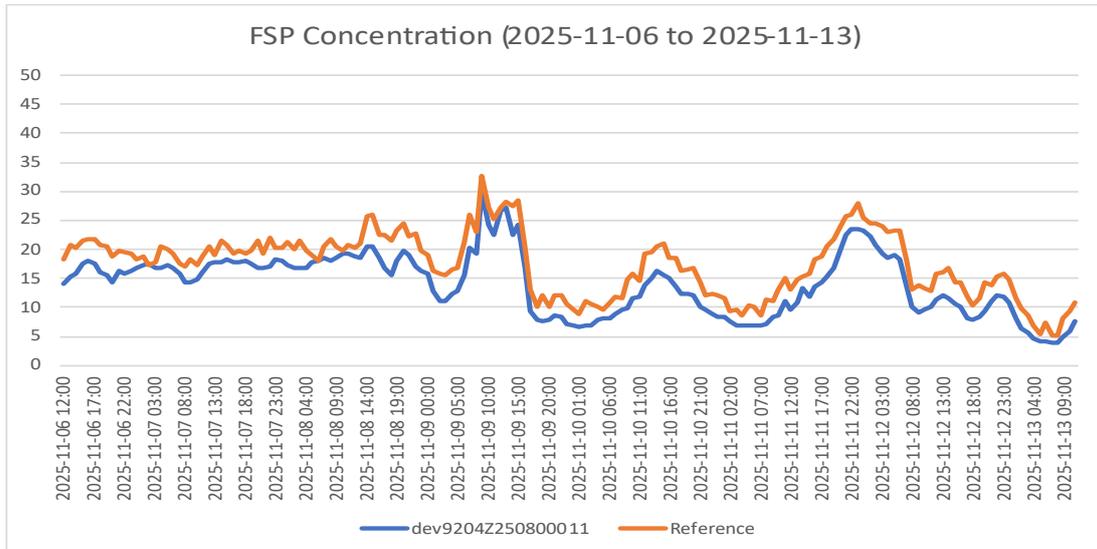
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

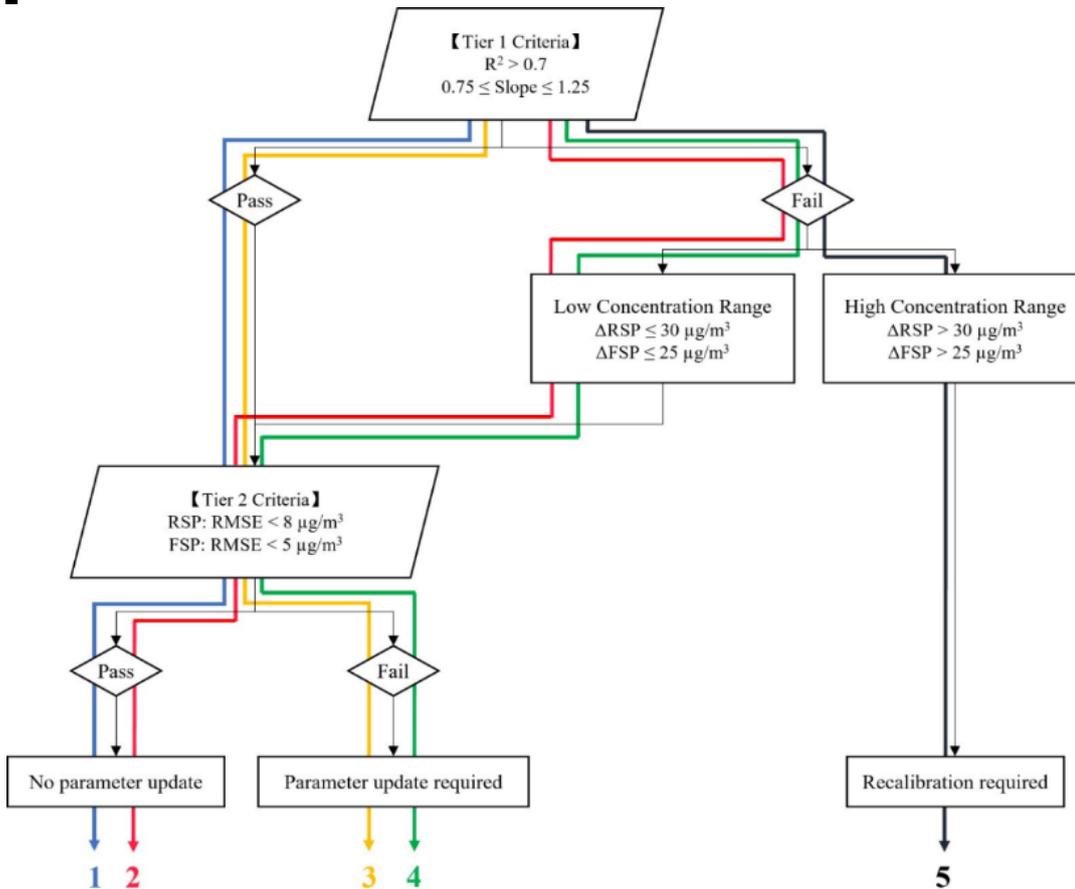
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.94	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.94	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	27.7 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	3.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.





**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications. No calibration action is needed during this time.

Prepared by:	Yannis Qiu	Reviewed by:	George Zhang
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z12		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800012
Issue Date:	2025-11-14		
Version	V1.0_20251114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Location: HKUST Air Quality Research Supersite Facility Collocation Data Time: 2025-11-06 11:00 to 2025-11-13 11:00

### Calibration Result:

#### RSP:

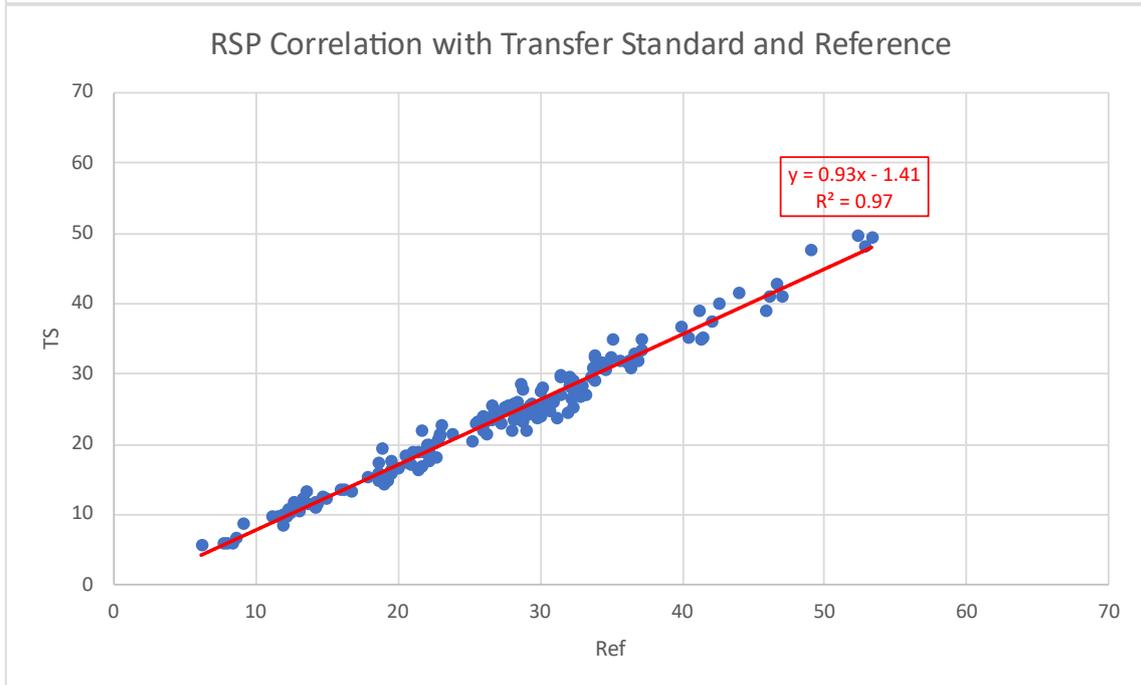
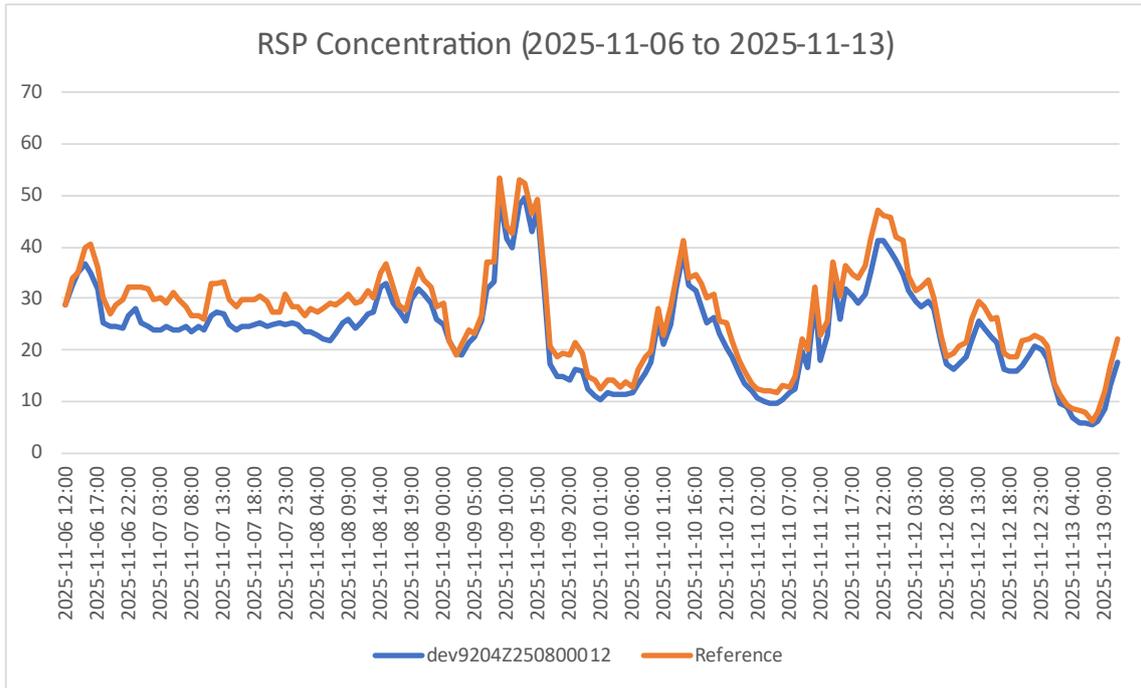
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.93	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.97	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	47.1 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	3.8 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

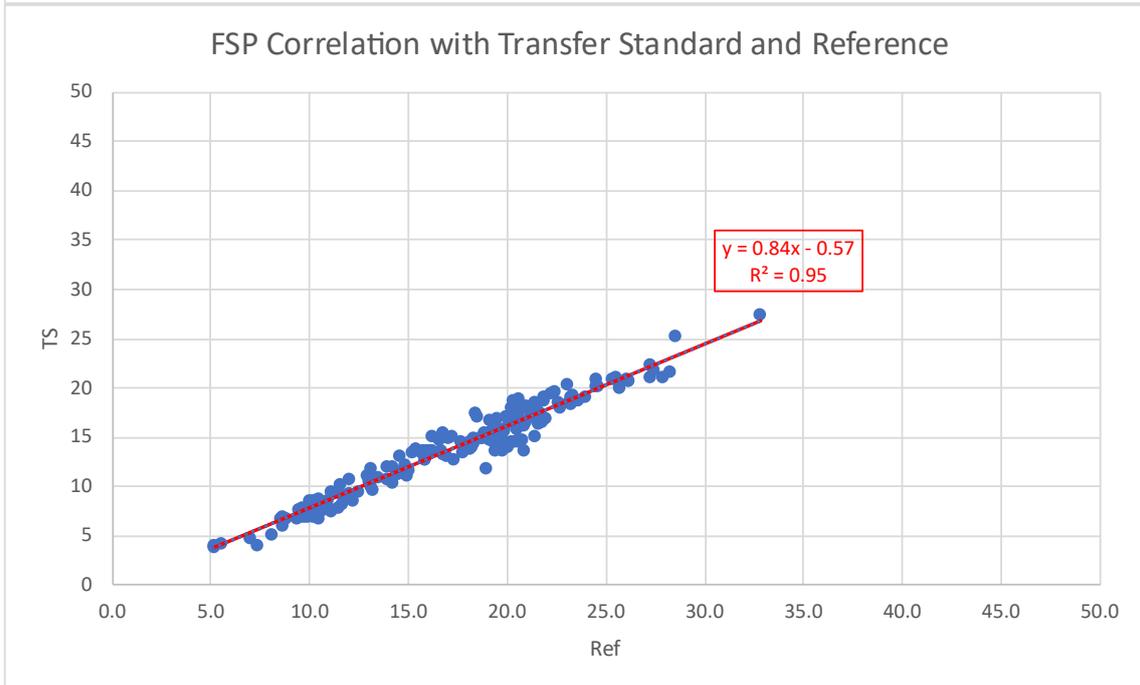
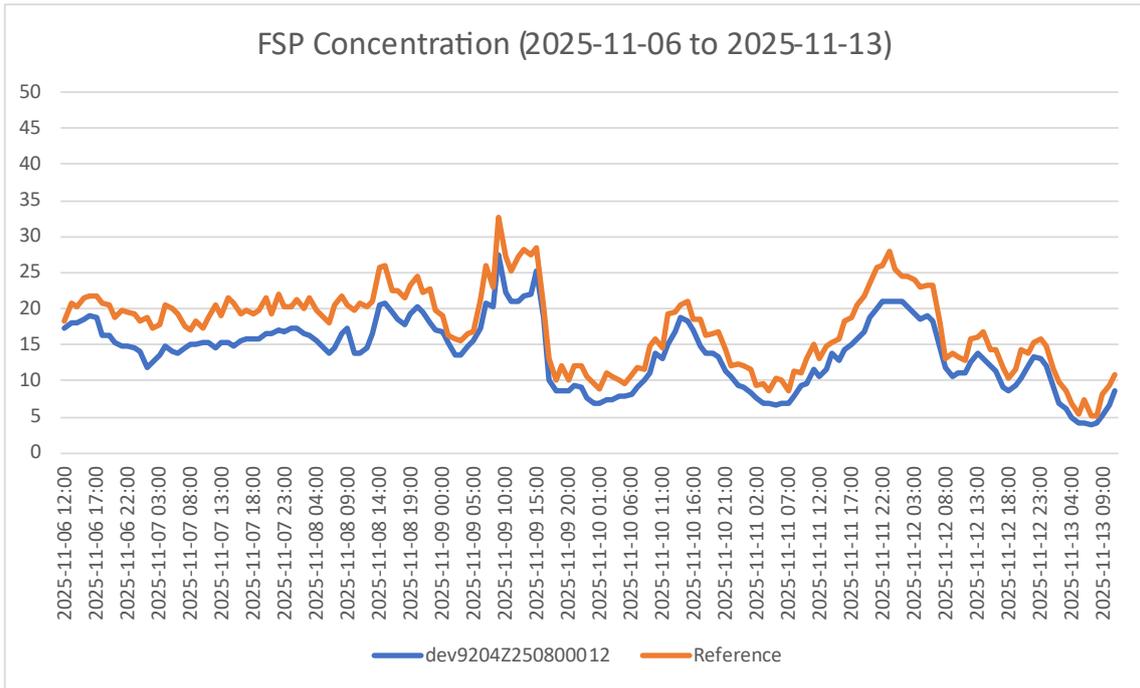
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

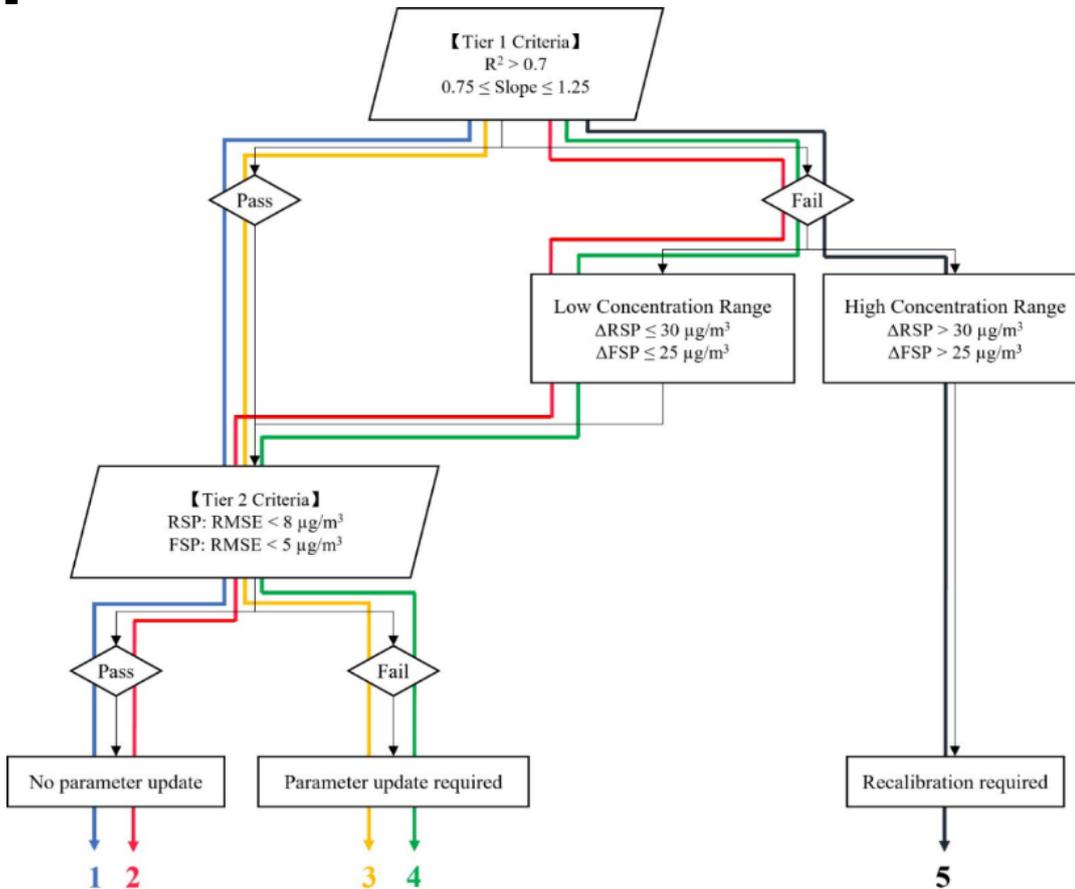
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.84	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.95	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	27.7 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	3.7 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.





**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications. No calibration action is needed during this time.

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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-12-Z11		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800011
Issue Date:	2025-12-15		
Version	V1.0_20251215		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Location: HKUST Air Quality Research Supersite Facility Collocation Data Time: 2025-12-04 16:00 to 2025-12-11 16:00

### Calibration Result:

#### RSP:

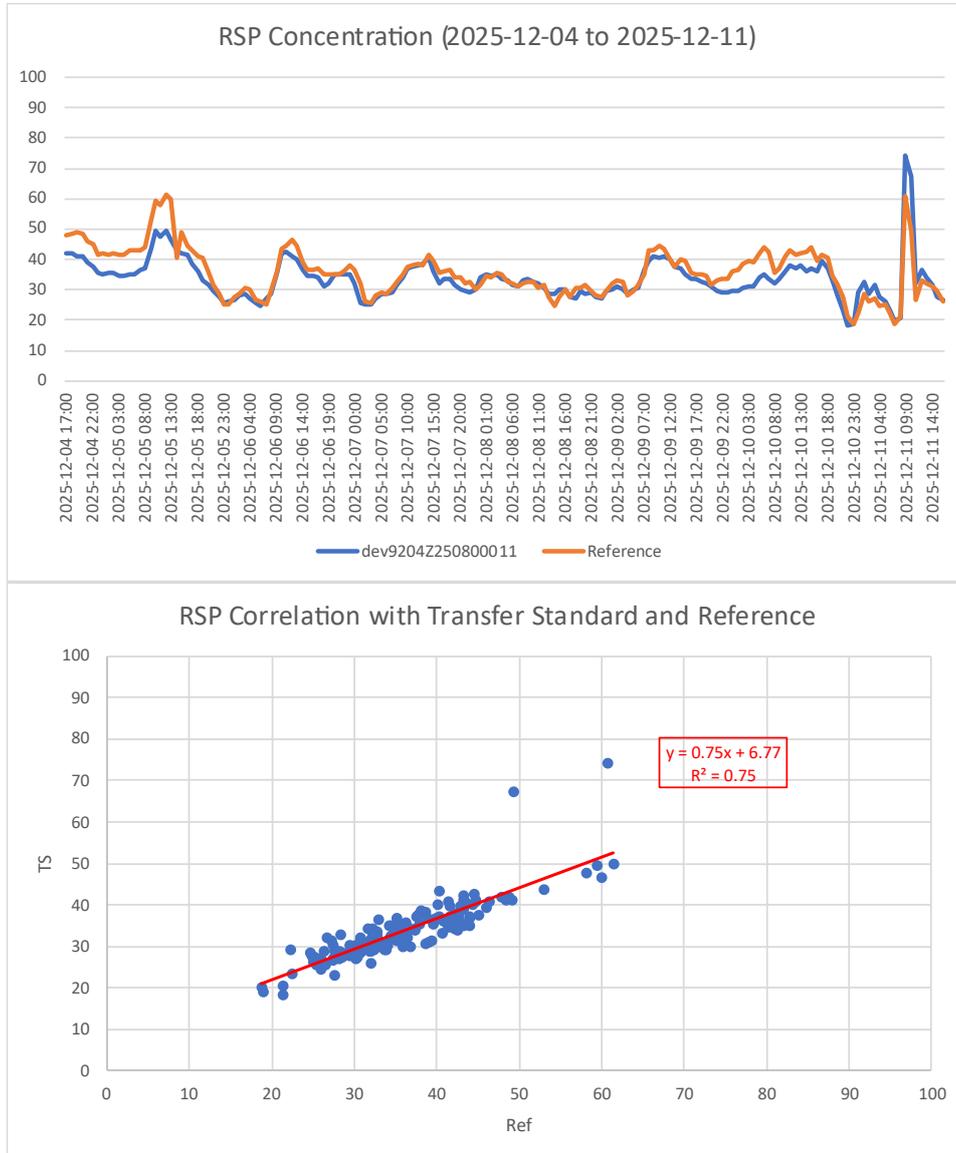
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.75	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.75	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	42.6 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	4.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

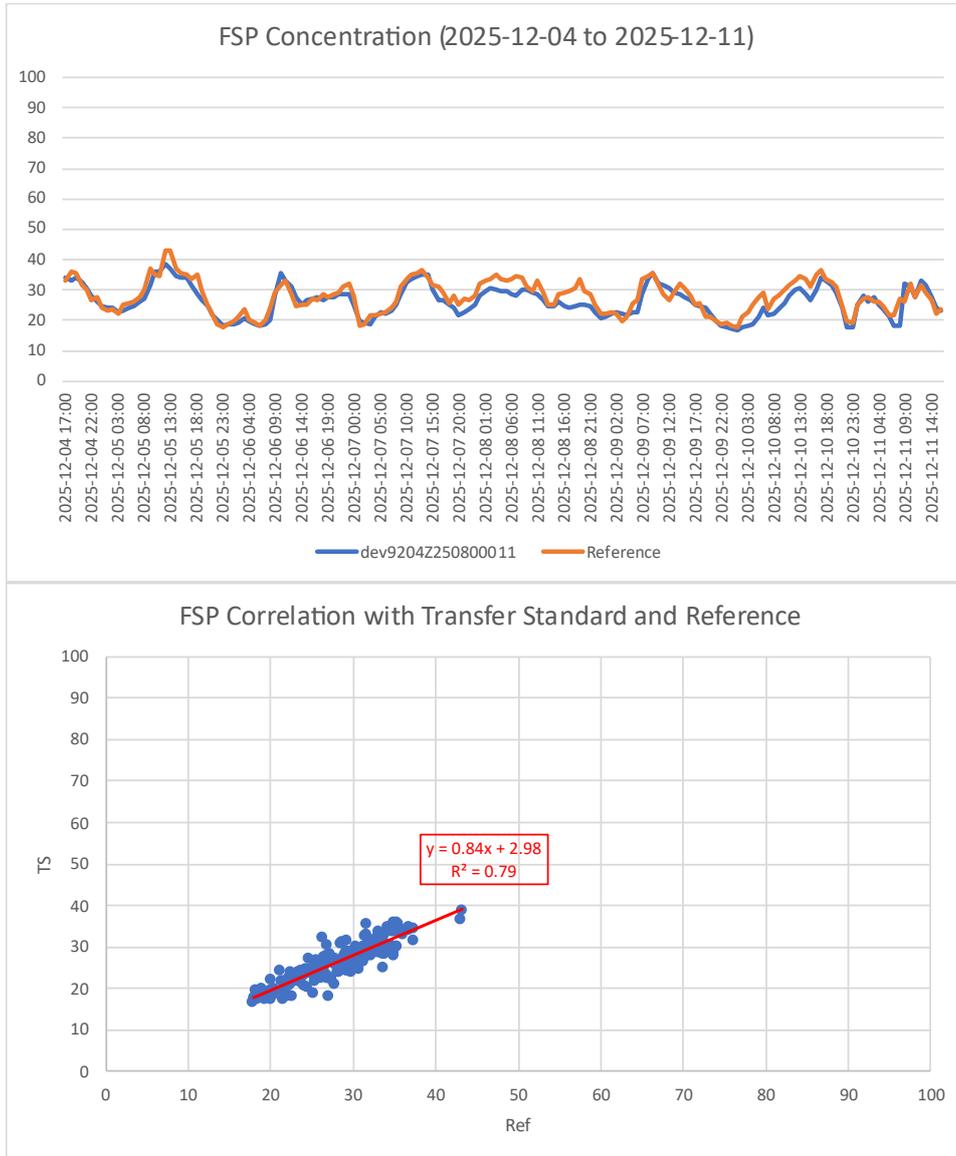
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

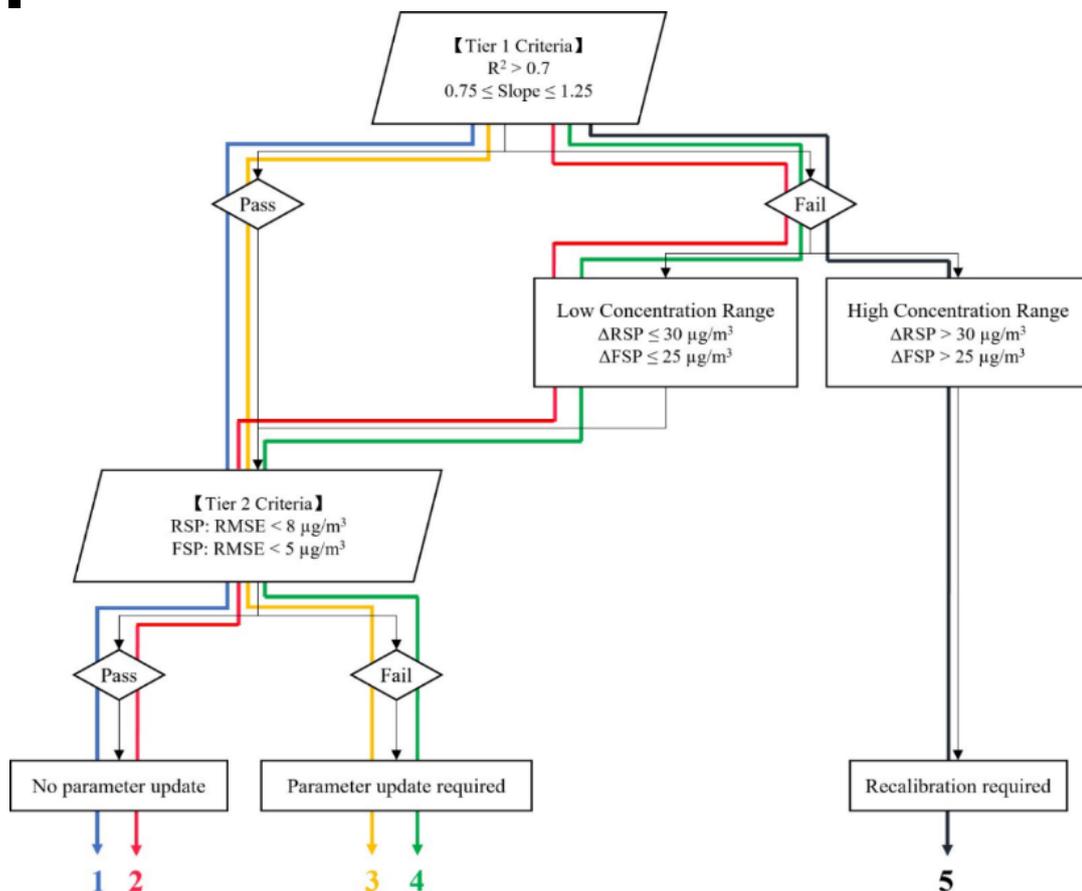
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.84	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.79	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	25.3 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	2.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.





**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications. No calibration action is needed during this time.

Prepared by:	Yannis Qiu	Reviewed by:	George Zhang
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-12-Z12		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800012
Issue Date:	2025-12-15		
Version	V1.0_20251215		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Location: HKUST Air Quality Research Supersite Facility Collocation Data Time: 2025-12-04 16:00 to 2025-12-11 16:00

### Calibration Result:

#### RSP:

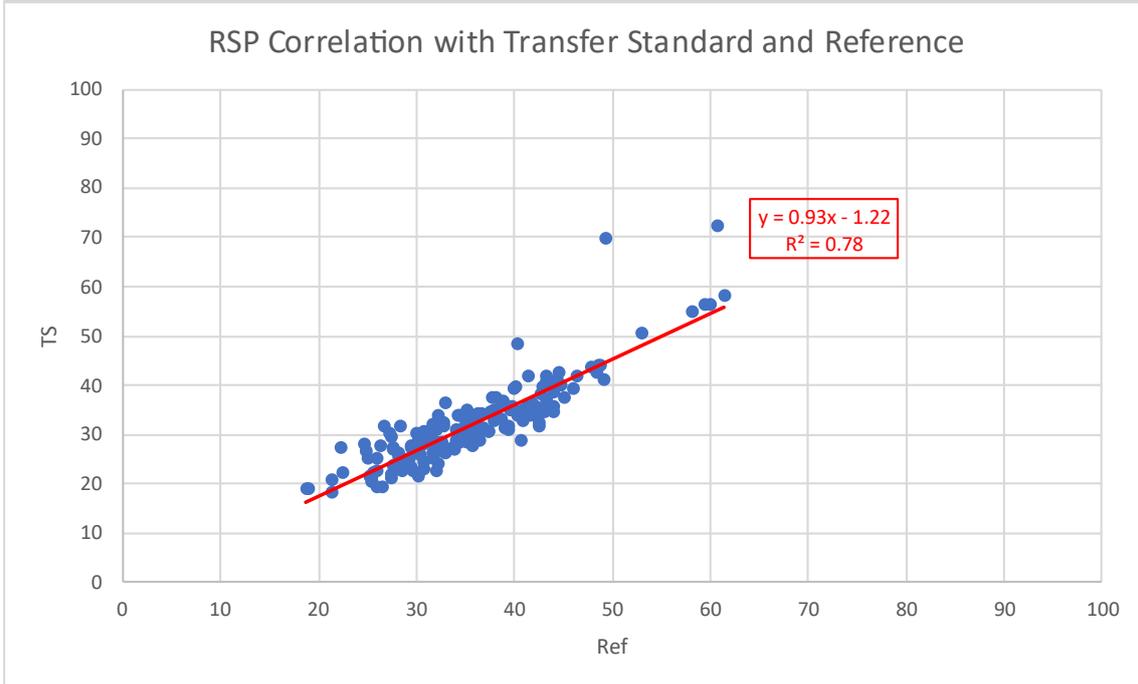
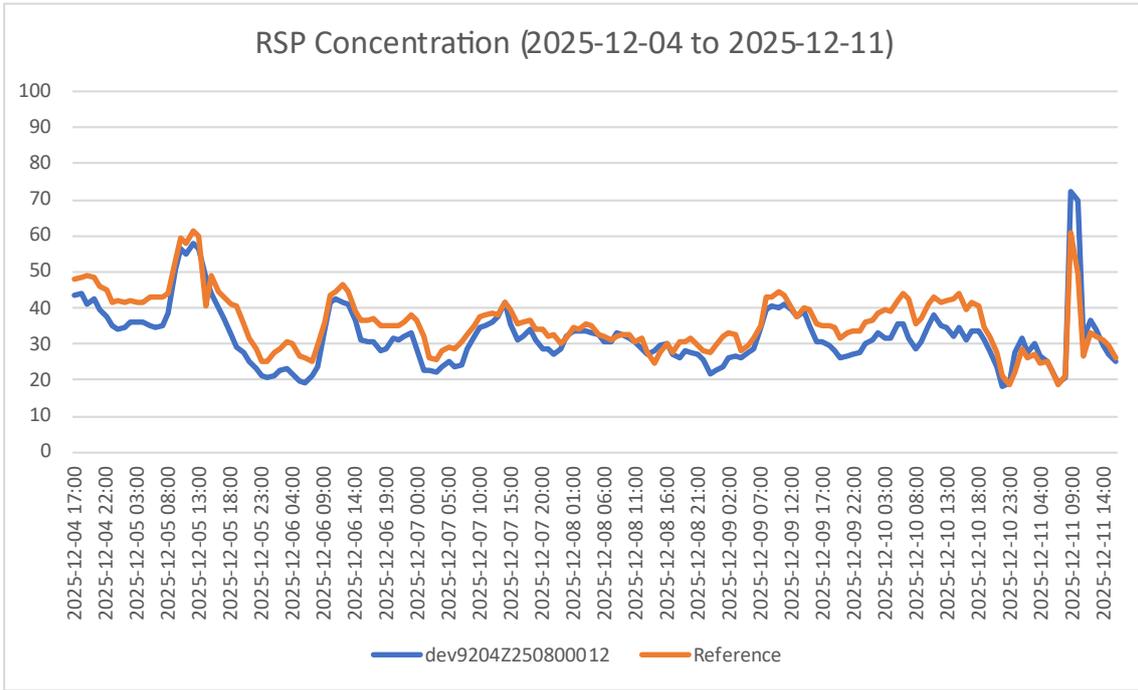
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.93	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.78	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	42.6 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	5.4 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

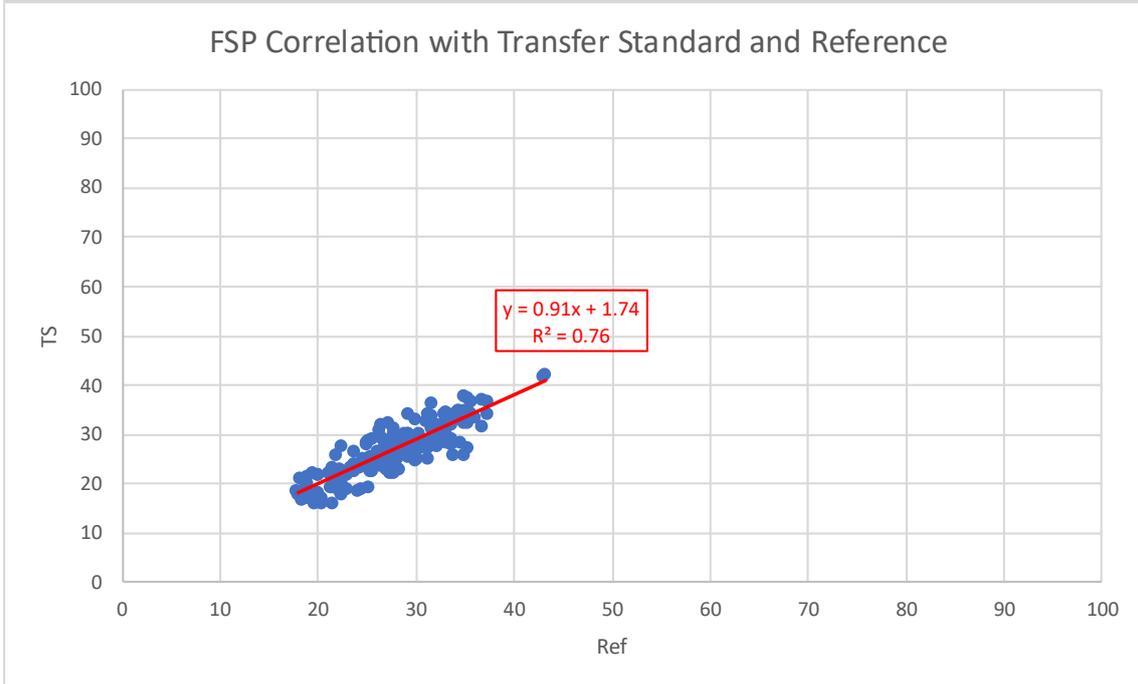
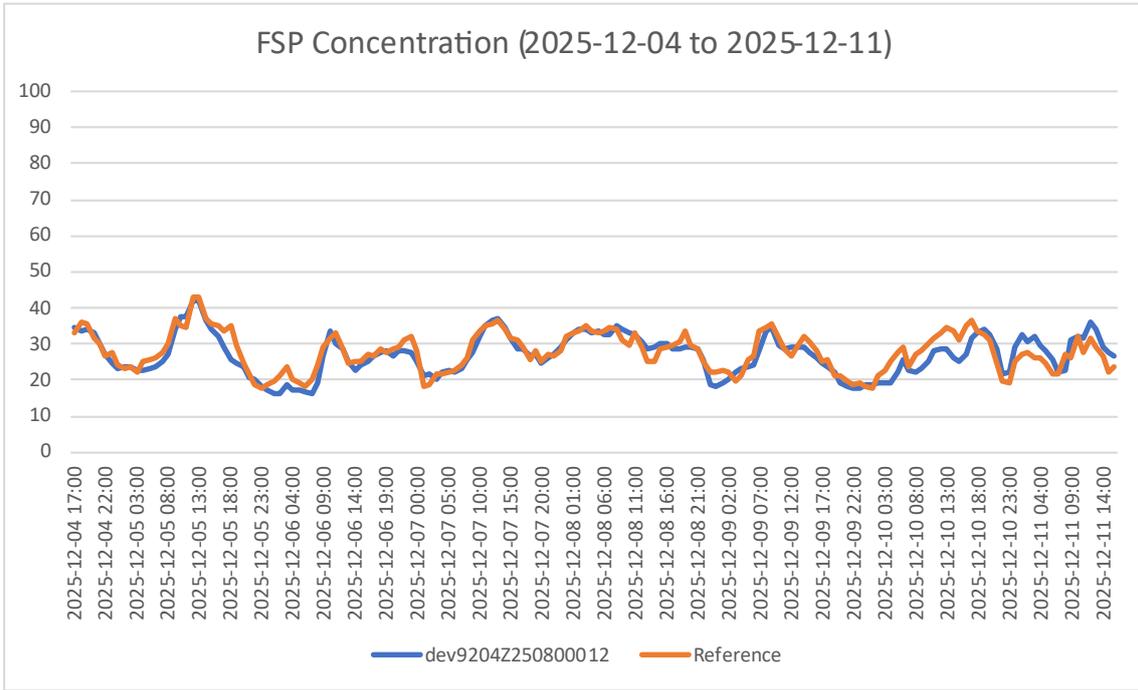
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

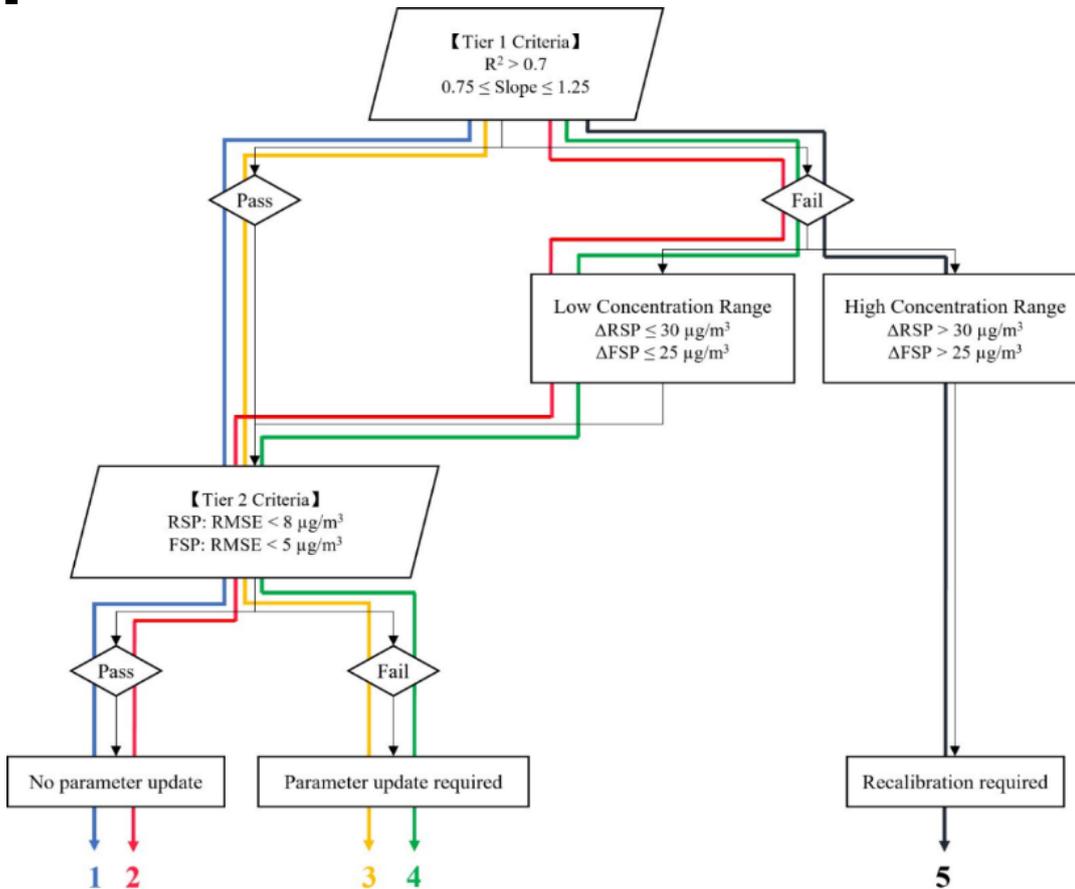
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.91	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.76	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	25.3 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	2.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.





**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications. No calibration action is needed during this time.

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