

## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z14		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800014
Issue Date:	2025-11-25		
Version	V1.0_20251125		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M06 Mai Po San Tsuen Collocation Data Period: 2025-11-24 12:10 to 2025-11-24 15:20

### Calibration Result:

#### RSP:

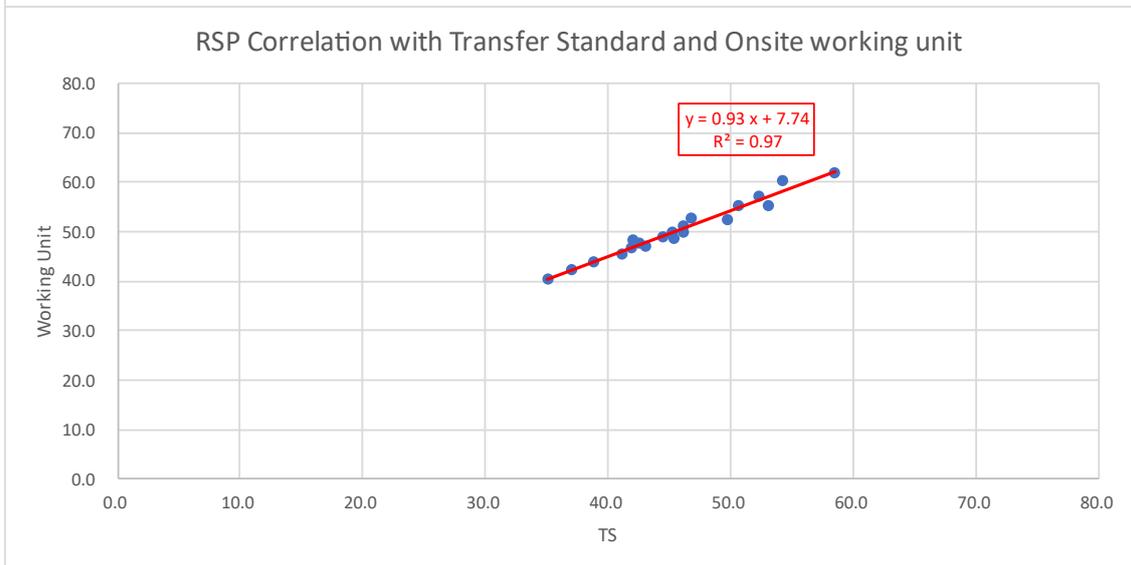
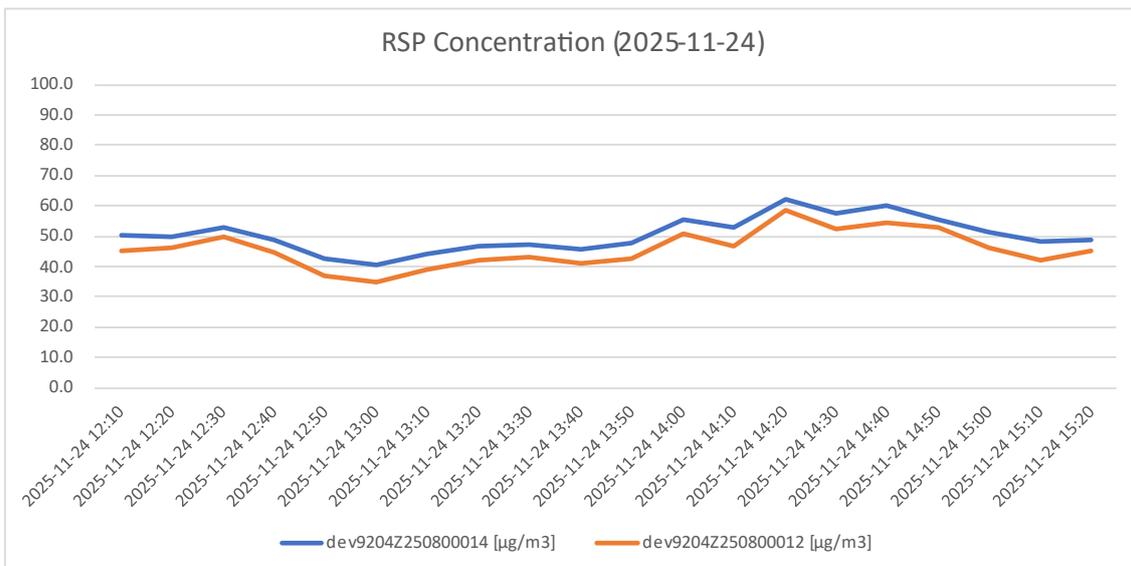
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.93	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.97	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	23.4 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	4.8 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

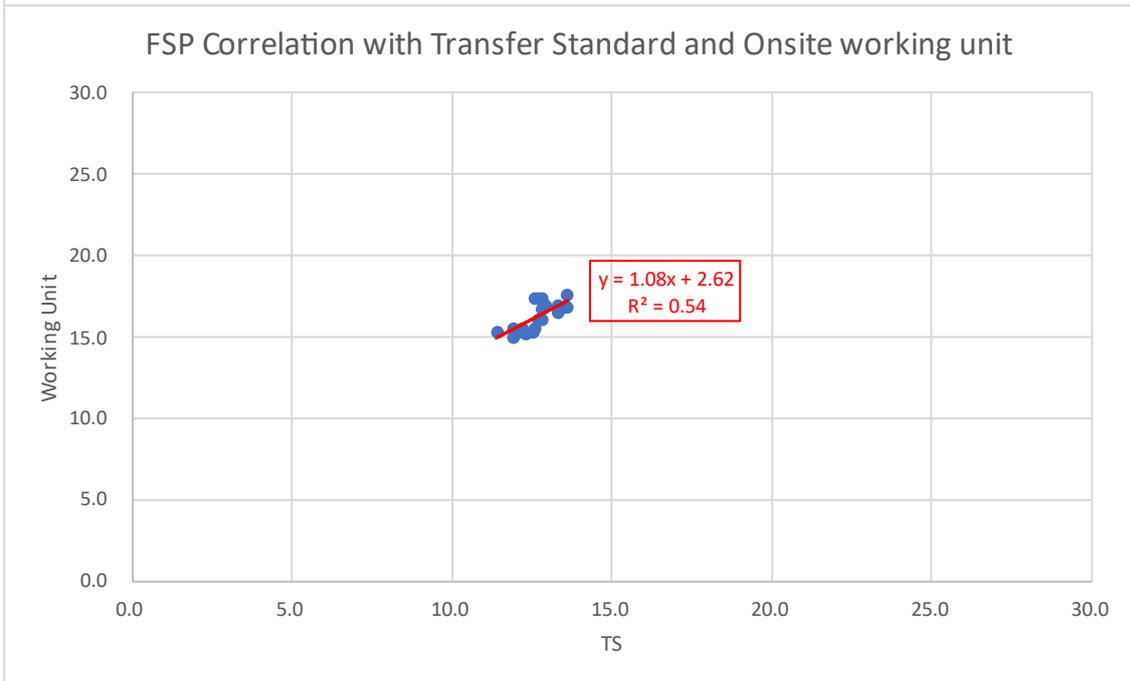
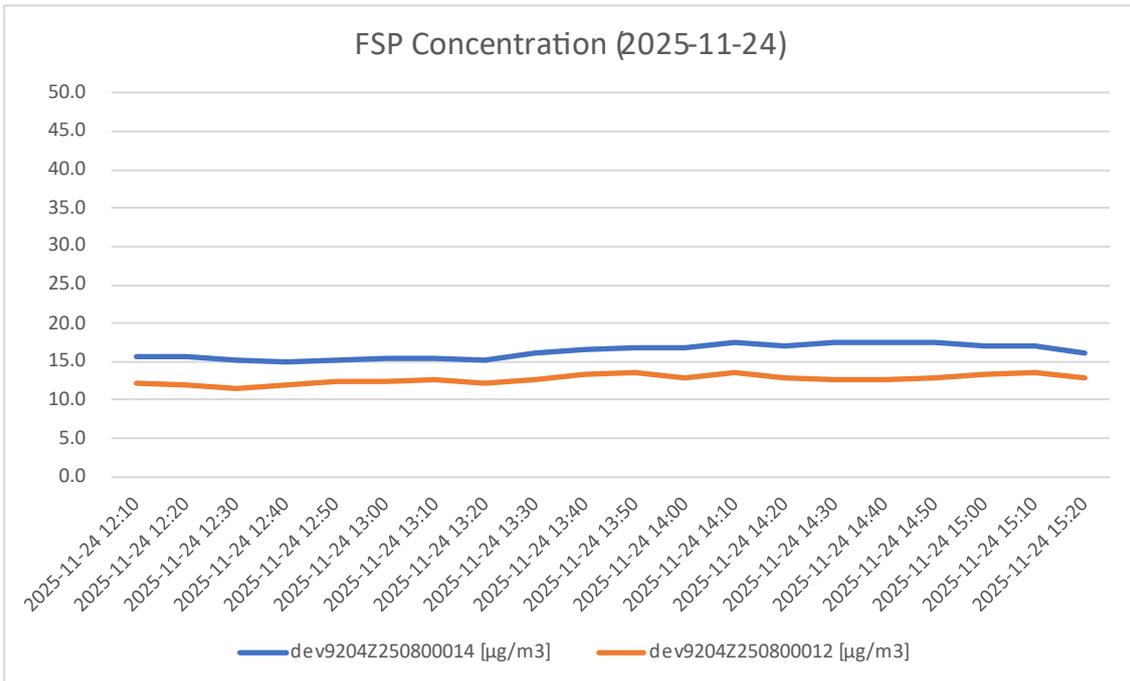
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

#### FSP:

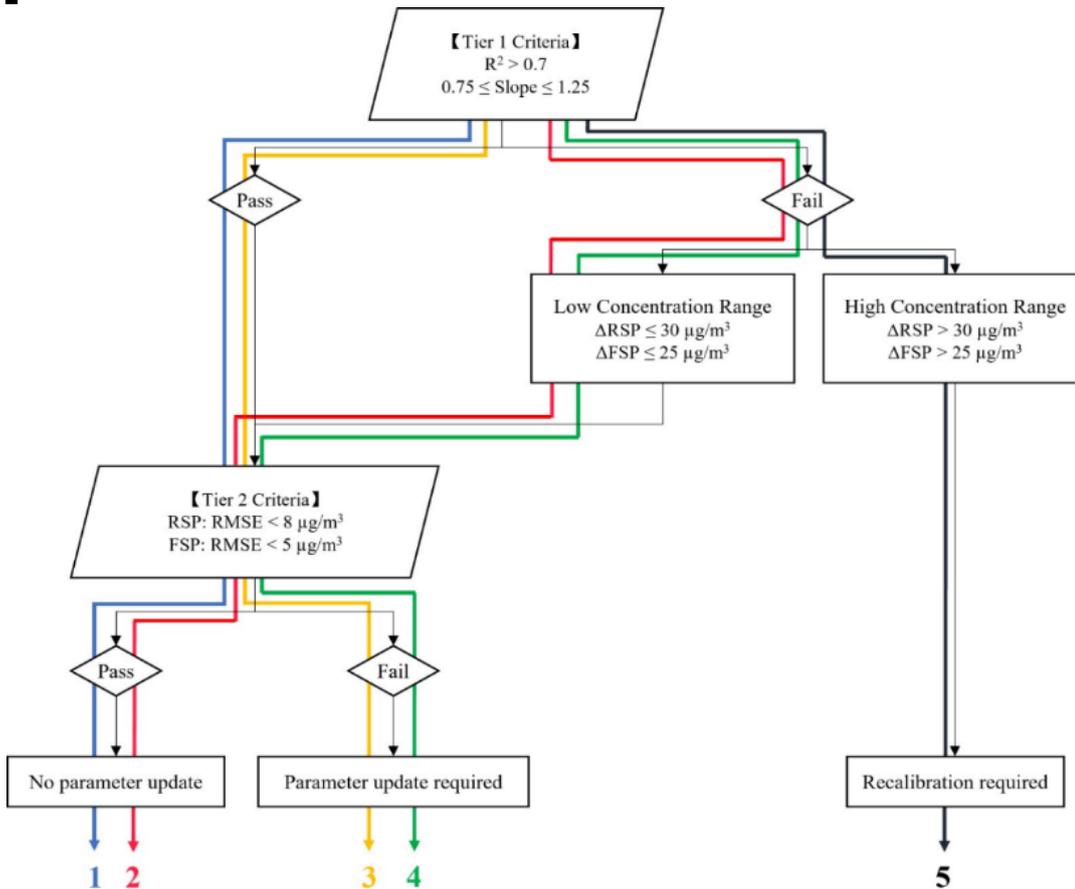
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.08	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.54	<input checked="" type="checkbox"/> FAIL
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.2 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<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 2 which is Criteria Tier 1 failed while 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z13		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800013
Issue Date:	2025-11-25		
Version	V1.0_20251125		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M11 Shek Wu Wai Collocation Data Period: 2025-11-24 12:00 to 2025-11-24 15:10

### Calibration Result:

#### RSP:

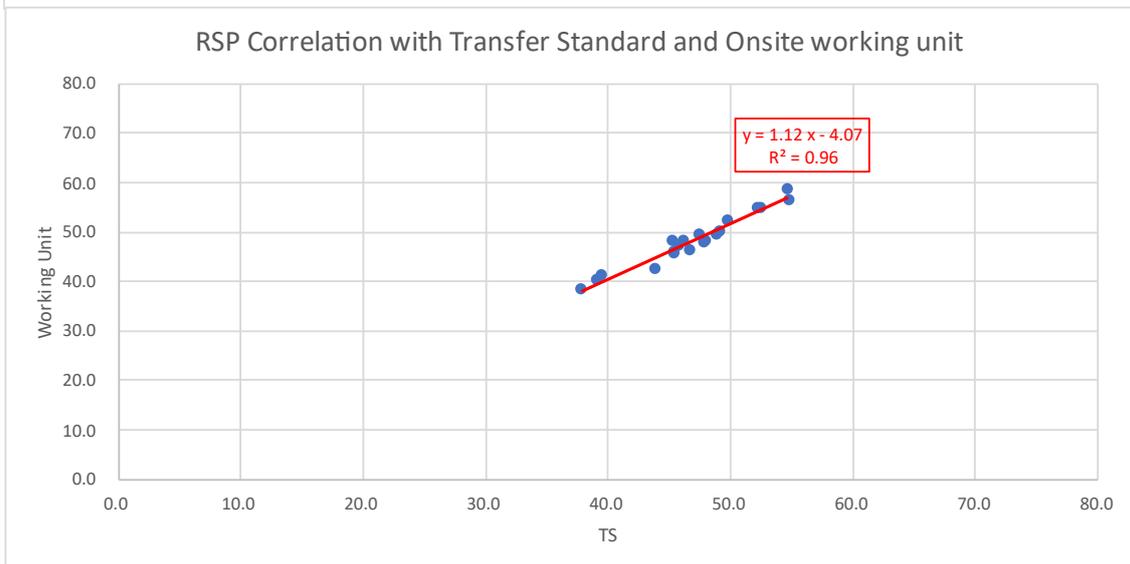
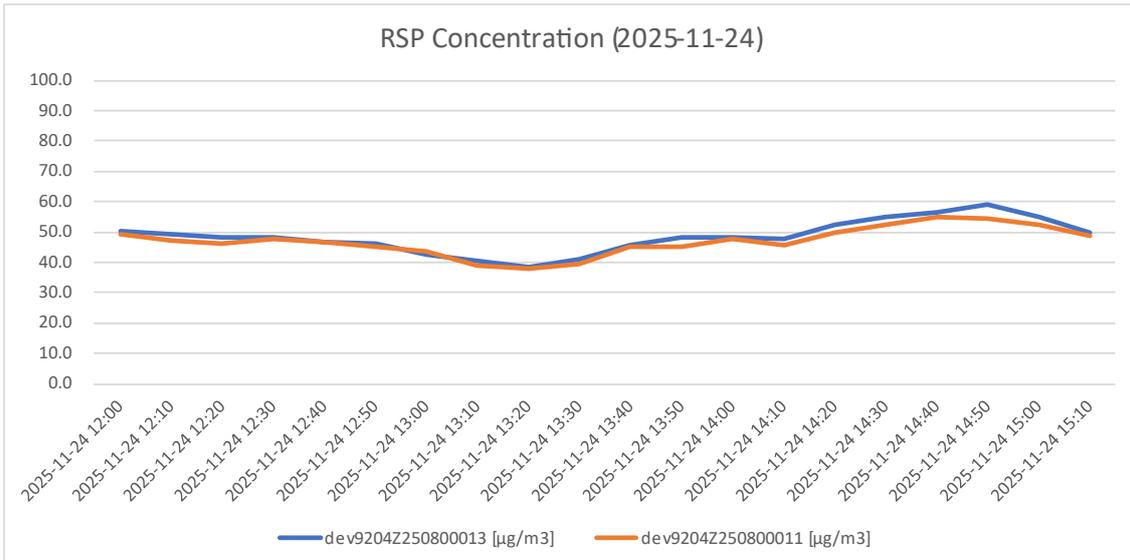
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.12	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.96	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	16.9 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	1.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

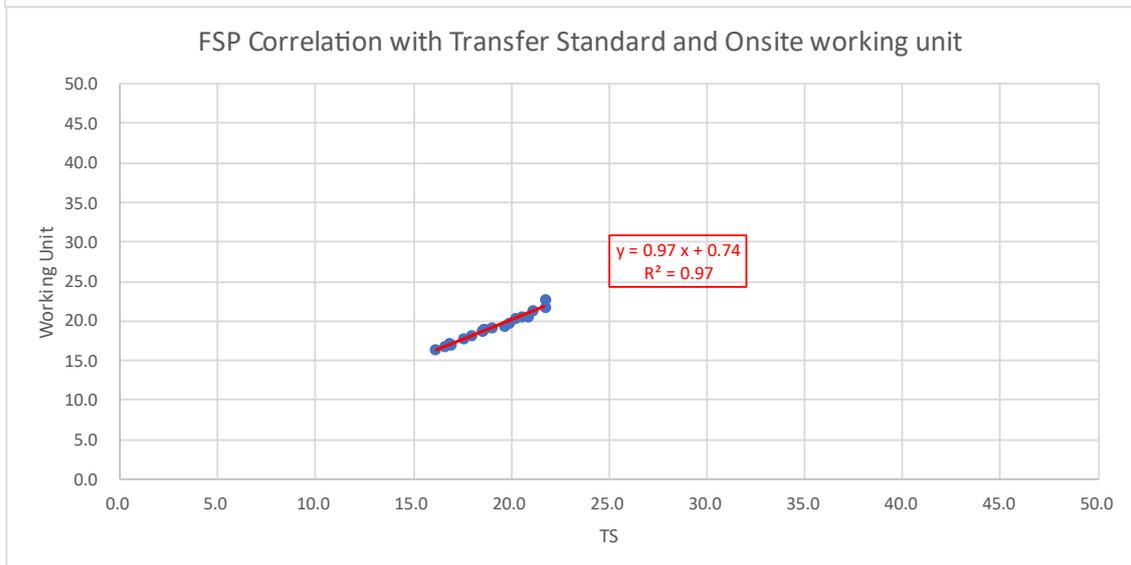
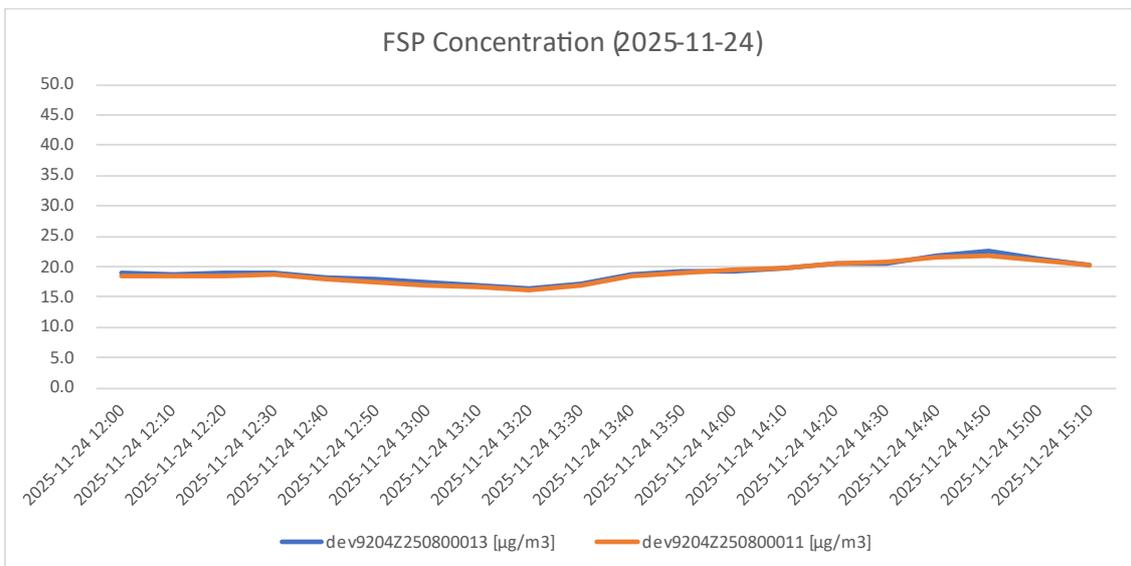
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

#### FSP:

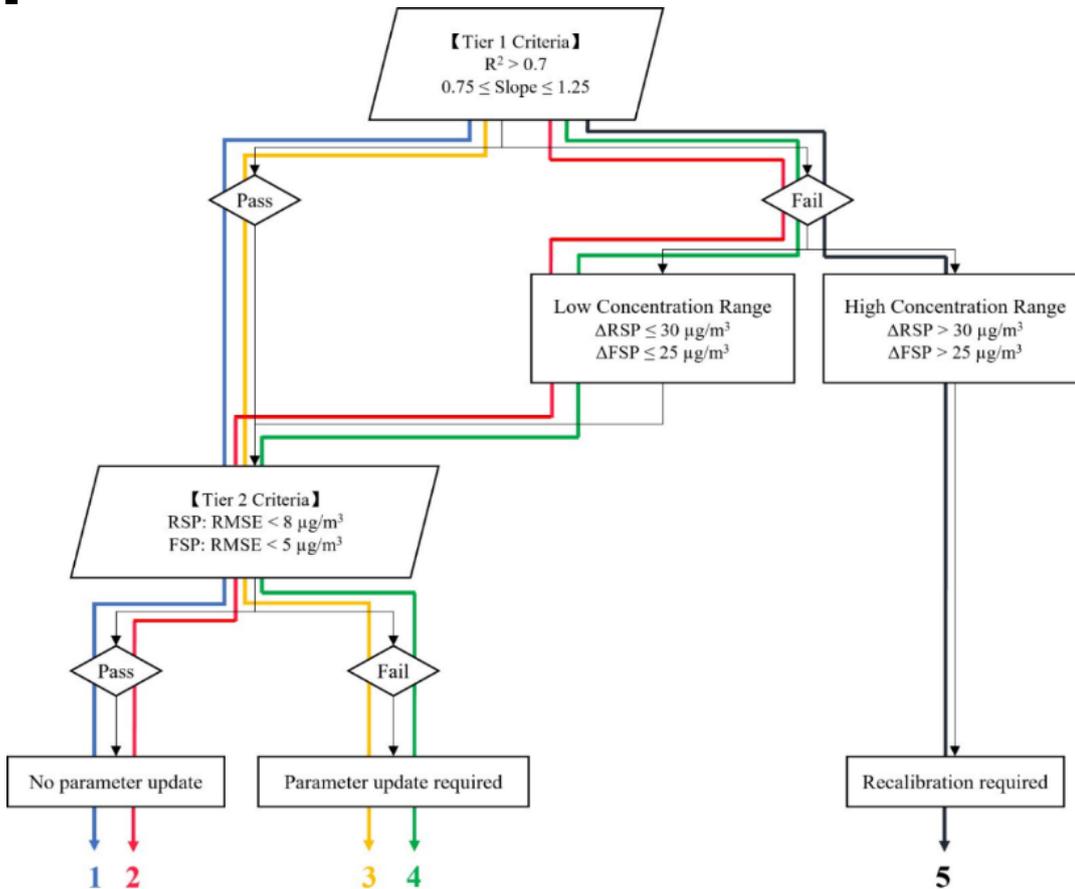
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.97	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.97	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.6 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	0.3 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which is 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z15		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800015
Issue Date:	2025-11-25		
Version	V1.0_20251125		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M14 Rolling Hill – Outside of Rolling Hill Collocation Data Period: 2025-11-24 18:10 to 2025-11-24 21:20

### Calibration Result:

#### RSP:

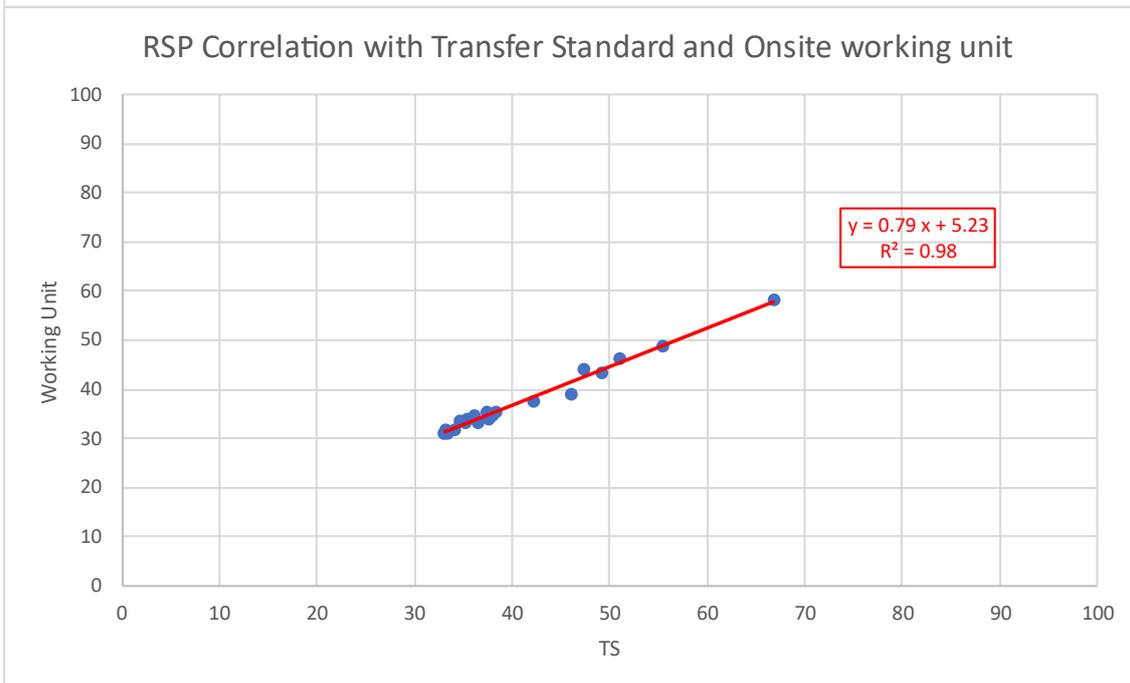
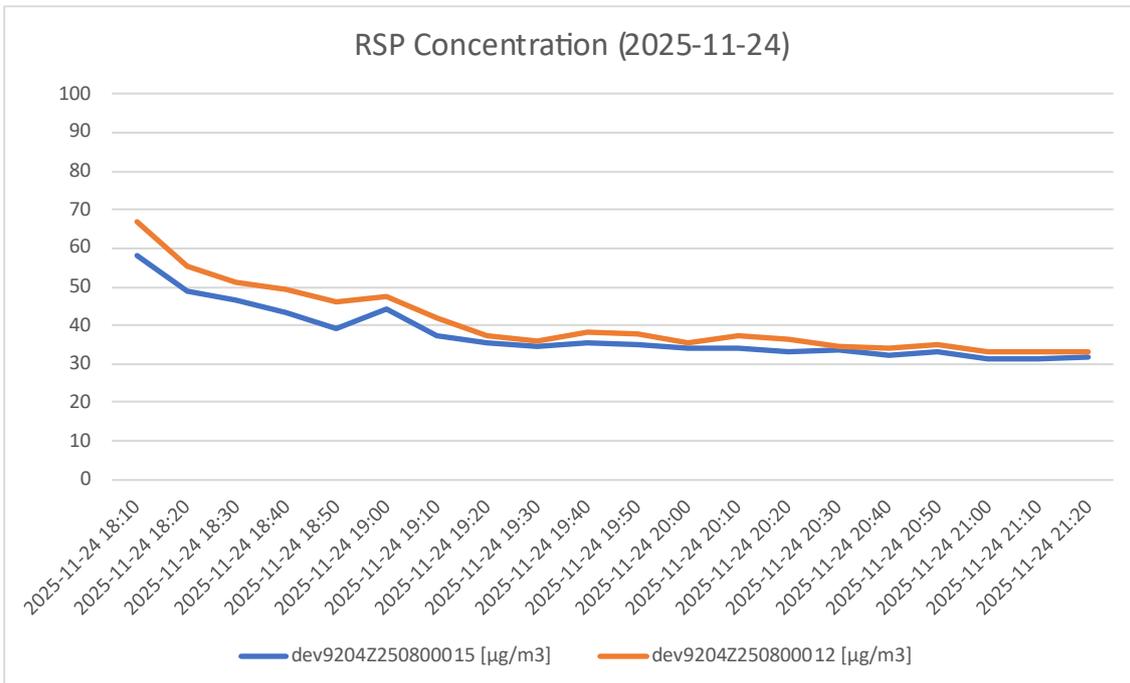
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.79	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.98	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	33.8 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	4.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

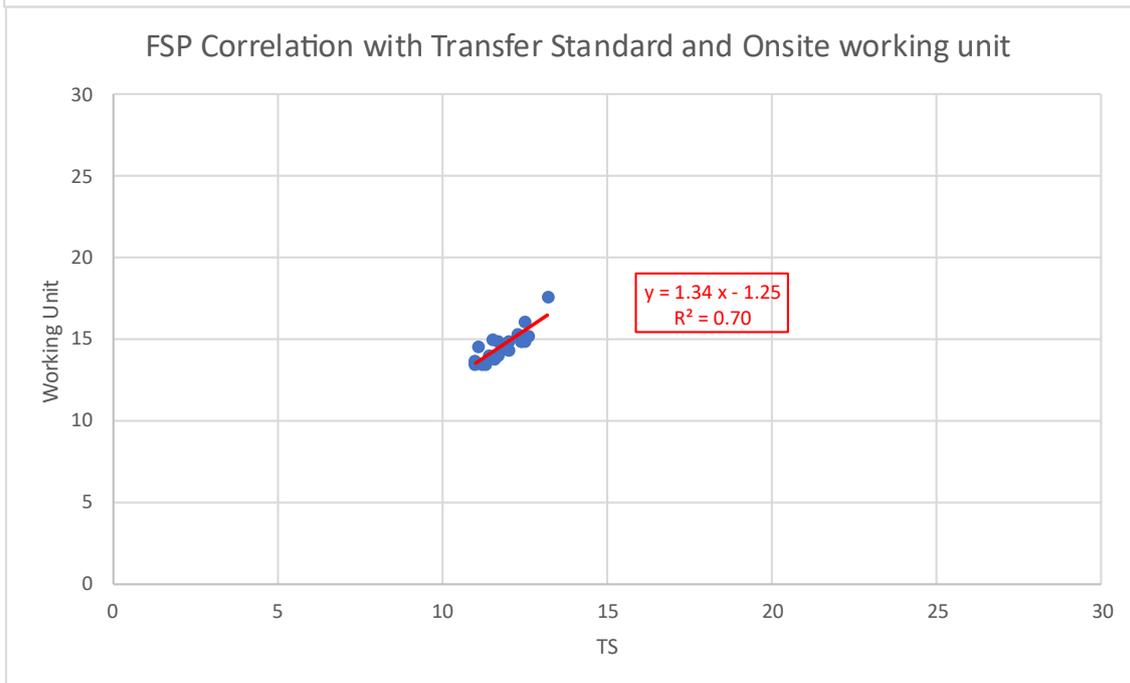
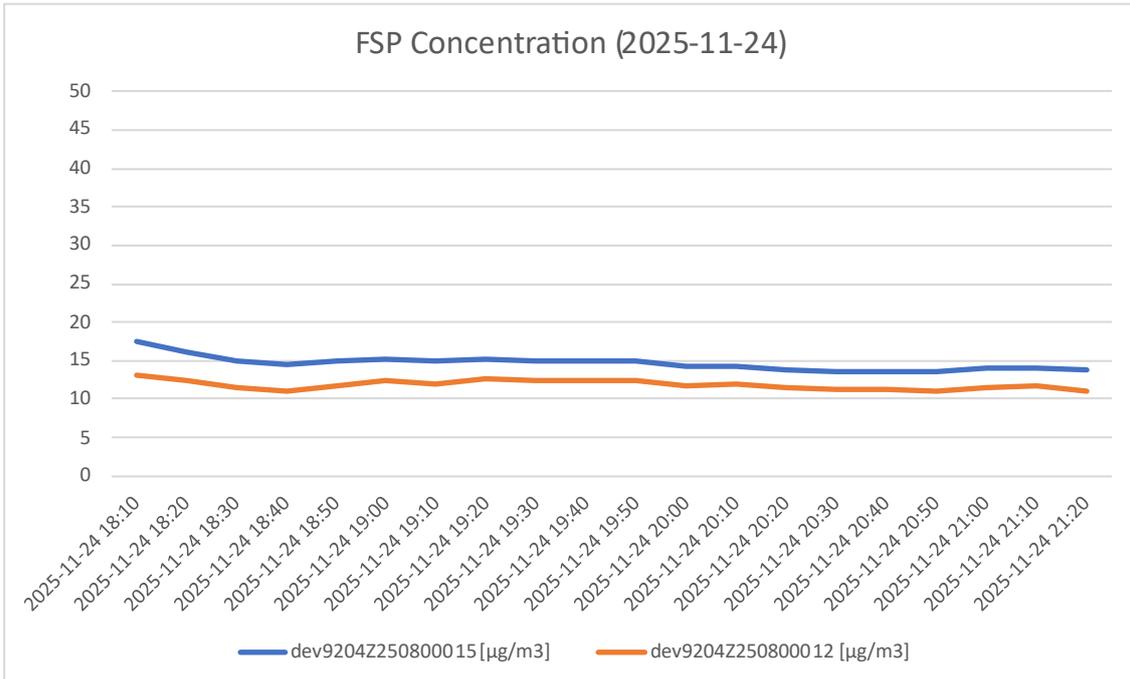
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

#### FSP:

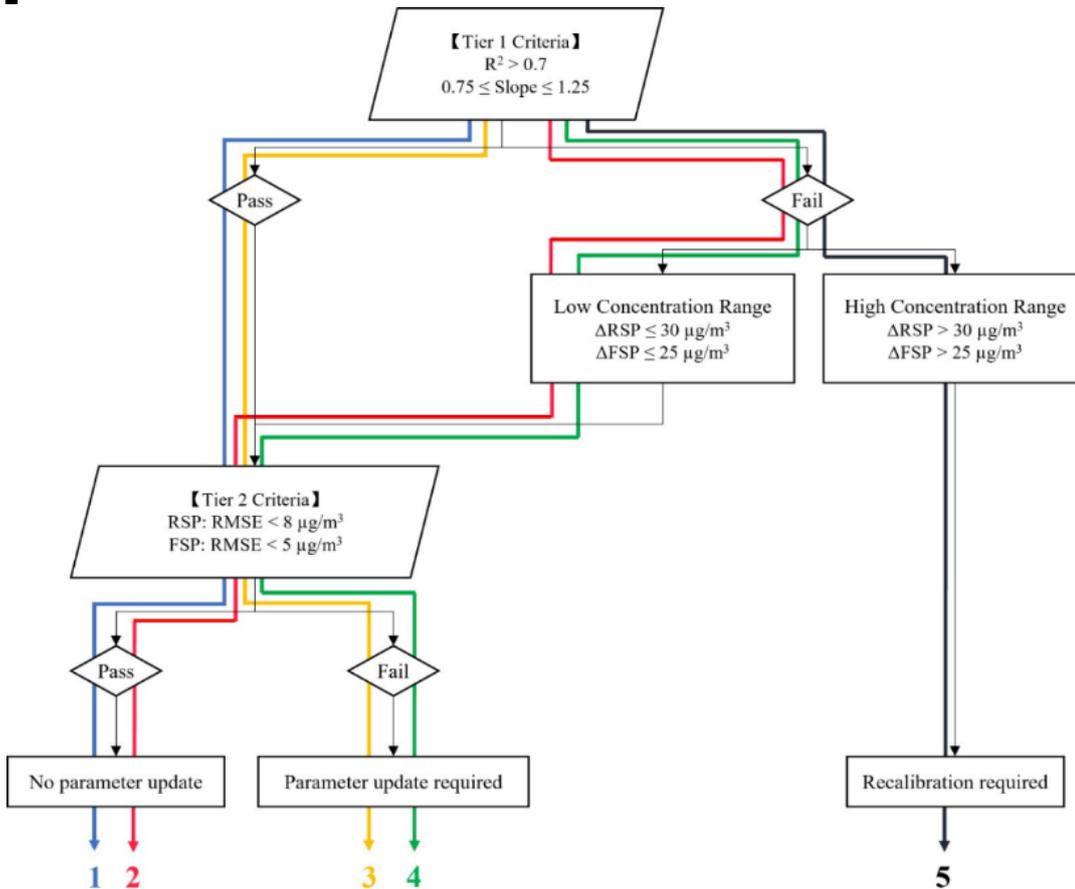
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.34	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.70	<input checked="" type="checkbox"/> FAIL
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.2 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	2.8 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z16		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800016
Issue Date:	2025-11-25		
Version	V1.0_20251125		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M13 Rolling Hill – Rooftop Area Collocation Data Period: 2025-11-24 18:10 to 2025-11-24 21:20

### Calibration Result:

#### RSP:

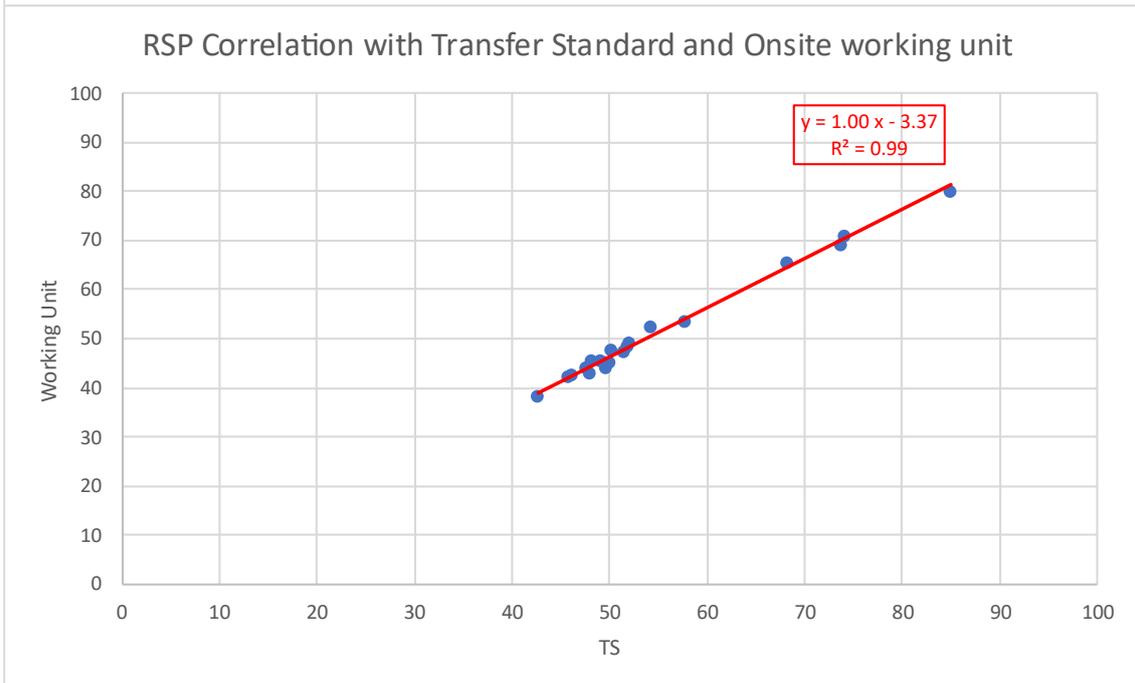
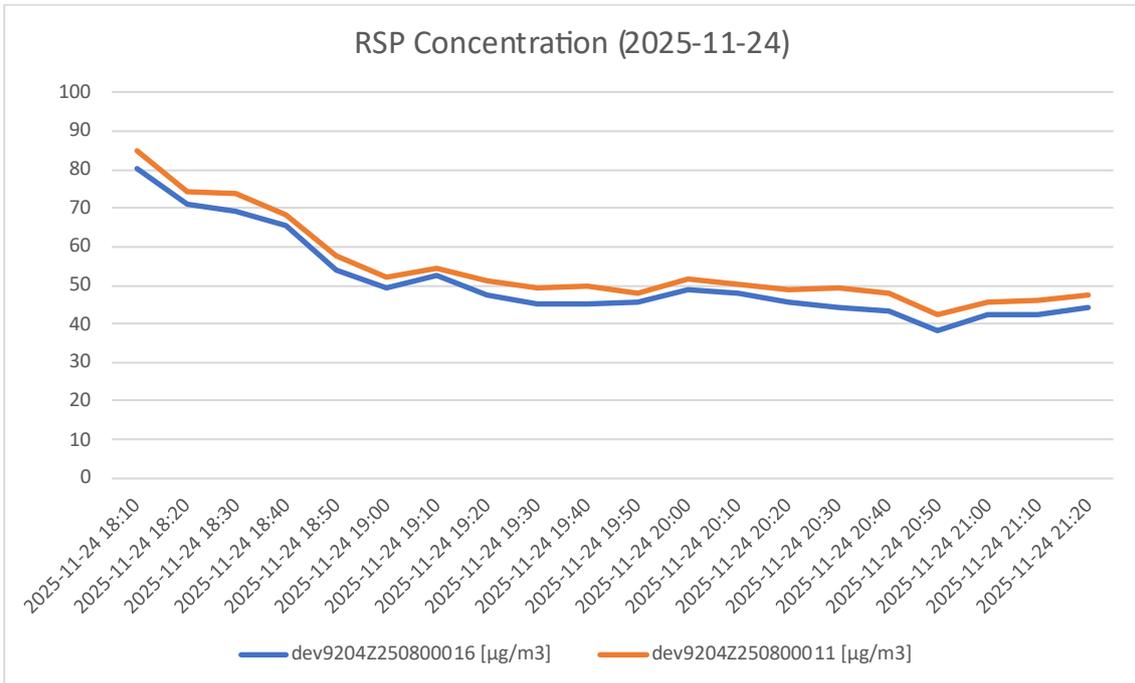
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.00	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.99	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	42.3 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	3.7 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

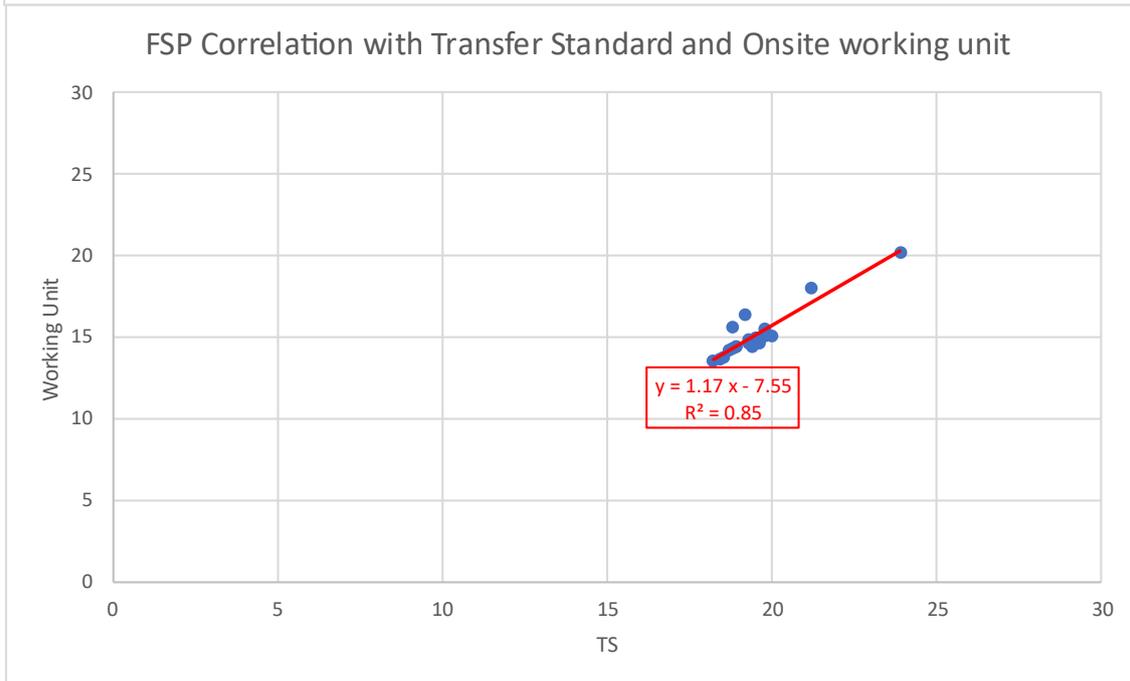
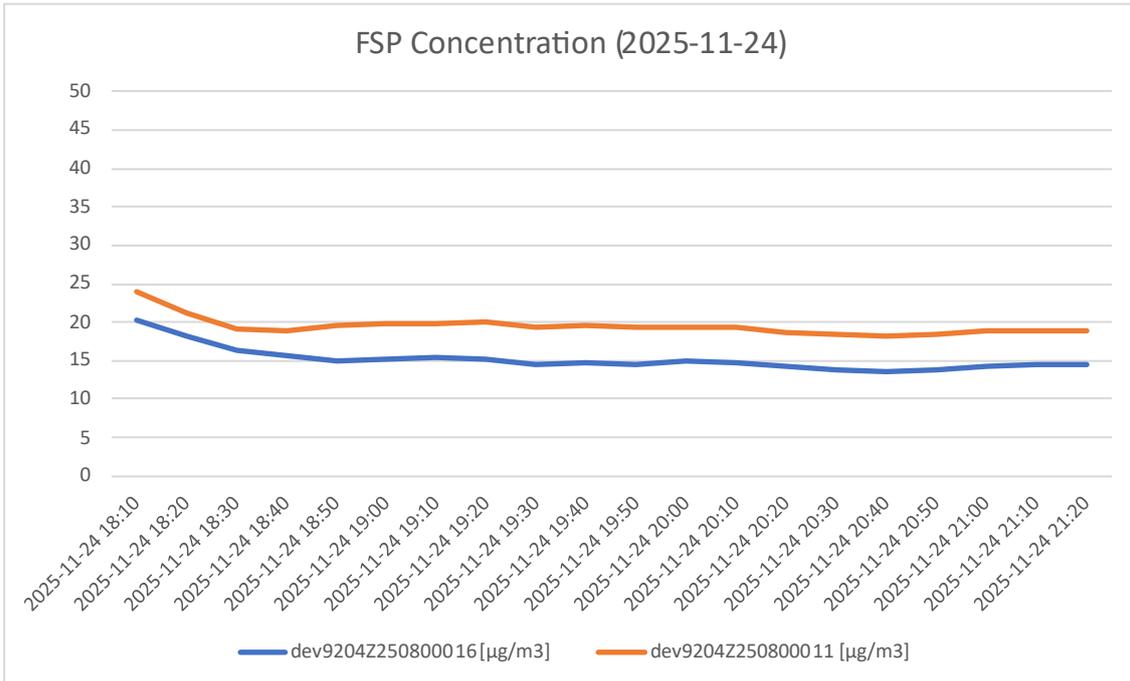
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

#### FSP:

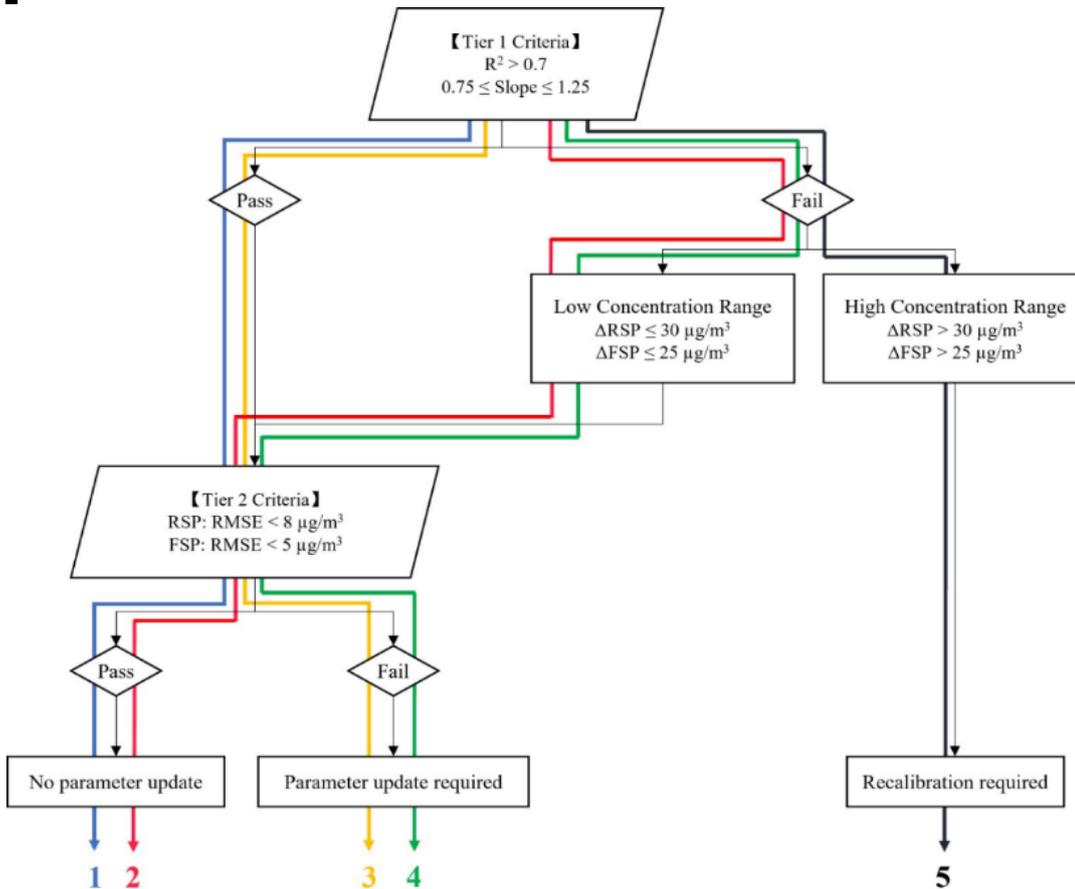
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.17	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.85	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.7 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	4.4 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 1 which is 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z19		
Product Model:	MAS Dust	Serial No.:	dev9204Z250900019
Issue Date:	2025-11-21		
Version	V1.0_20251121		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M15a The STEP Collocation Data Period: 2025-11-17 12:40 to 2025-11-17 15:50

### Calibration Result:

#### RSP:

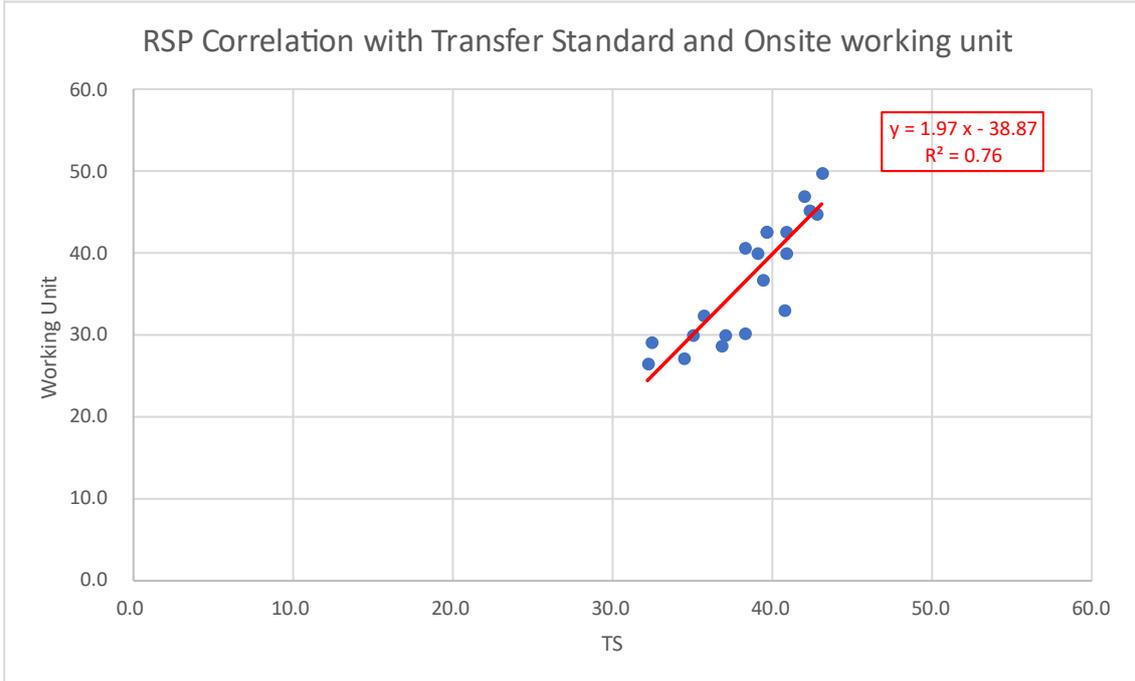
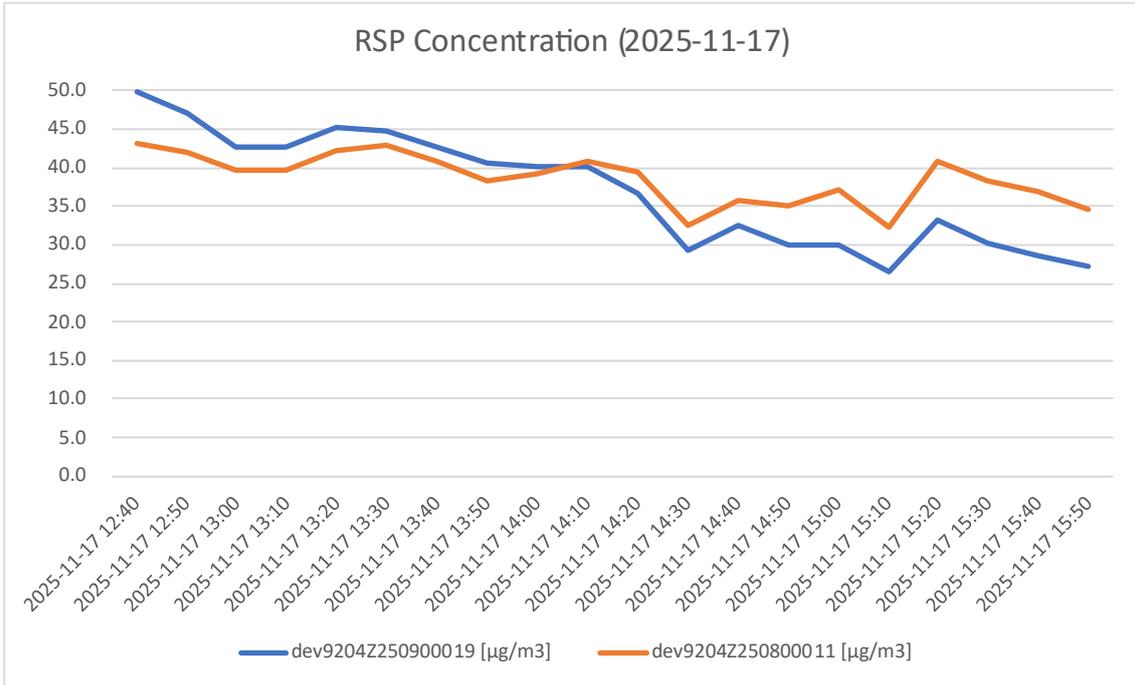
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.97	<input type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.76	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	10.9 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	5.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

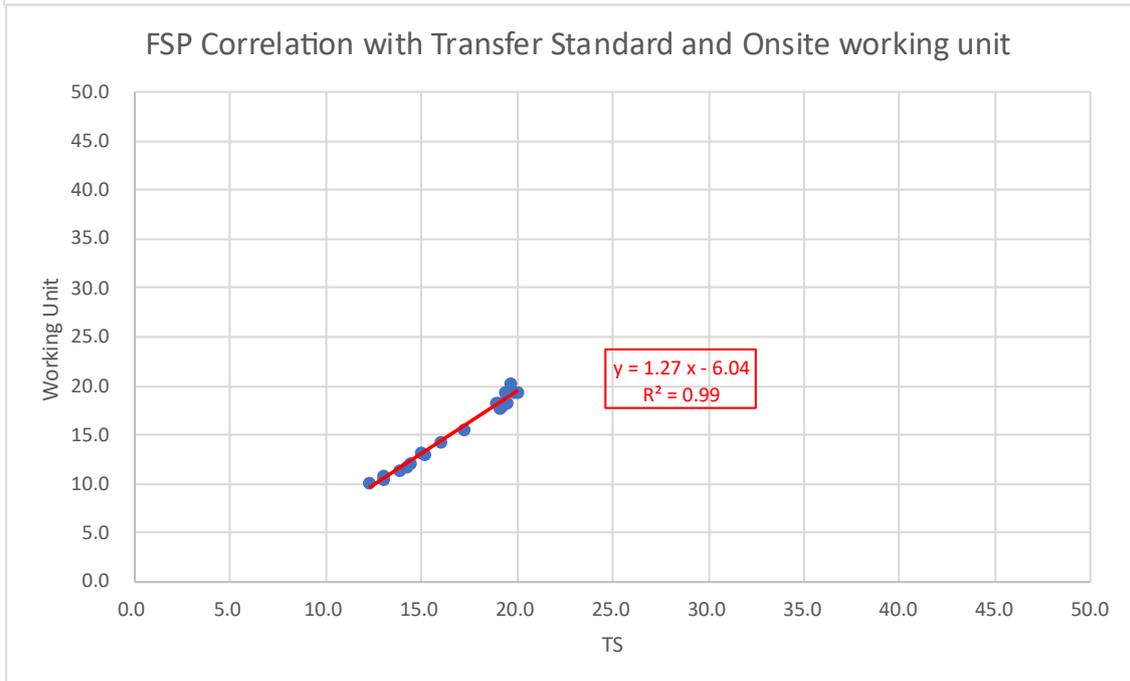
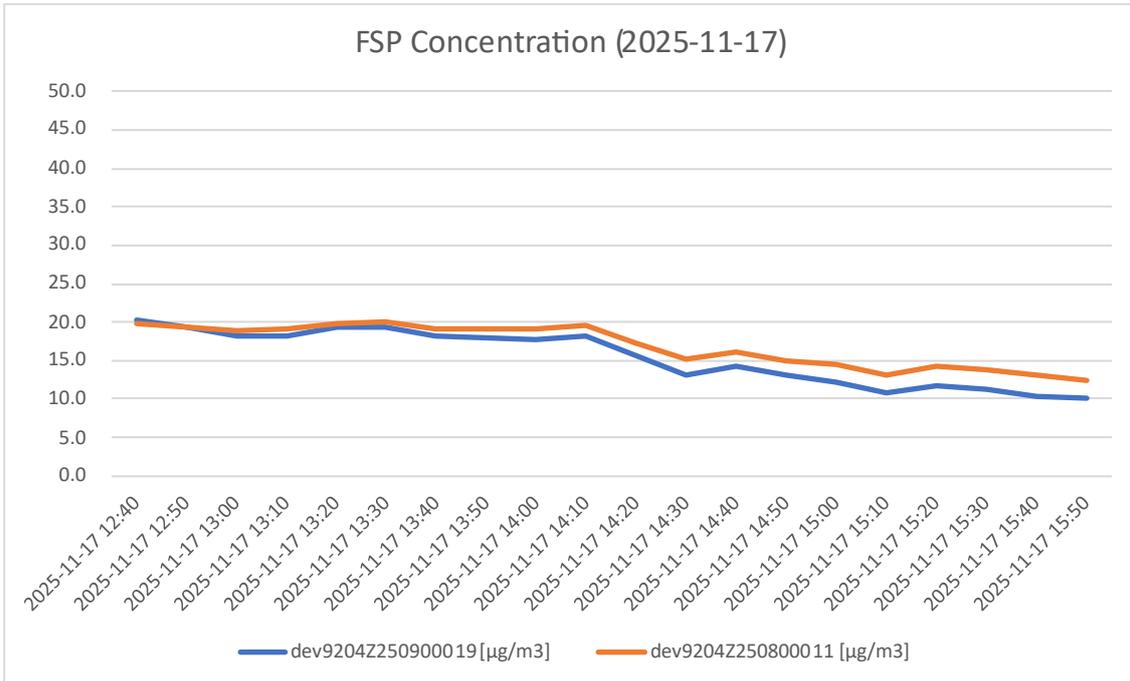
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

#### FSP:

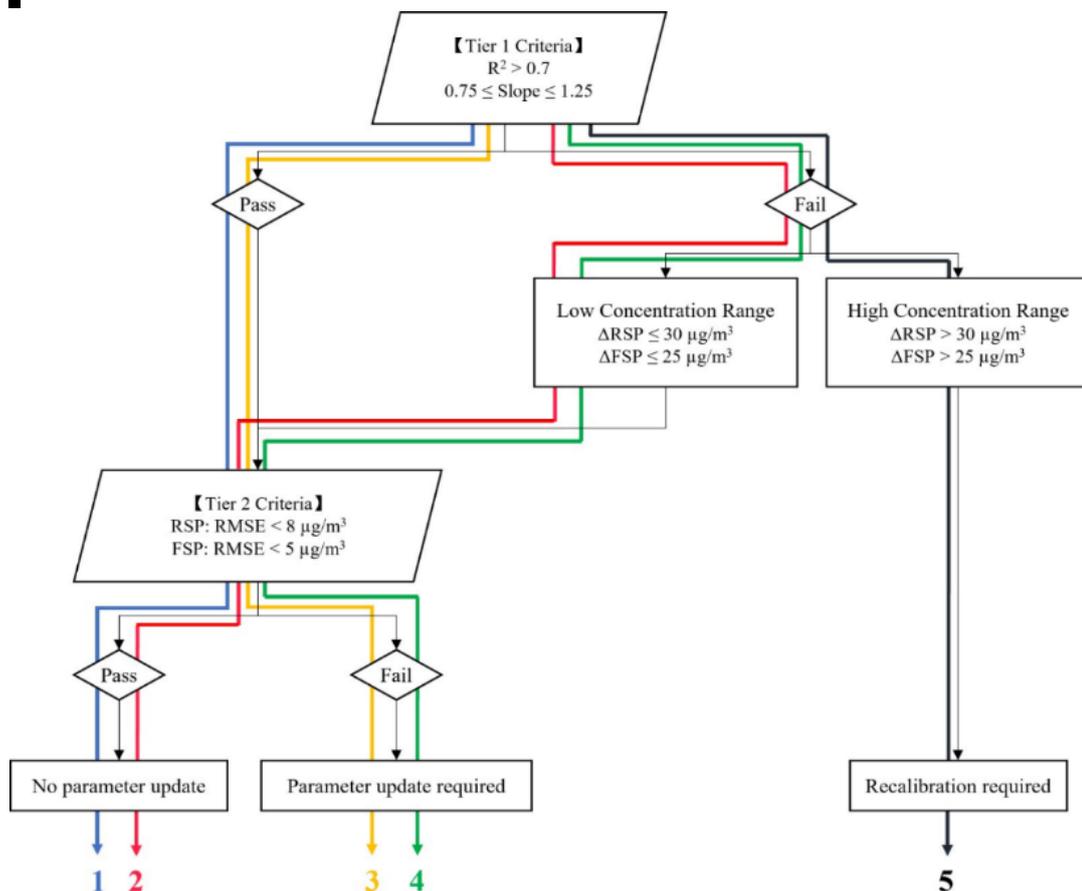
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.27	<input type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.99	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	7.7 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	1.7 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z05		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700005
Issue Date:	2025-11-21		
Version	V1.0_20251121		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M09 Wing Ping Tsuen Collocation Data Period: 2025-11-17 05:20 to 2025-11-17 08:30

### Calibration Result:

#### RSP:

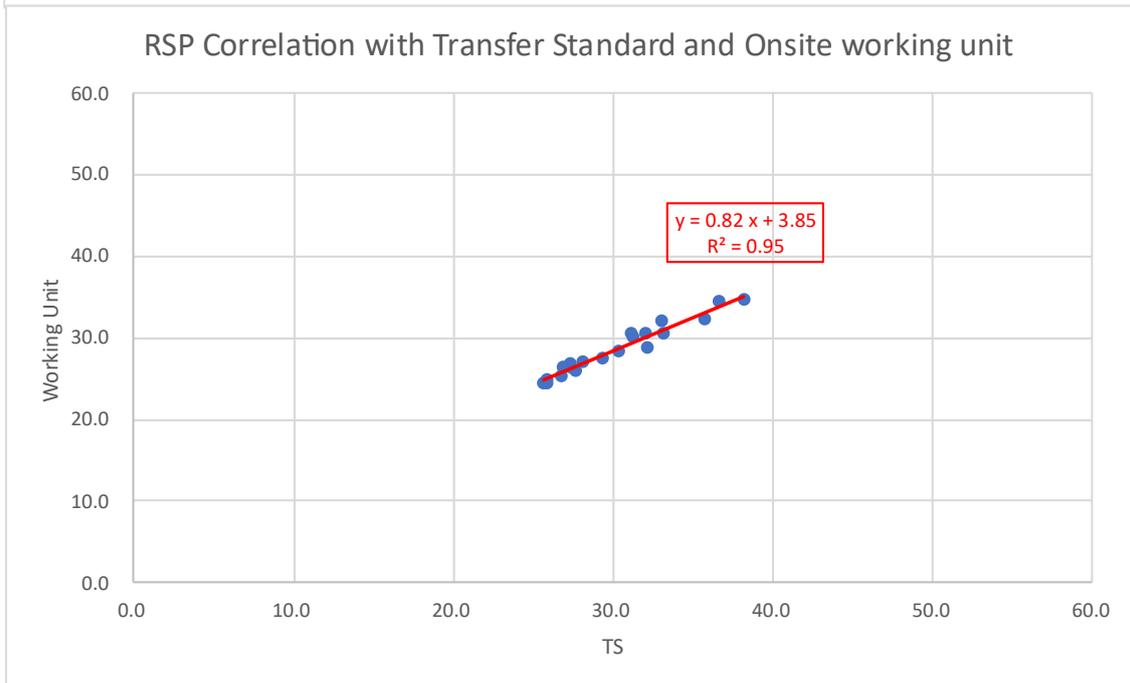
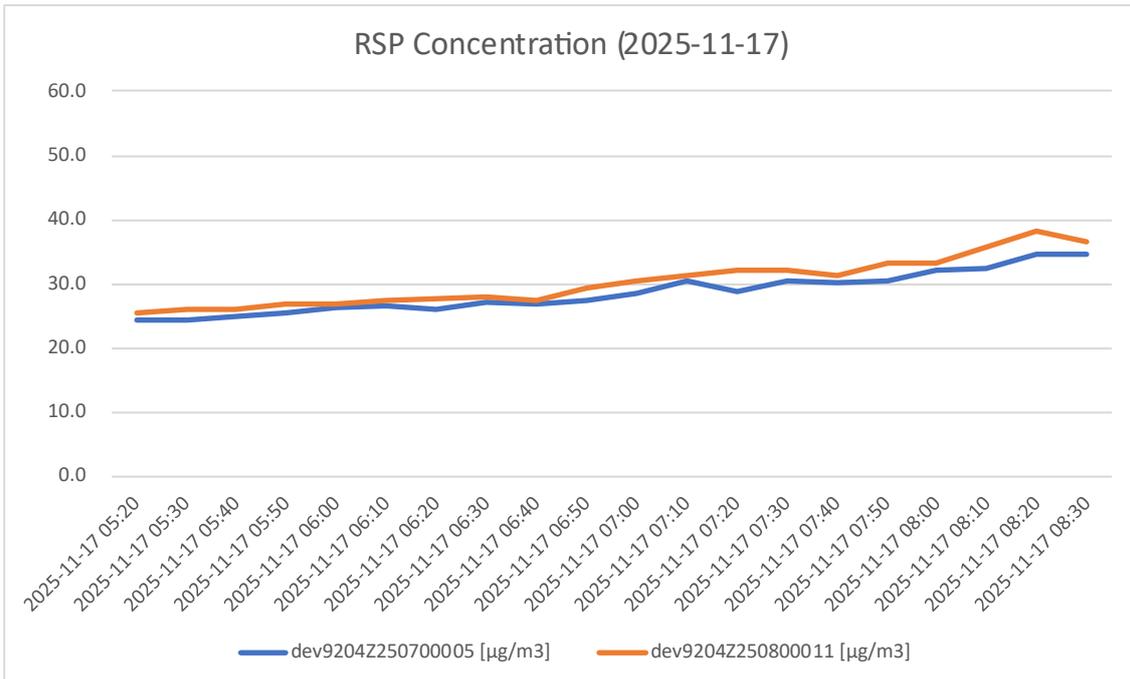
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.82	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.95	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	12.6 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	1.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

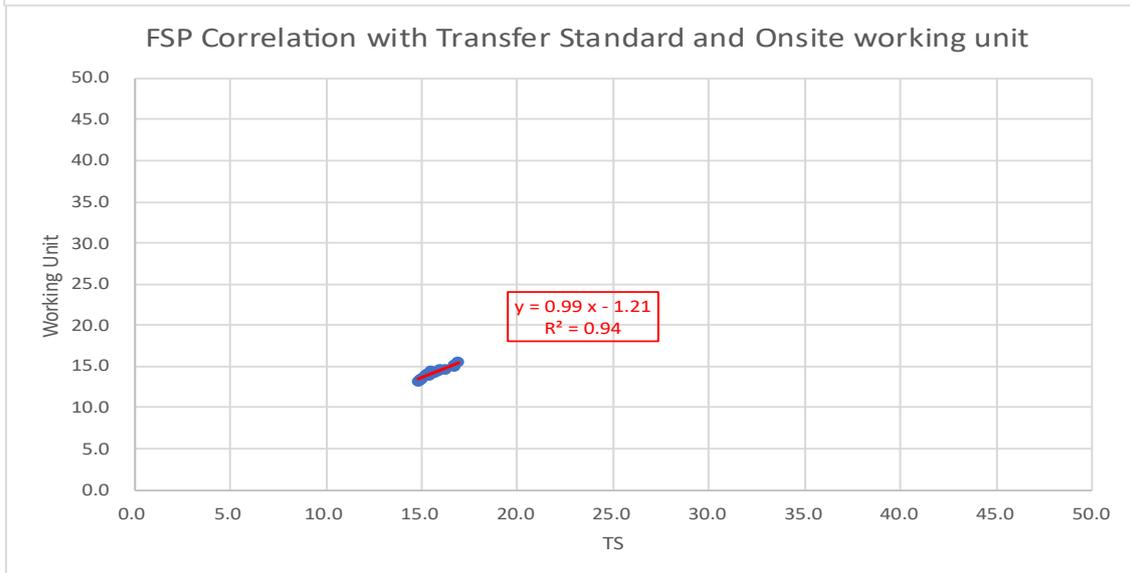
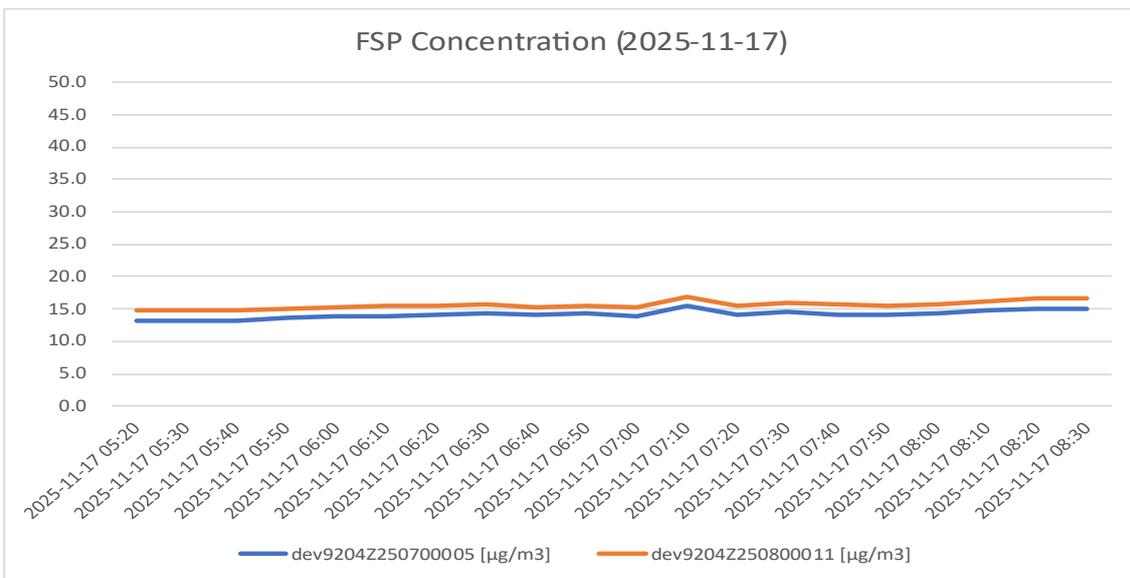
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

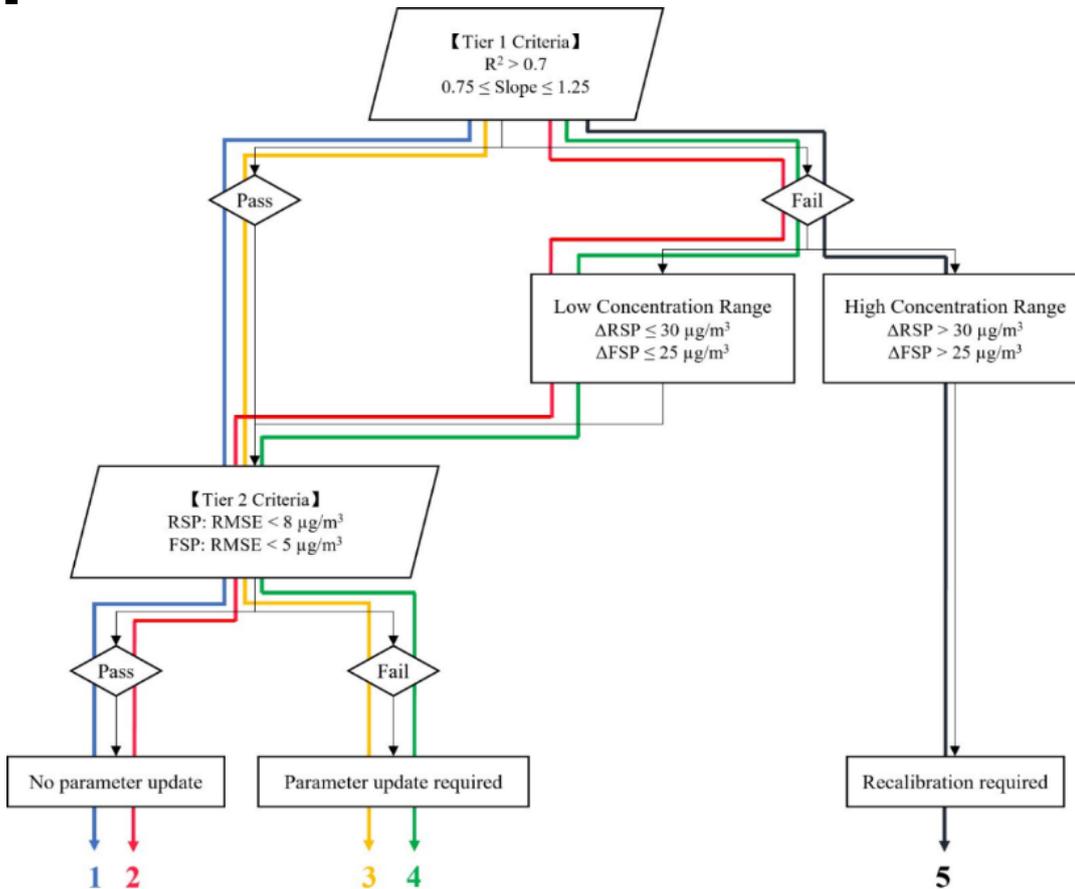
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.99	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.94	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.1 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	1.4 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.





**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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z07		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700007
Issue Date:	2025-11-21		
Version	V1.0_20251121		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M03 Pun Uk Tsuen Collocation Data Period: 2025-11-17 12:40 to 2025-11-17 15:50

### Calibration Result:

#### RSP:

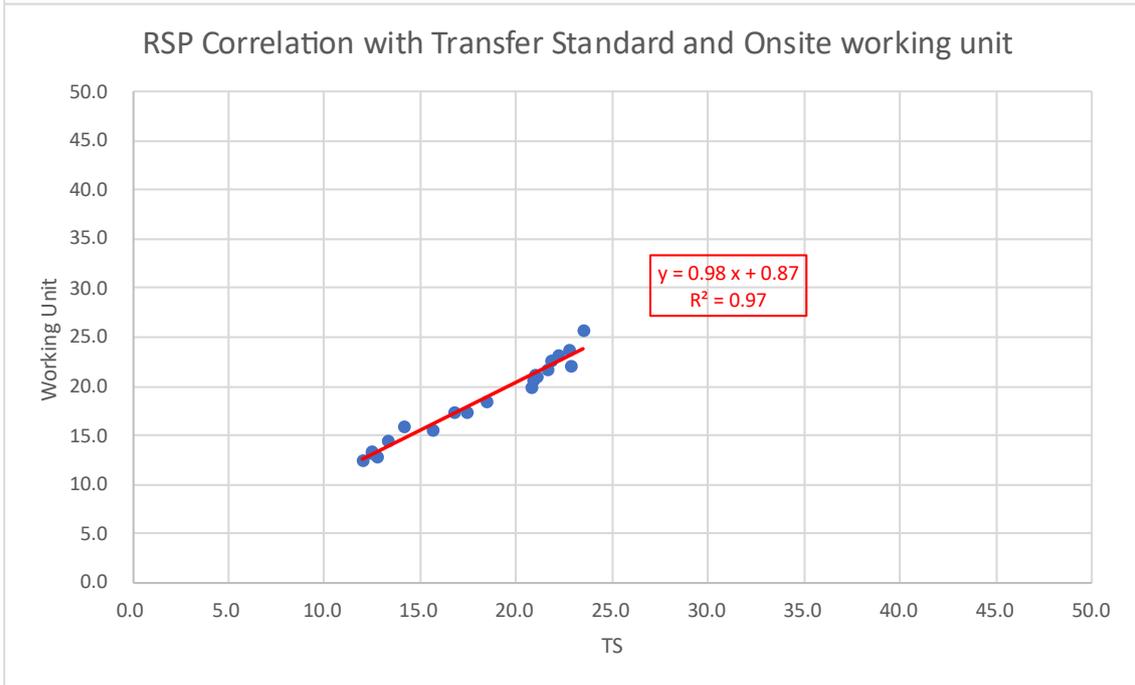
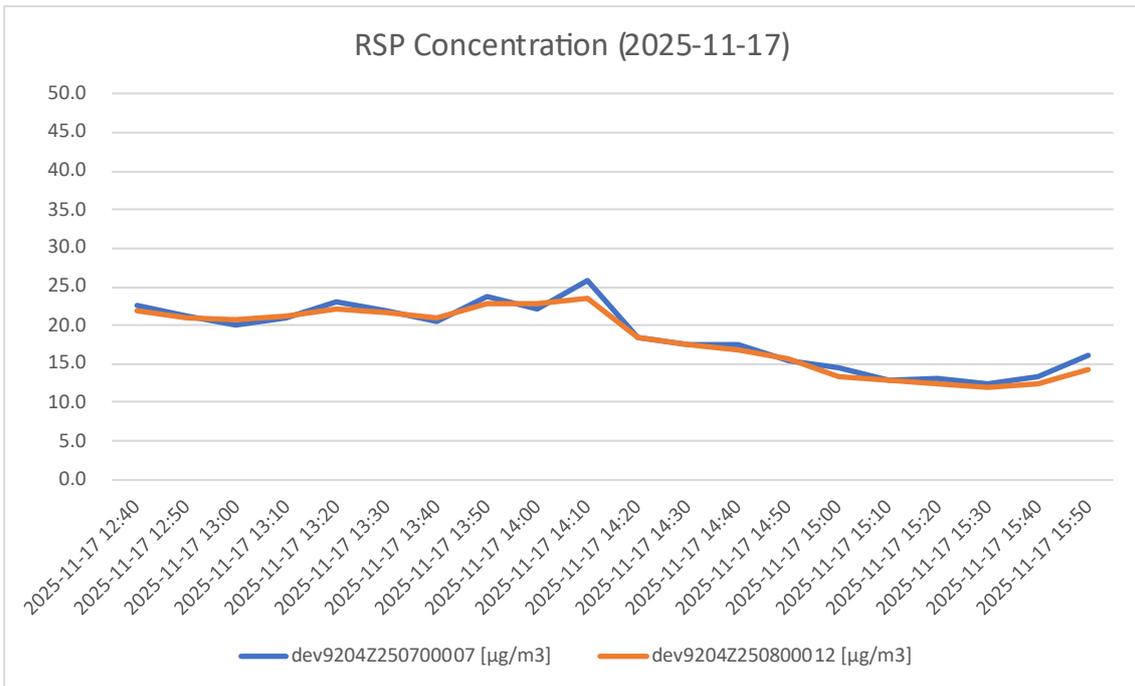
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.98	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.97	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	11.5 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	0.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

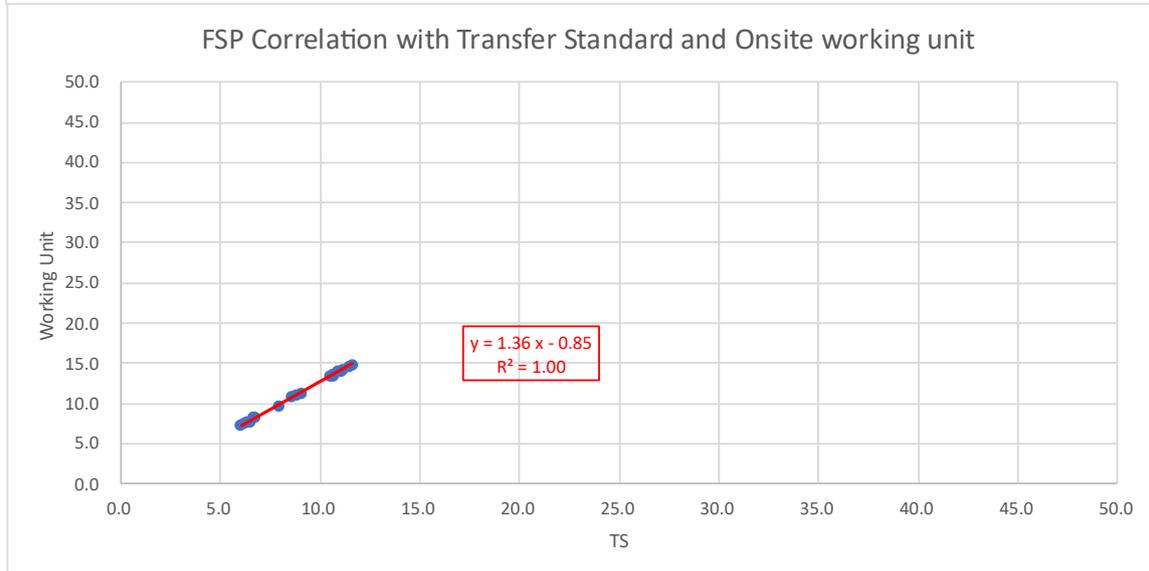
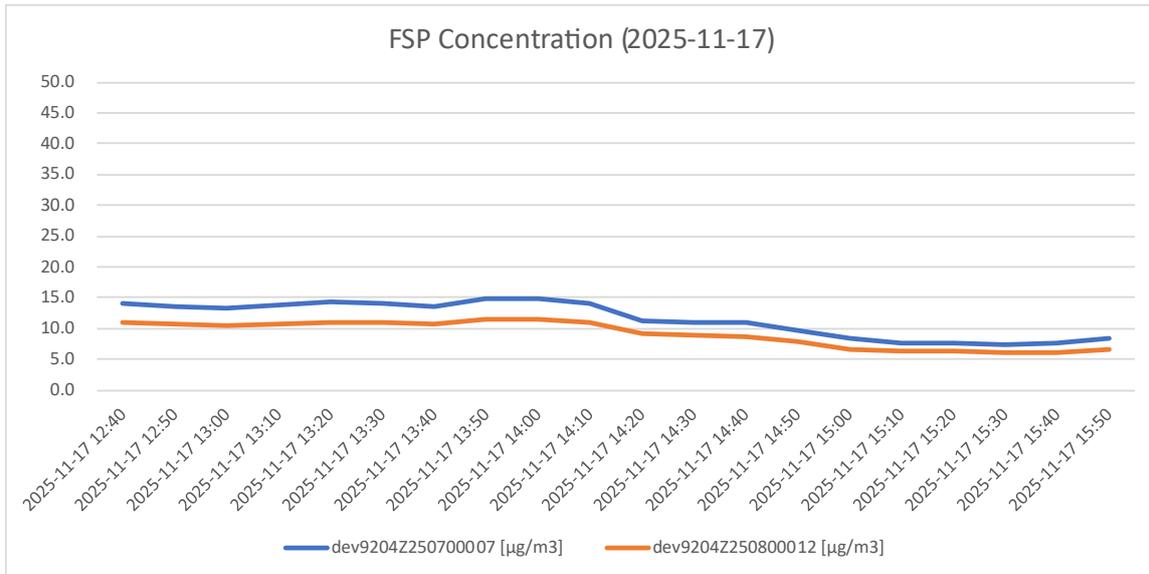
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

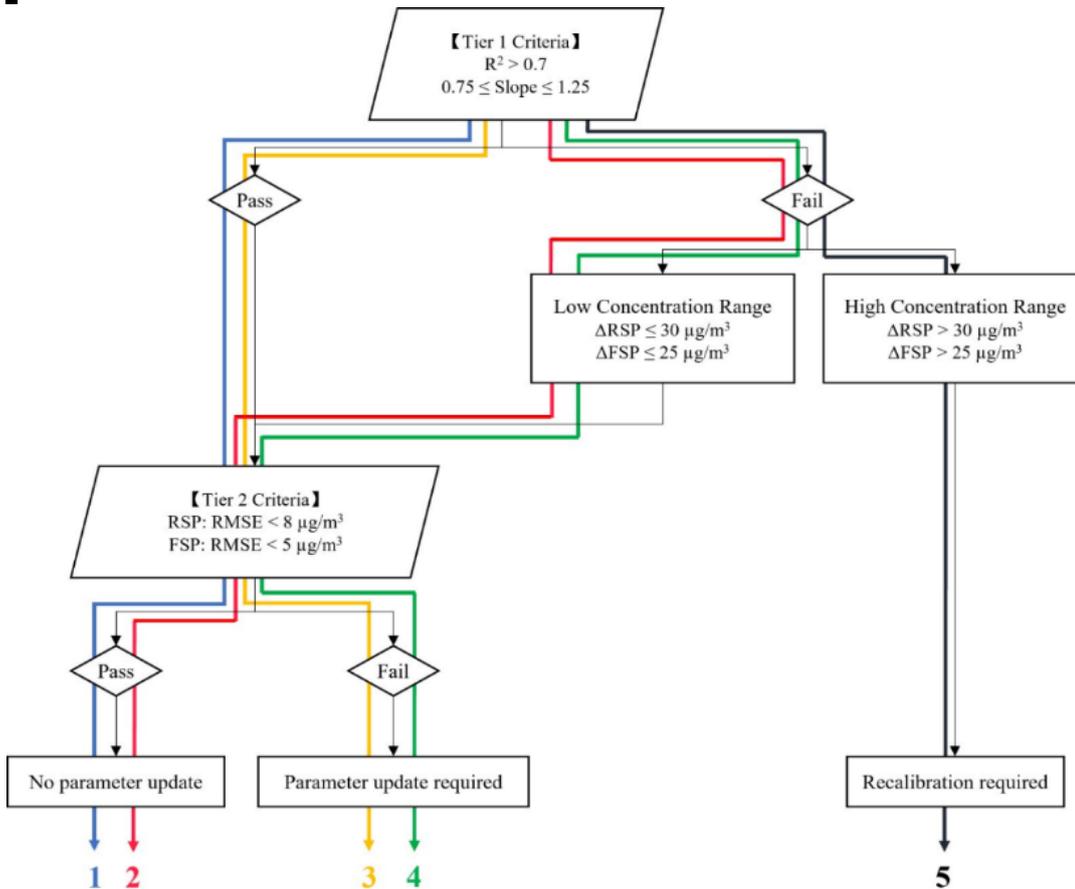
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.36	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	1.00	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.6 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	2.5 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-11-Z06		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700006
Issue Date:	2025-11-21		
Version	V1.0_20251121		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M04 Chau Tau Tsuen Collocation Data Period: 2025-11-17 05:20 to 2025-11-17 08:30

### Calibration Result:

#### RSP:

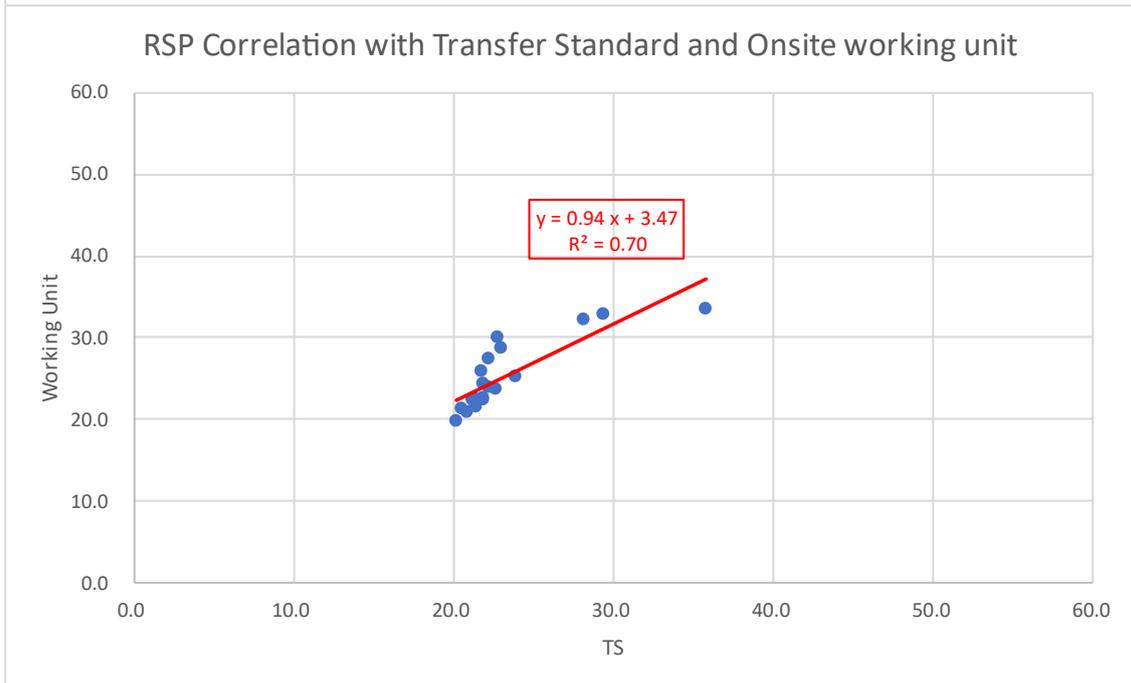
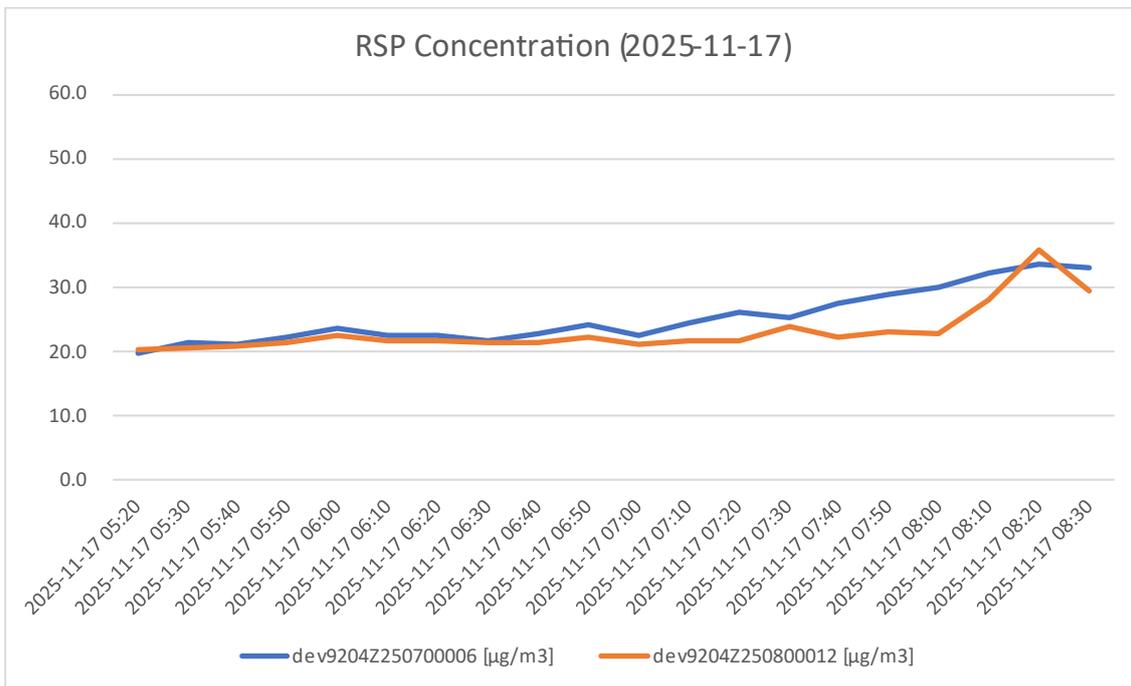
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.94	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.70	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	15.6 µg/m <sup>3</sup>	Not applicable
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	3.1 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

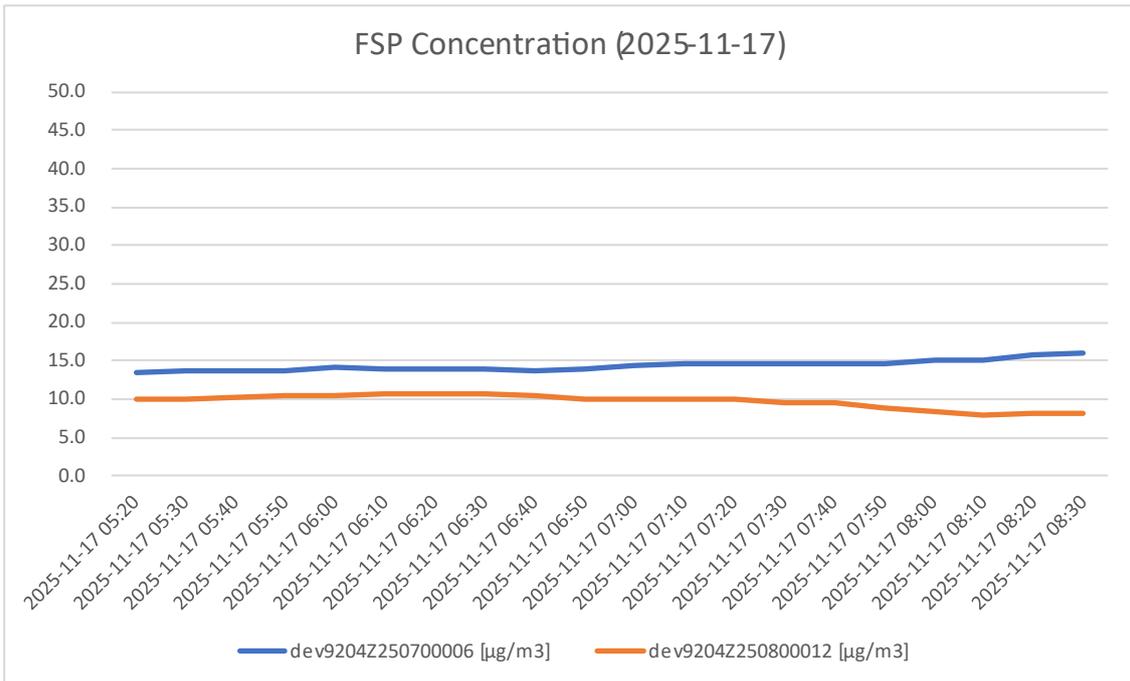
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

#### FSP:

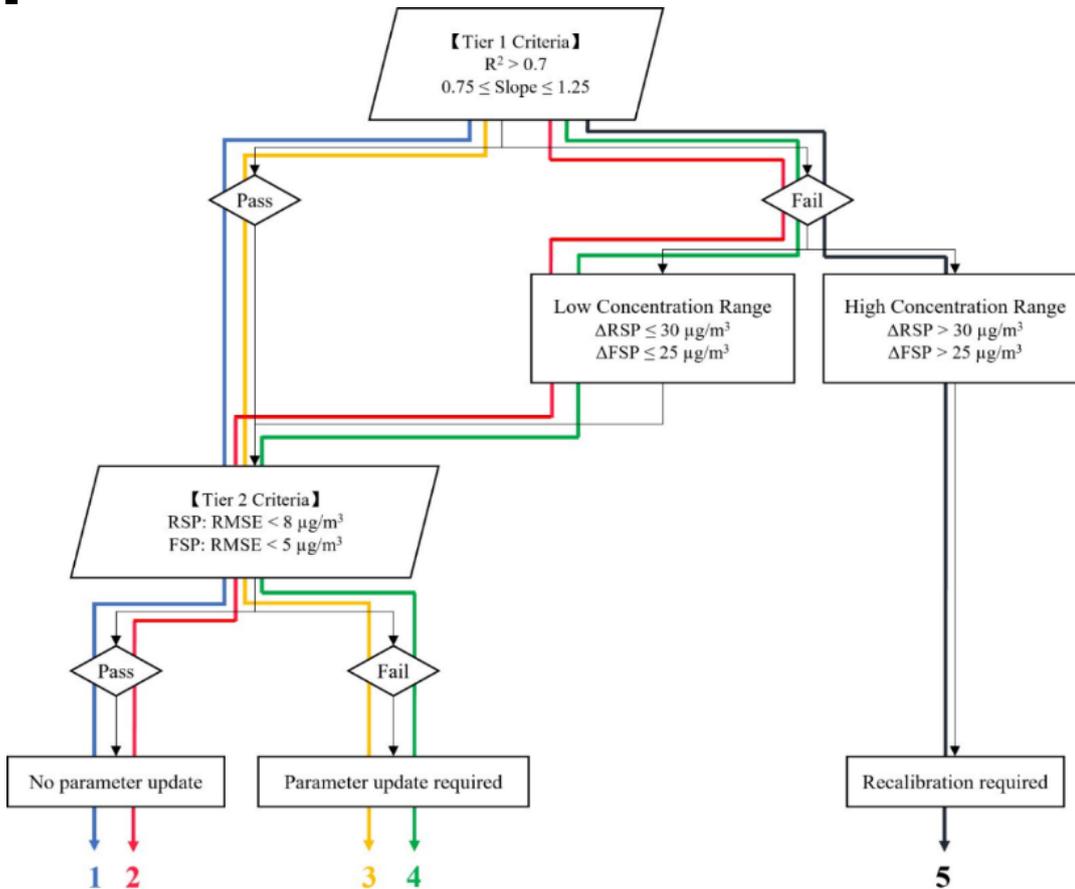
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	-0.67	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.75	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.9 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	4.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while 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:	Curry Duan	Reviewed by:	Yannis Qiu
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## ONSITE EQUIPMENT VALIDATION RECORD

### Product Information:

Report No.:	ZR/T CS.004-2025-12-Z19		
Product Model:	MAS Dust	Serial No.:	dev9204Z250900019
Issue Date:	2025-12-30		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M15a The STEP Collocation Data Period: 2025-12-17 11:30 to 2025-12-17 15:40

### Calibration Result:

#### RSP (Before parameter update):

Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
Bias (Slope)	1.00±0.25	1.41	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.70	<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	16.8 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b>Tier 2</b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	9.5 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	1.000		

Remark: Follow QAQC Protocol Path 4 which is Criteria Tier 1 and Tier 2 Failed, parameter update is required.

#### RSP (After parameter update):

Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
Bias (Slope)	1.00±0.25	1.08	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.70	<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	16.8 µg/m <sup>3</sup>	Not applicable.
<b>Tier 2</b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	3.2 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Deploy K factor	0.765		

Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 Passed.

**FSP (Before parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	0.75	<input checked="" type="checkbox"/> PASS
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.78	<input checked="" type="checkbox"/> PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	7.9 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	11.2 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
<b><u>Current K factor</u></b>	<b>0.670</b>		

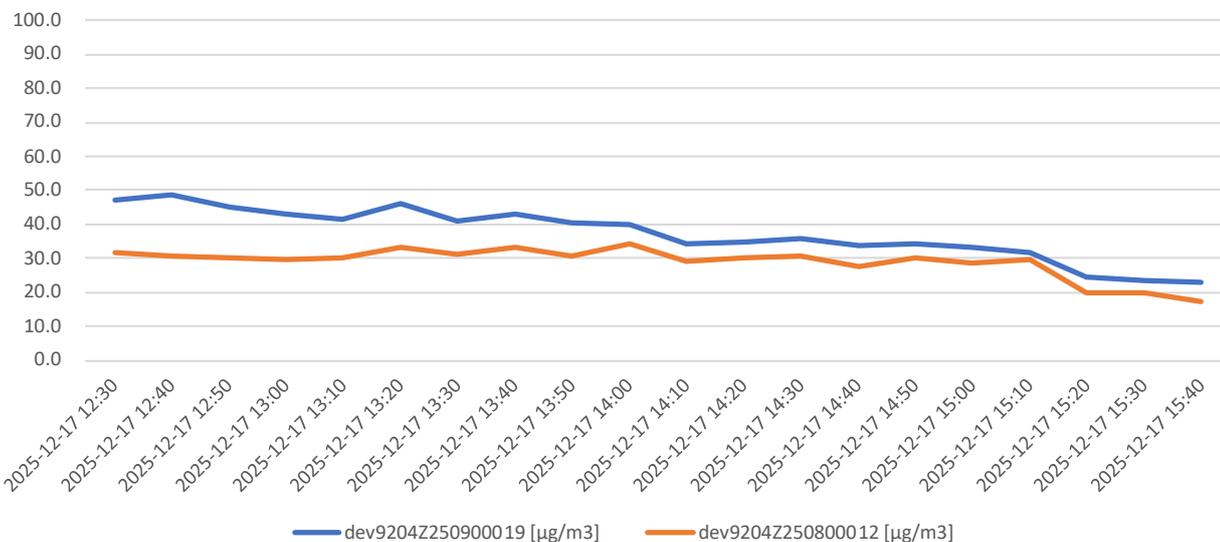
Remark: Follow QAQC Protocol Path 3 which is Criteria Tier 1 Passed while Tier 2 Failed, parameter update is required.

**FSP (After parameter update):**

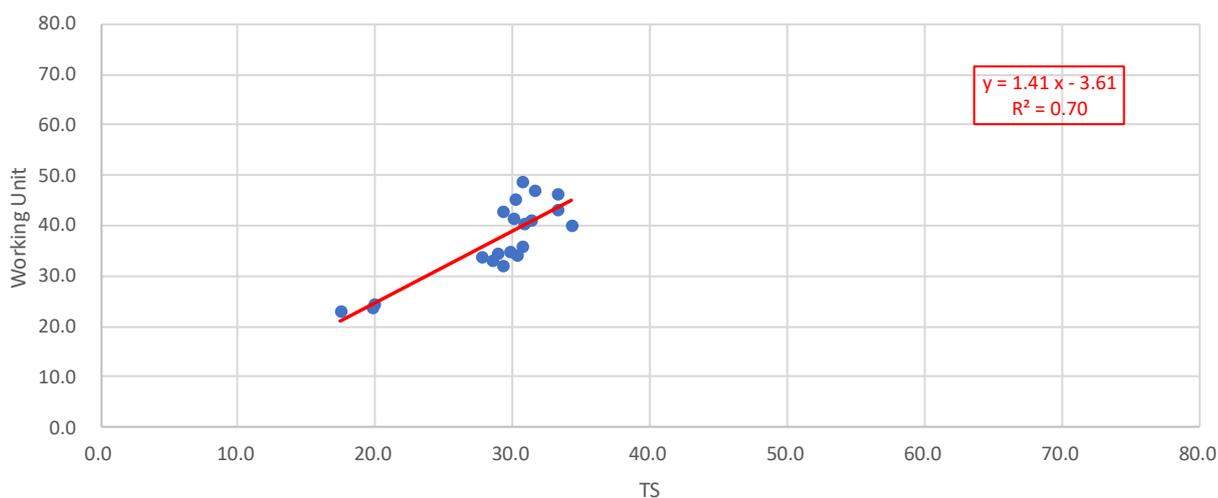
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	1.33	<input checked="" type="checkbox"/> FAIL
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.78	<input checked="" type="checkbox"/> PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	7.9 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	1.8 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b><u>Deploy K factor</u></b>	<b>1.196</b>		

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 Failed while Tier 2 Passed.

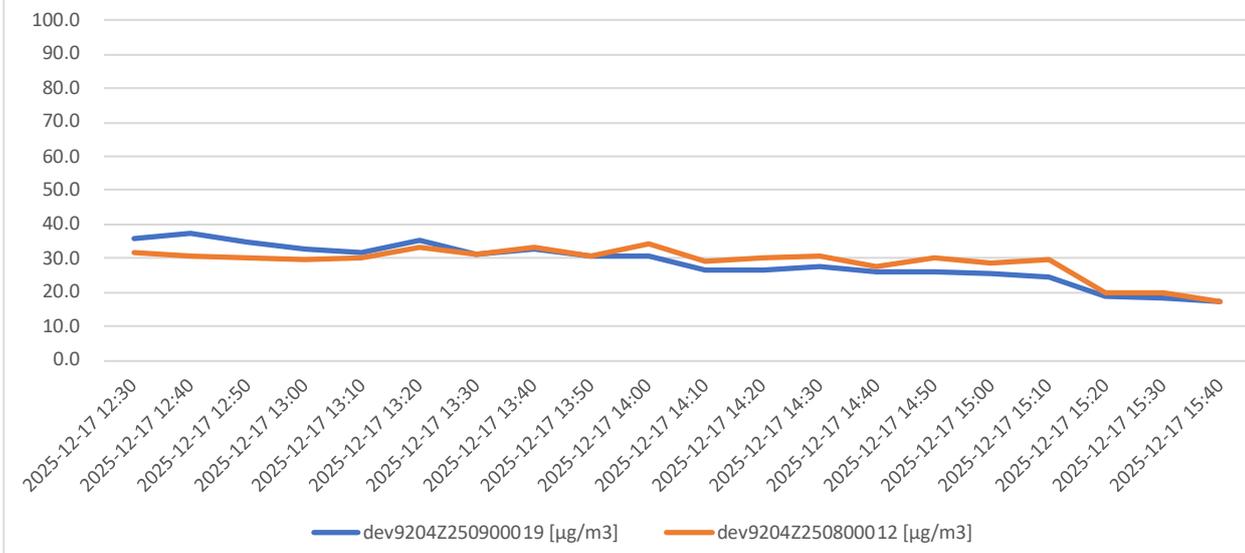
RSP Concentration - Before Parameter Update (2025-12-17)



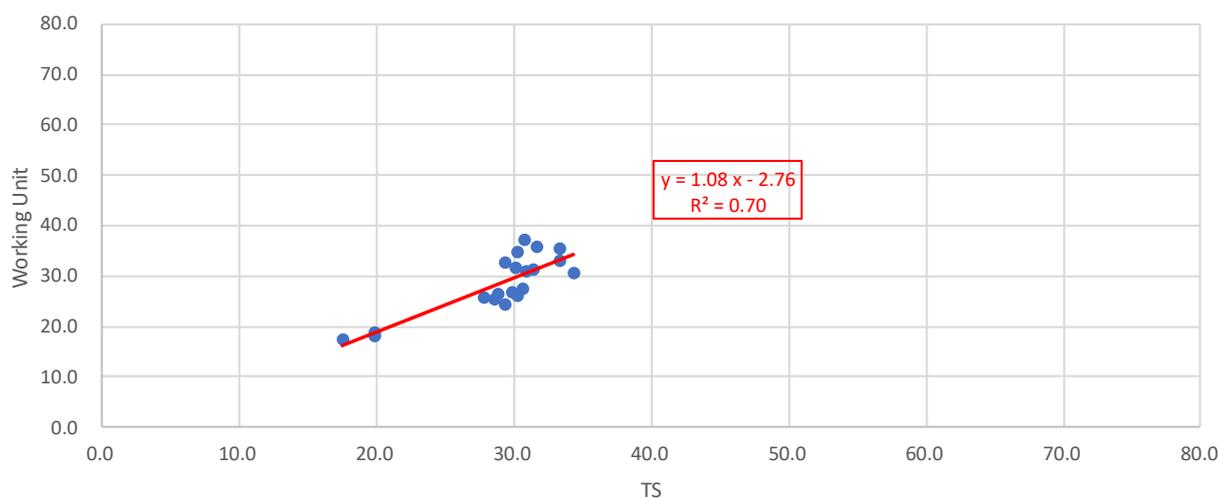
RSP Correlation with Transfer Standard and Onsite working unit - (Before Parameter Update )



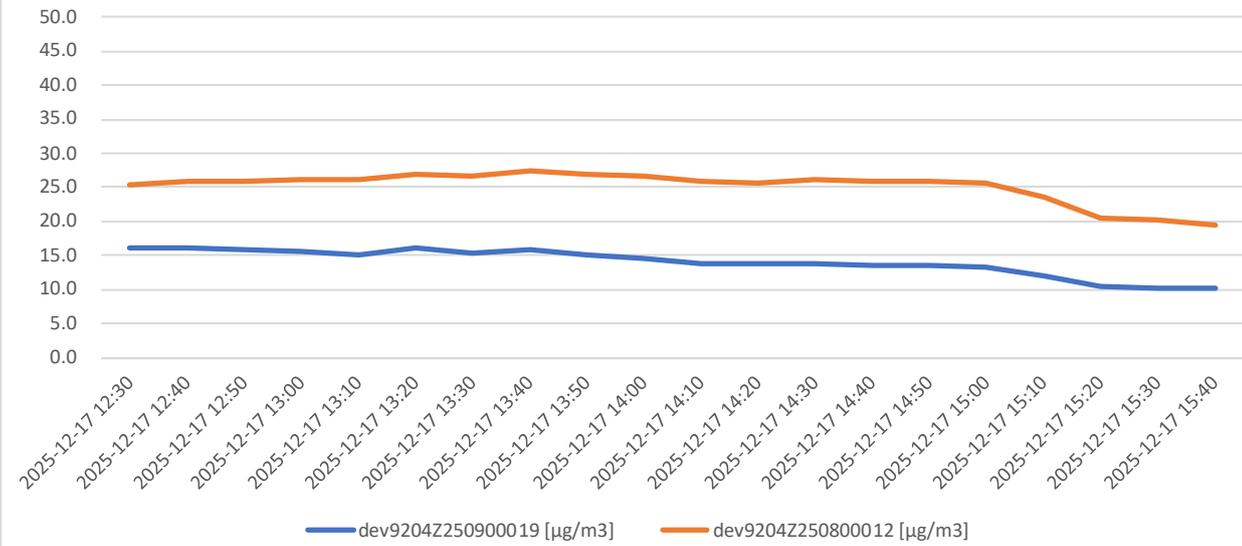
RSP Concentration- After Parameter Update (2025-12-17)



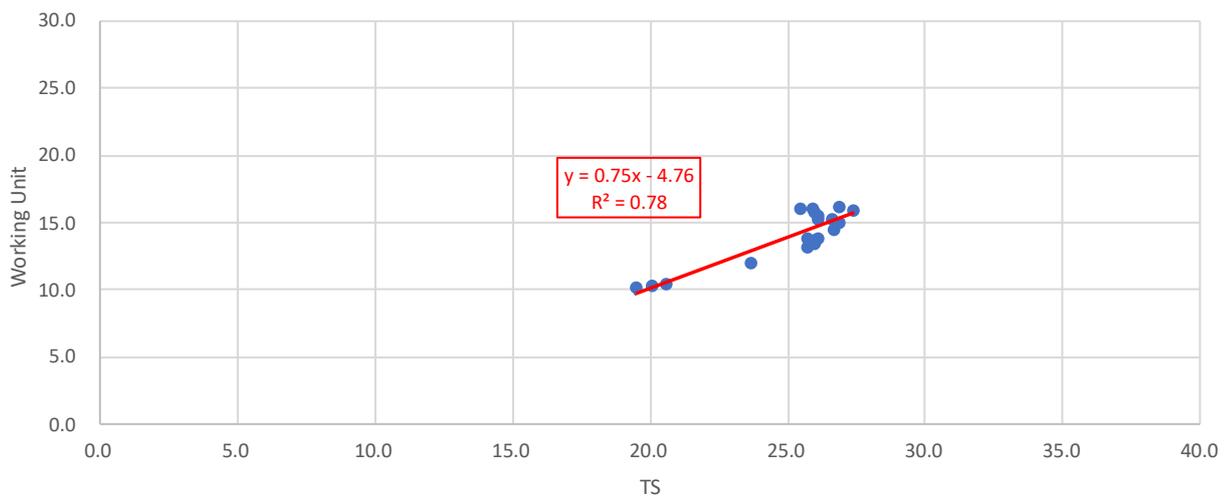
RSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



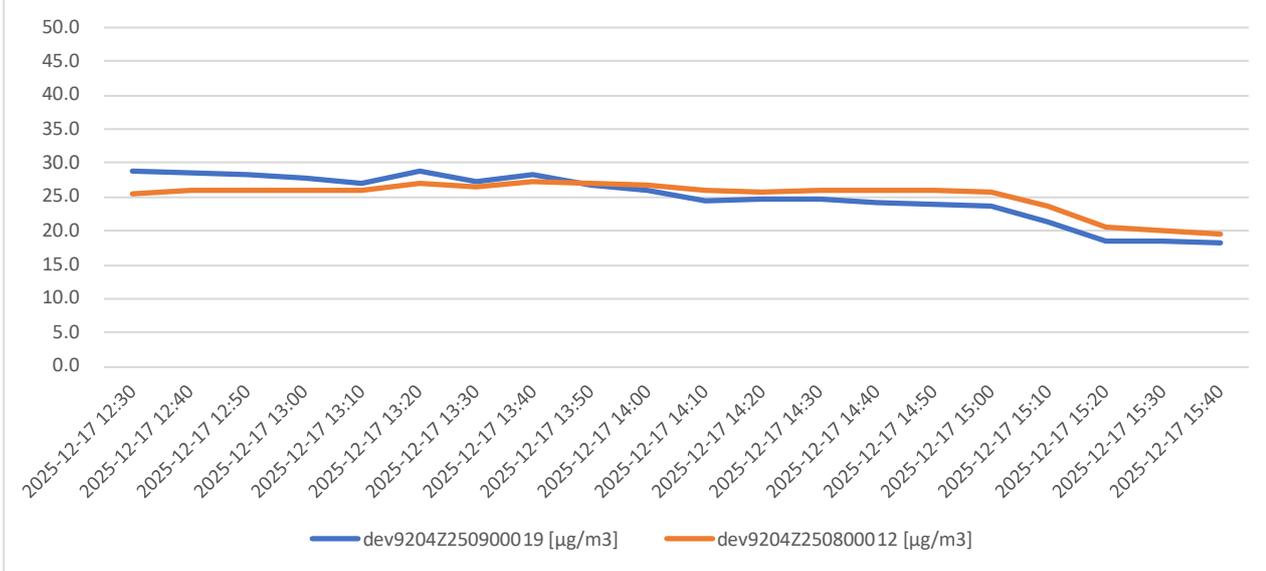
FSP Concentration - Before Parameter Update (2025-12-17)



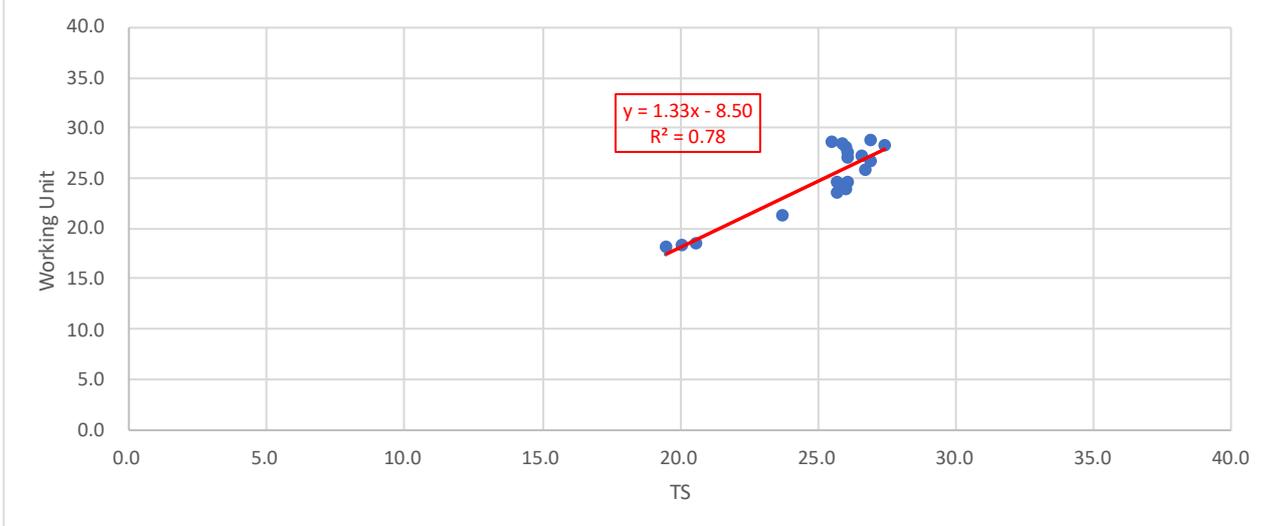
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



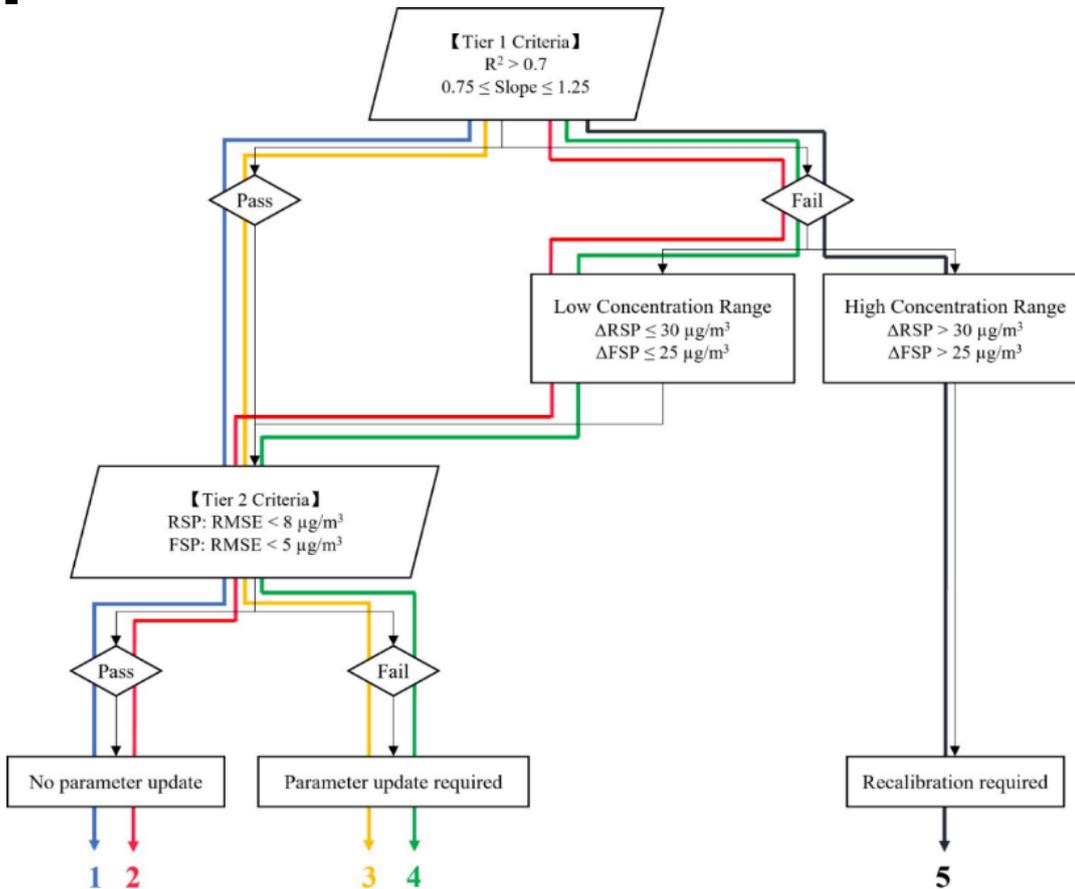
FSP Concentration - After Parameter Update (2025-12-17)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z05		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700005
Issue Date:	2025-12-30		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800012 Location: M09 Wing Ping Tsuen Collocation Data Period: 2025-12-17 00:00 to 2025-12-17 04:10

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.35	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.90	<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	7.7 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	7.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.993		

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 Failed and Tier 2 Passed.

#### FSP (Before parameter update):

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.00	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.44	<input checked="" type="checkbox"/> FAIL
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	1.9 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			

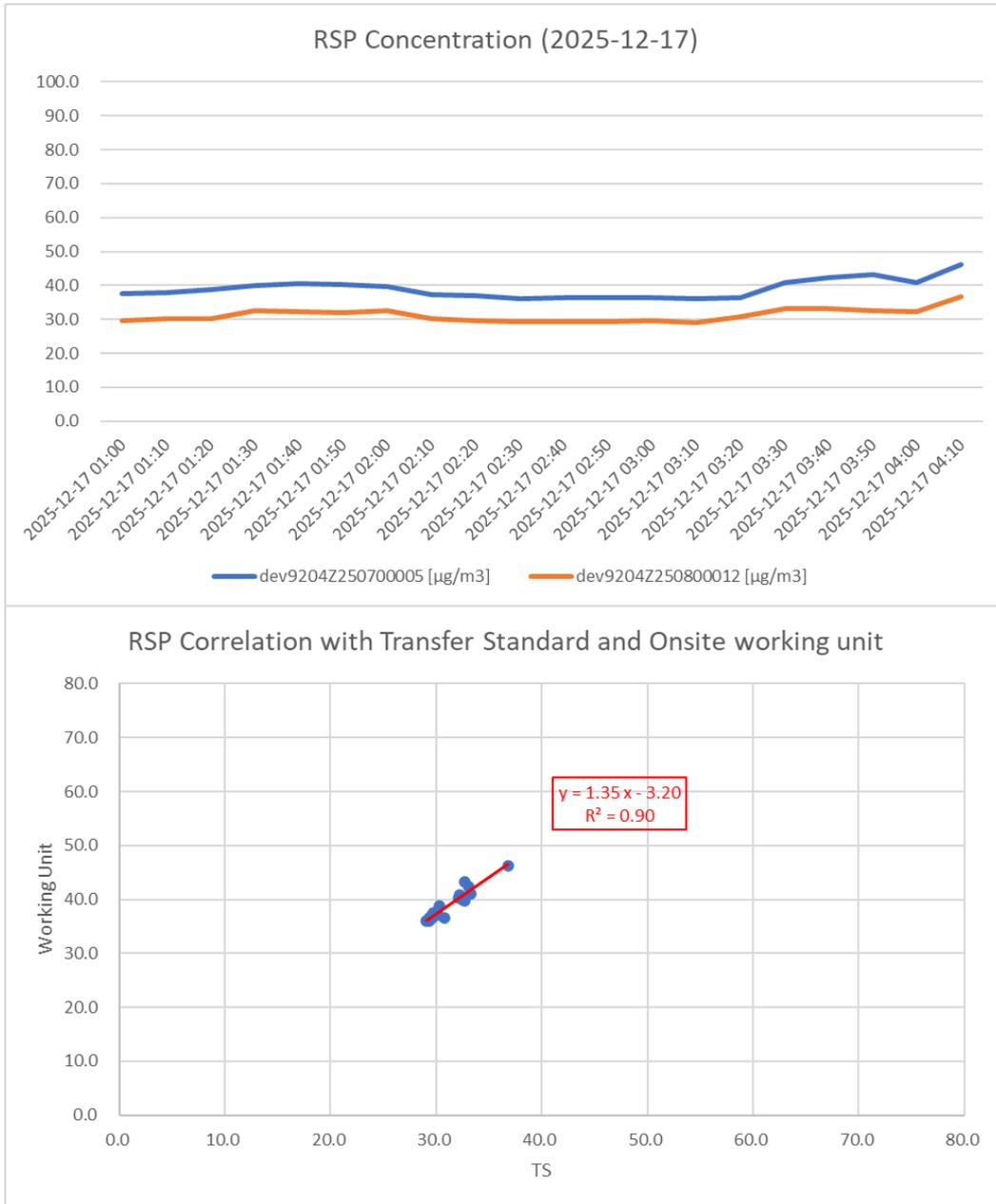
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	11.1 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
<b>Current K factor</b>	<b>0.812</b>		

Remark: Follow QAQC Protocol Path 4 which is Criteria Tier 1 and Tier 2 Failed, parameter update is required.

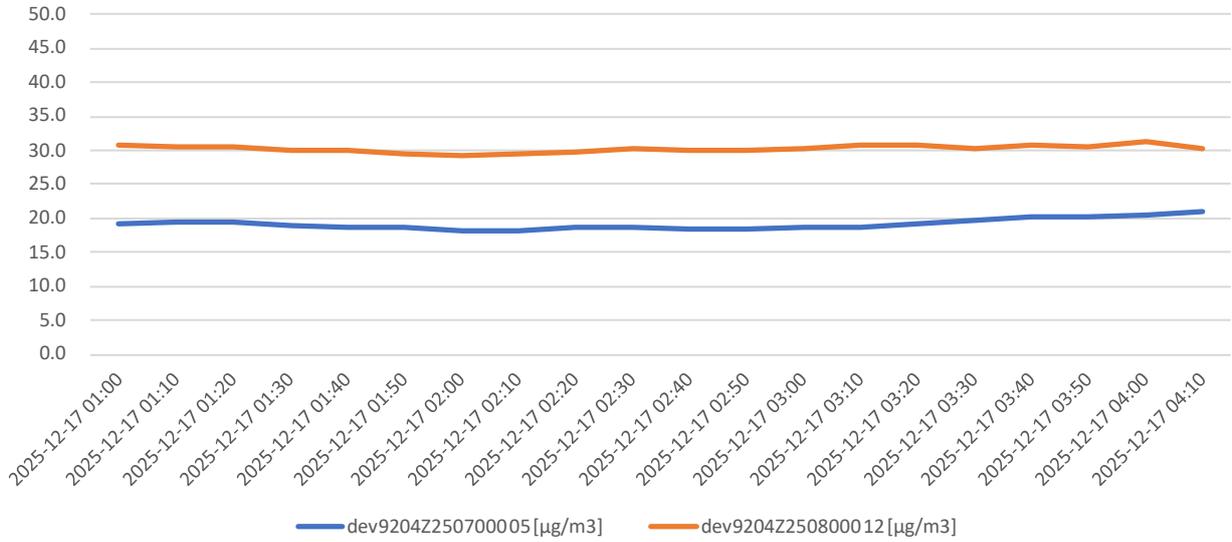
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
<b>Bias (Slope)</b>	1.00±0.25	1.58	<input checked="" type="checkbox"/> FAIL
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.44	<input checked="" type="checkbox"/> FAIL
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	1.9 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b>Tier 2</b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	1.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b>Deploy K factor</b>	<b>1.282</b>		

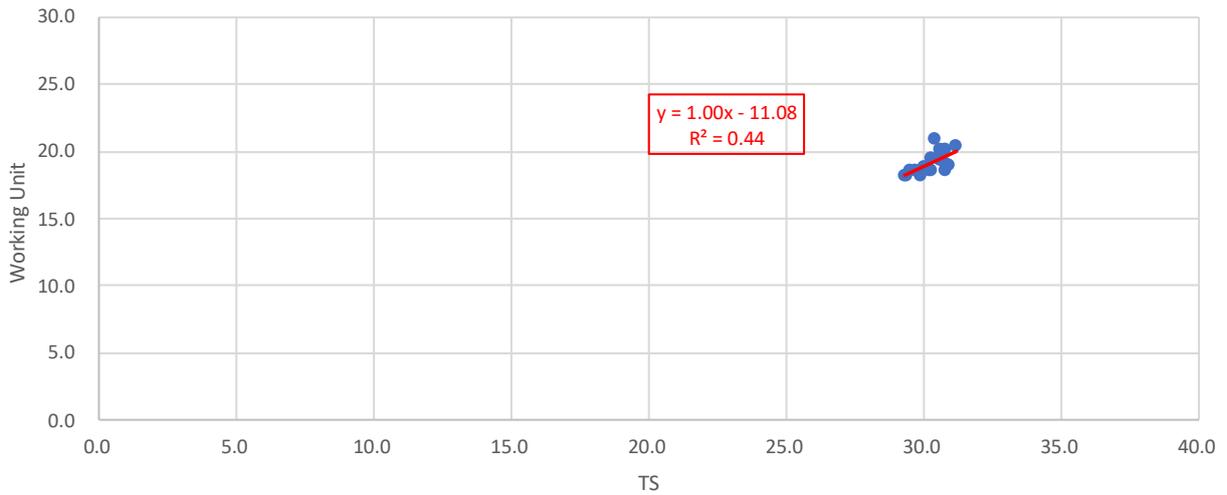
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 Failed while Tier 2 Passed.



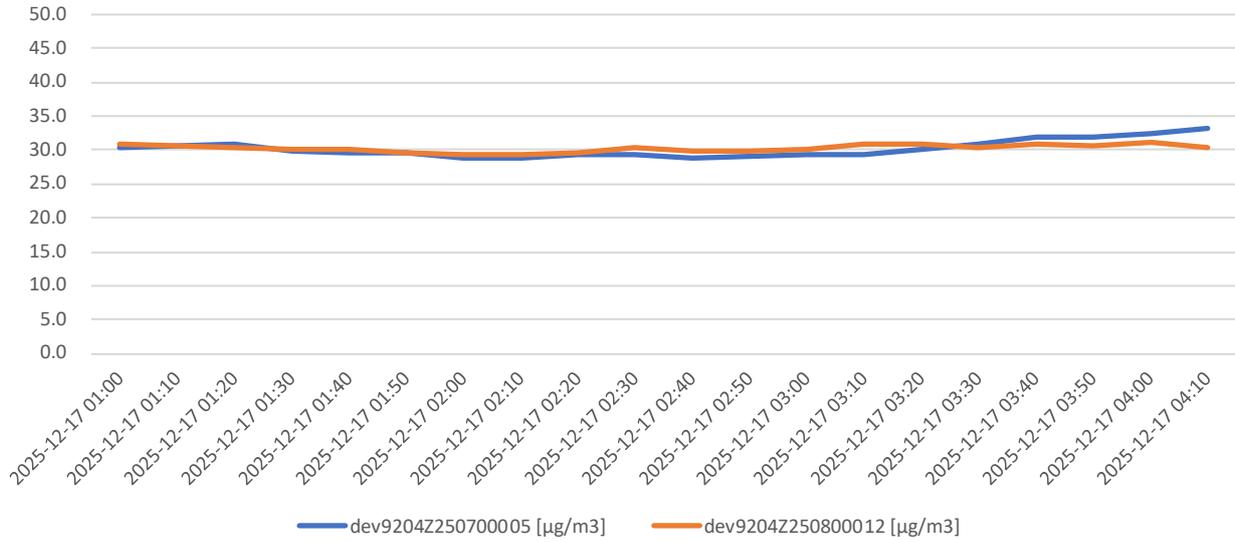
FSP Concentration - Before Parameter Update (2025-12-17)



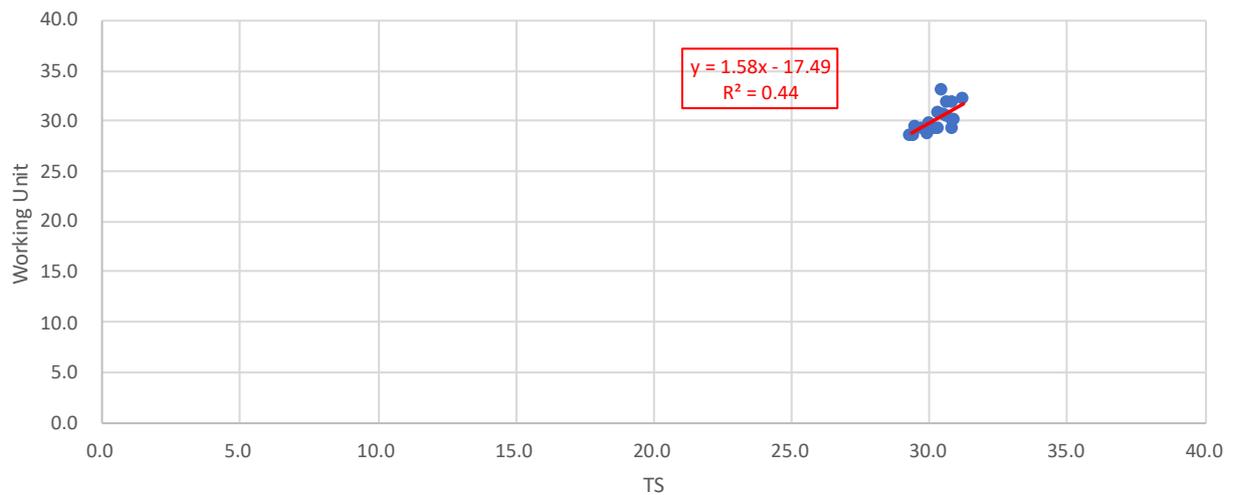
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



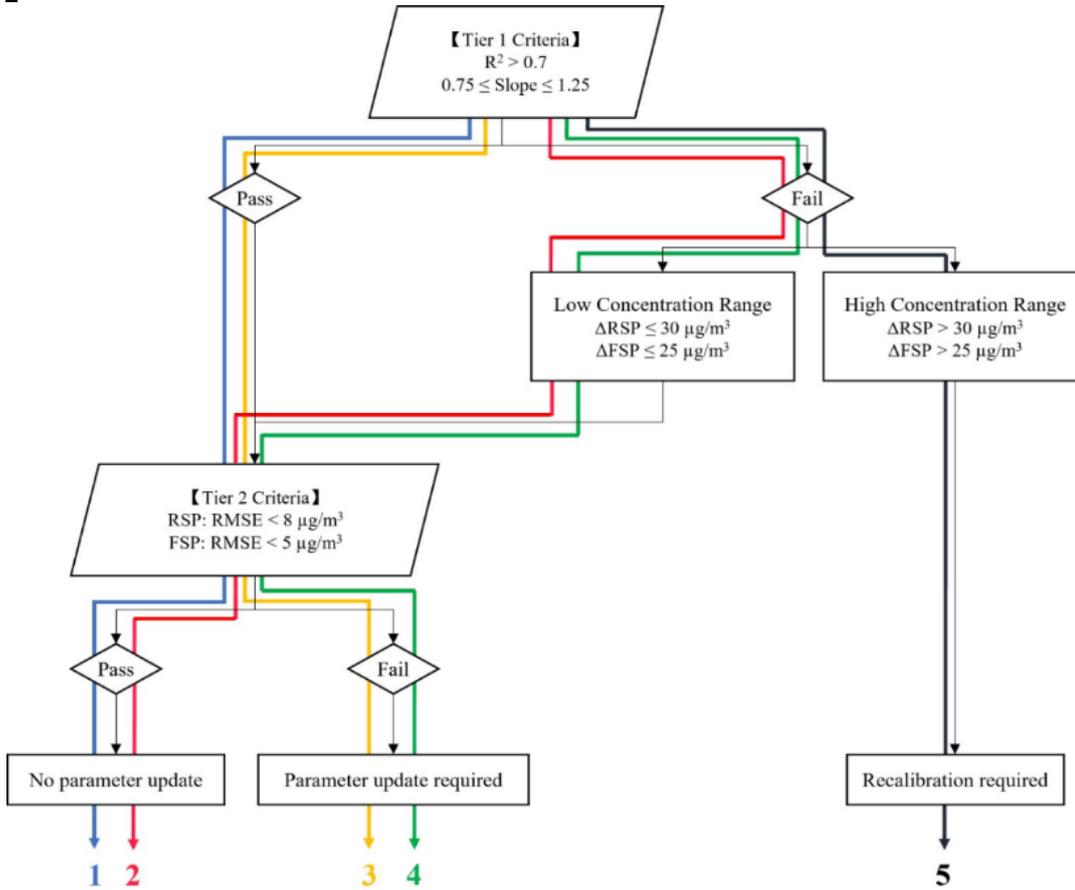
FSP Concentration - After Parameter Update (2025-12-17)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z06		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700006
Issue Date:	2025-12-30		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M04 Chau Tau Tsuen Collocation Data Period: 2025-12-17 00:00 to 2025-12-17 04:10

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.83	<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	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	11.1 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	2.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.745		

Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 Passed.

#### FSP (Before parameter update):

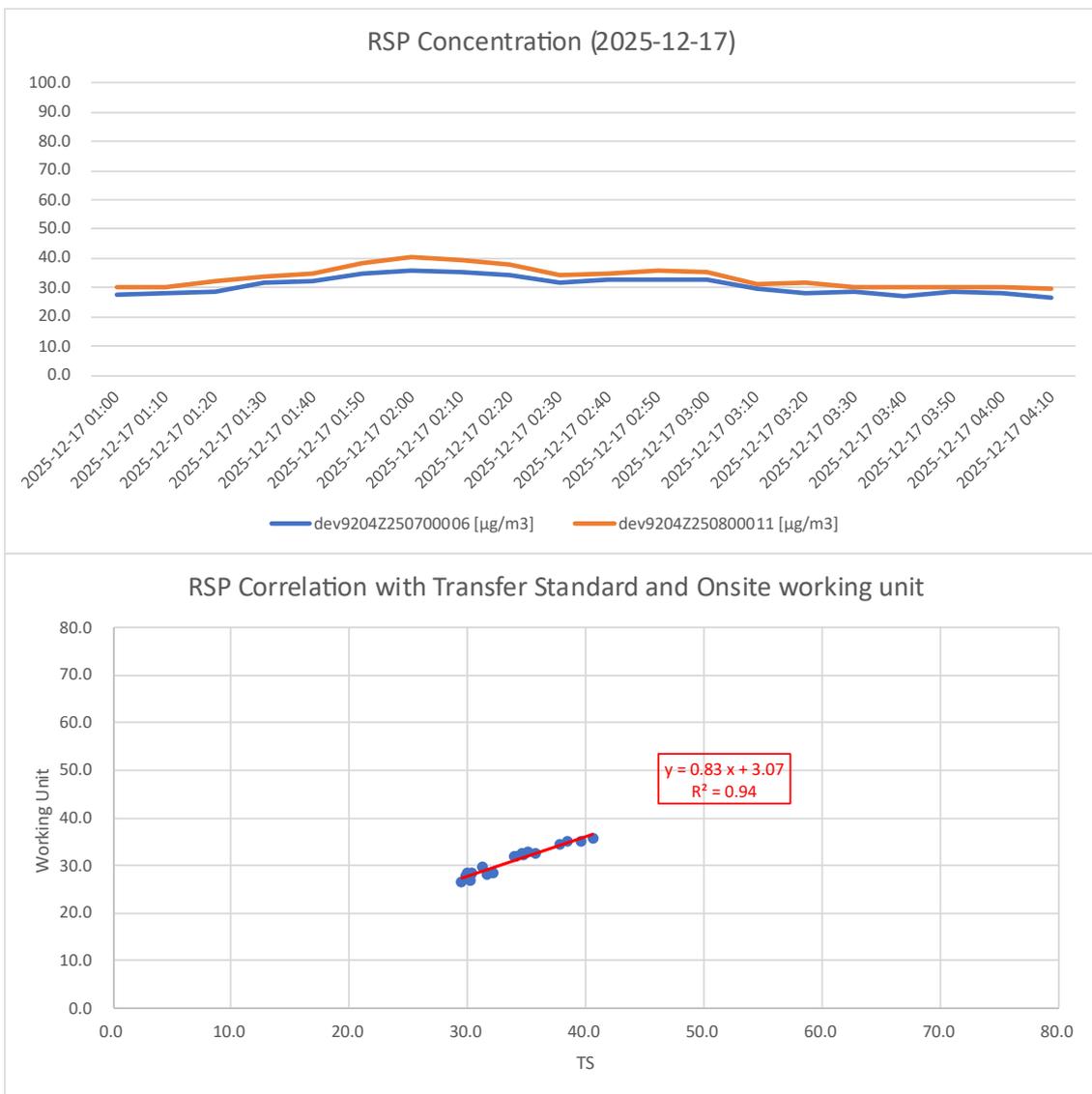
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.56	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.92	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.2 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	10.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.916		

Remark: Follow QAQC Protocol Path 4 which is Criteria Tier 1 and Tier 2 Failed, parameter update is required.

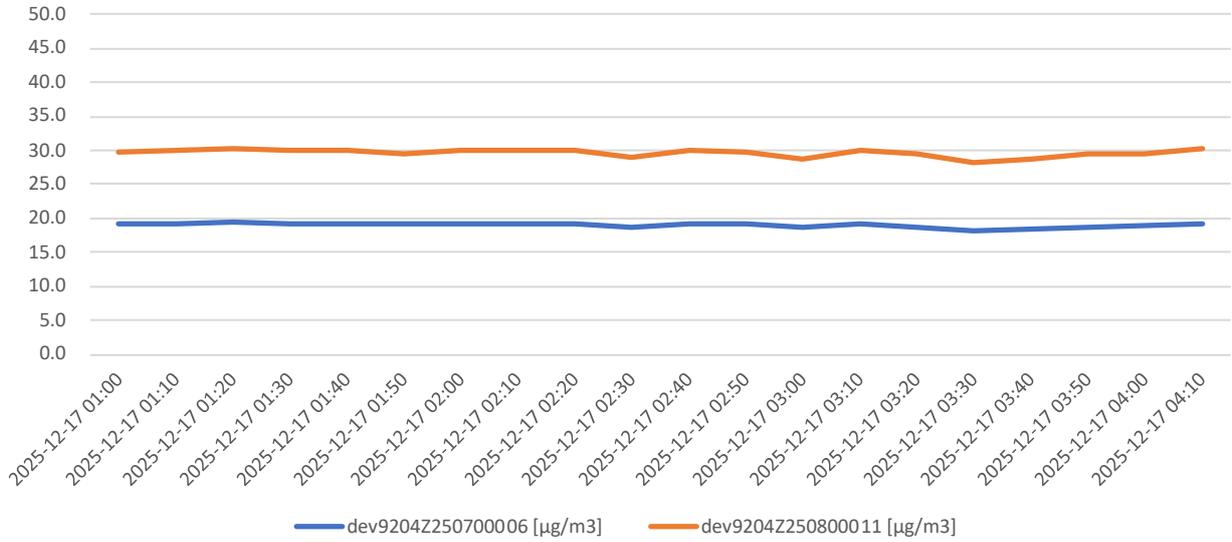
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
<b>Bias (Slope)</b>	1.00±0.25	0.87	☑ PASS
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.92	☑ PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	2.2 µg/m <sup>3</sup>	Not applicable.
<b>Tier 2</b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	0.2 µg/m <sup>3</sup>	☑ PASS
<b>Deploy K factor</b>	<b>1.429</b>		

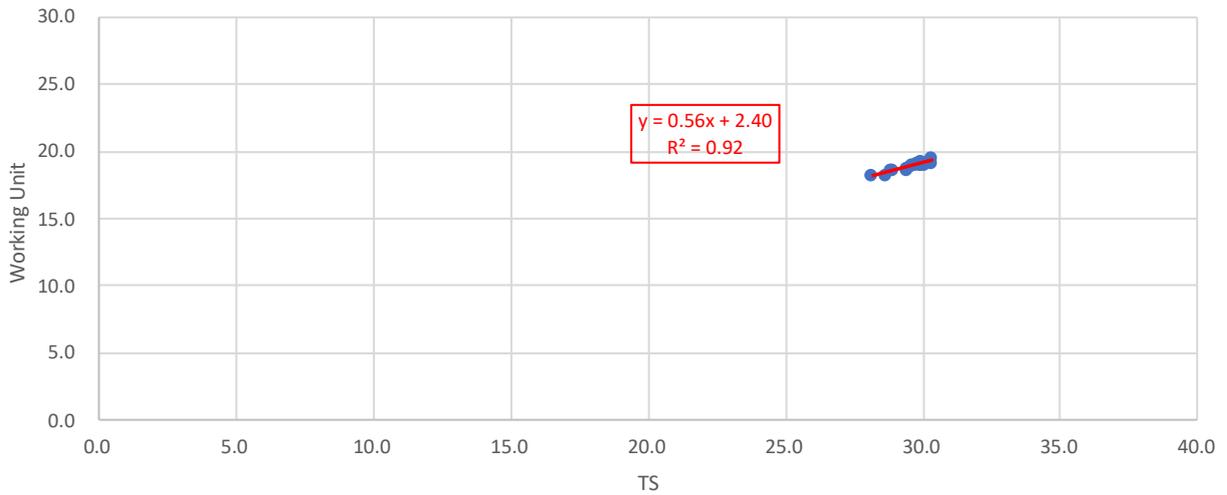
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 Passed.



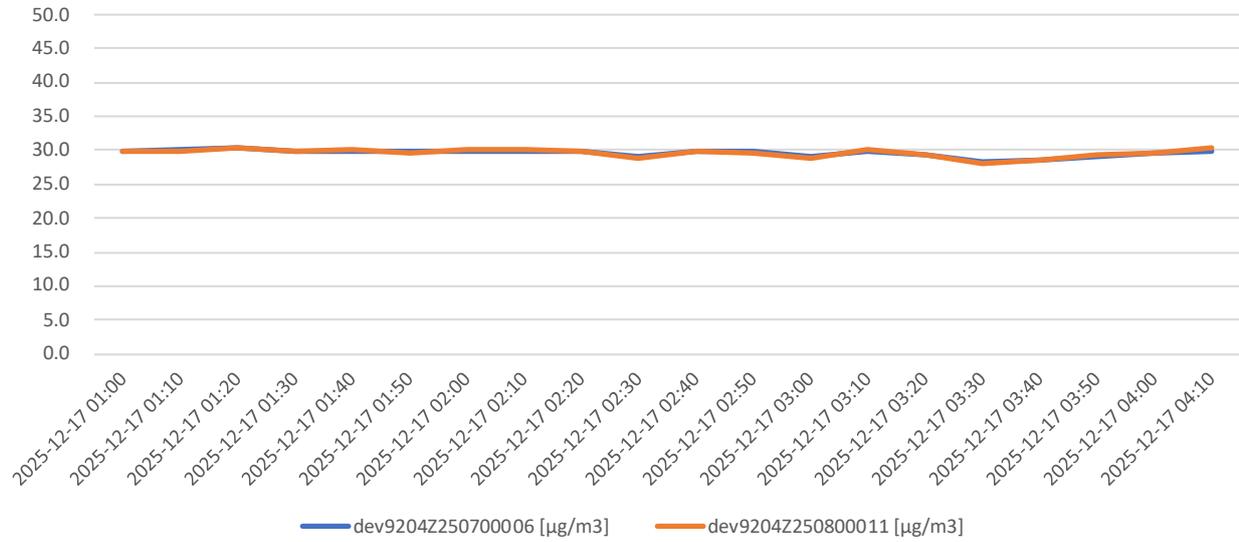
FSP Concentration- Before Parameter Update (2025-12-17)



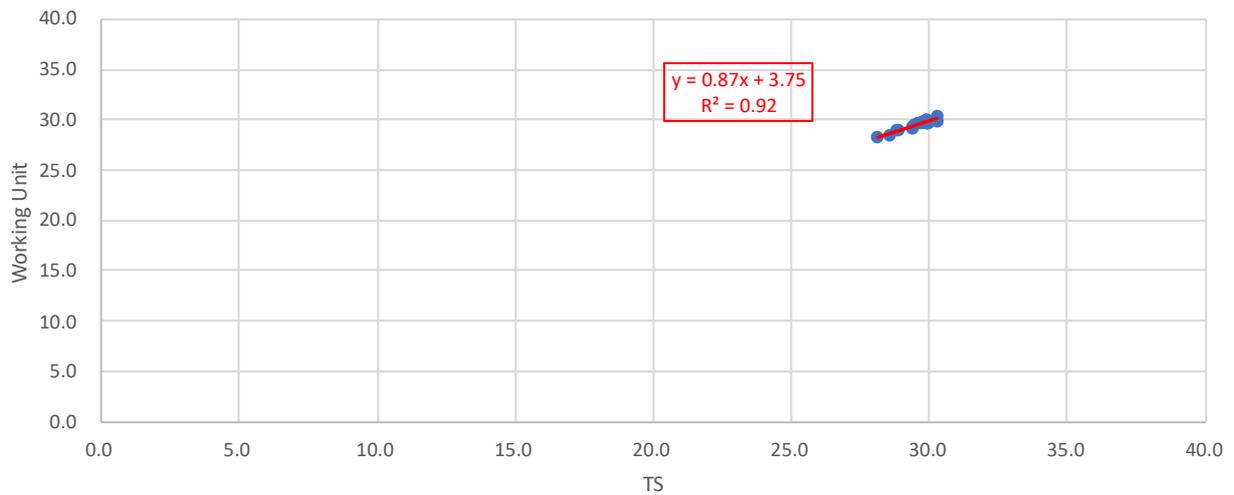
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



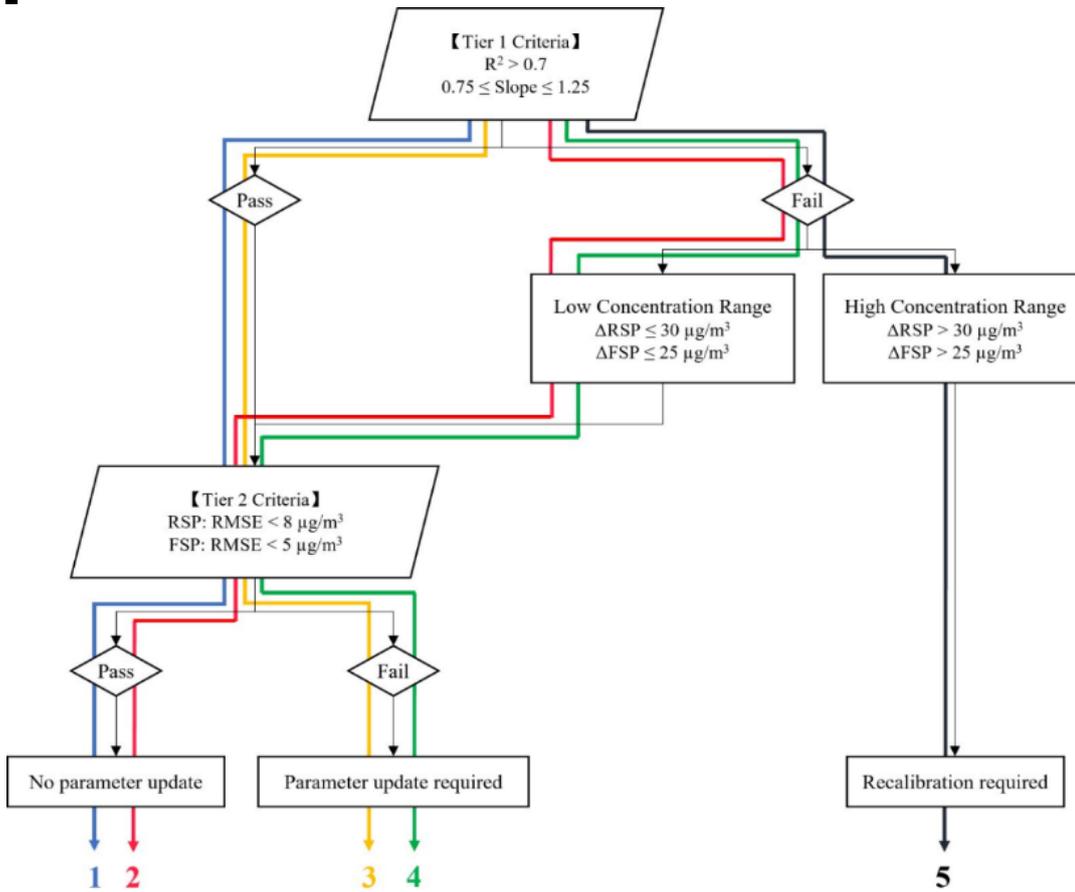
FSP Concentration - After Parameter Update (2025-12-17)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z07		
Product Model:	MAS Dust	Serial No.:	dev9204Z250700007
Issue Date:	2025-12-30		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9204Z250800011 Location: M03 Pun Uk Tsuen Collocation Data Period: 2025-12-17 11:20 to 2025-12-17 15:30

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.98	<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	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	4.2 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	1.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.726		

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

#### FSP (Before parameter update):

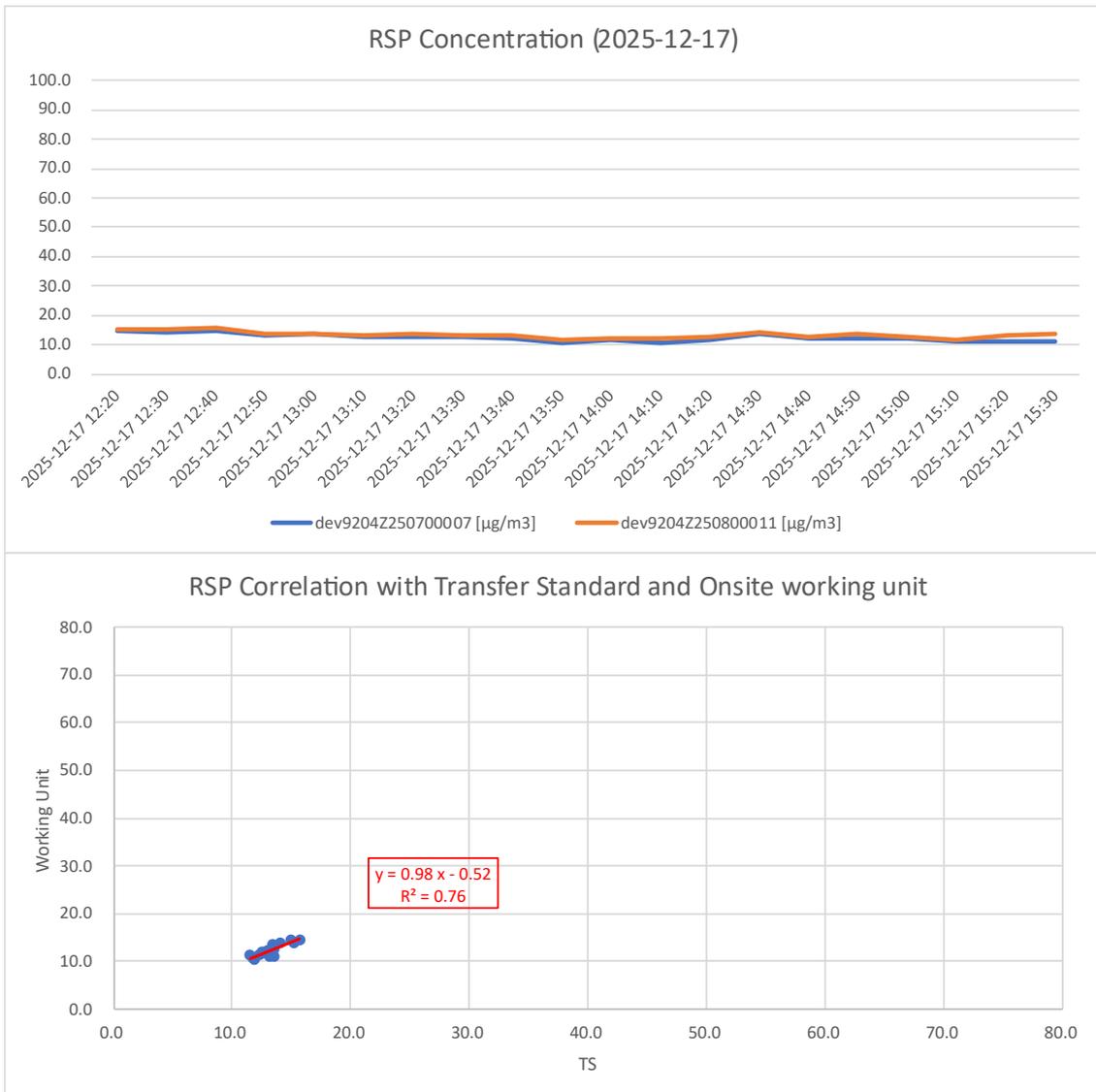
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.64	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.94	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.5 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	5.9 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.653		

Remark: Follow QAQC Protocol Path 4 which is Criteria Tier 1 and Tier 2 Failed, parameter update is required.

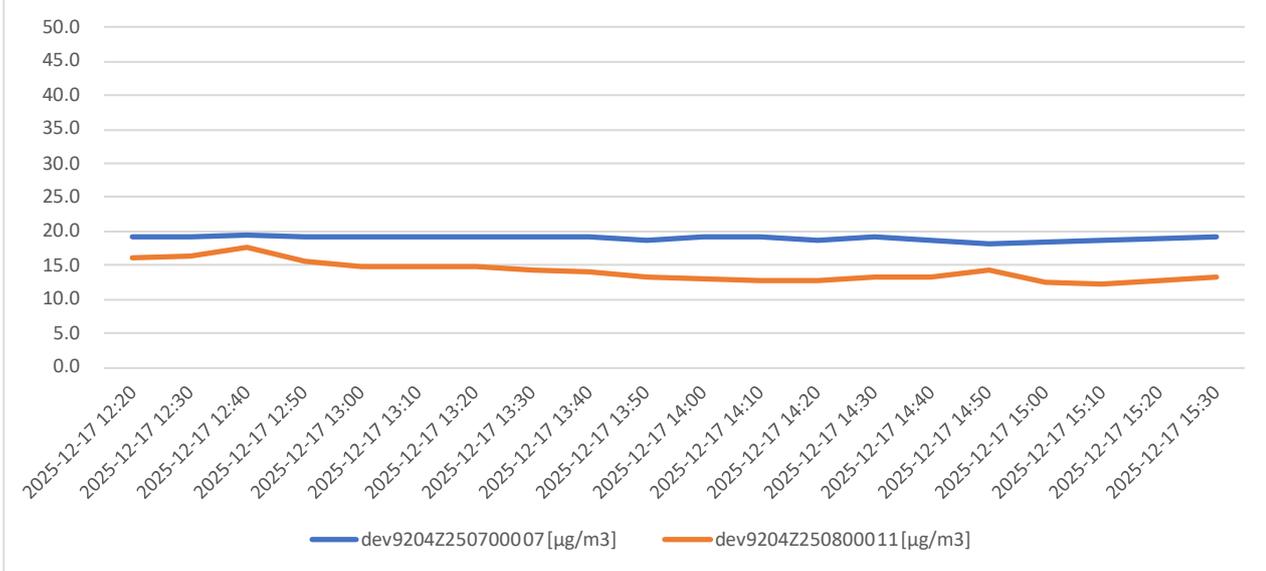
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	1.10	<input checked="" type="checkbox"/> PASS
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.94	<input checked="" type="checkbox"/> PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.5 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	0.4 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b><u>Deploy K factor</u></b>	<b>1.122</b>		

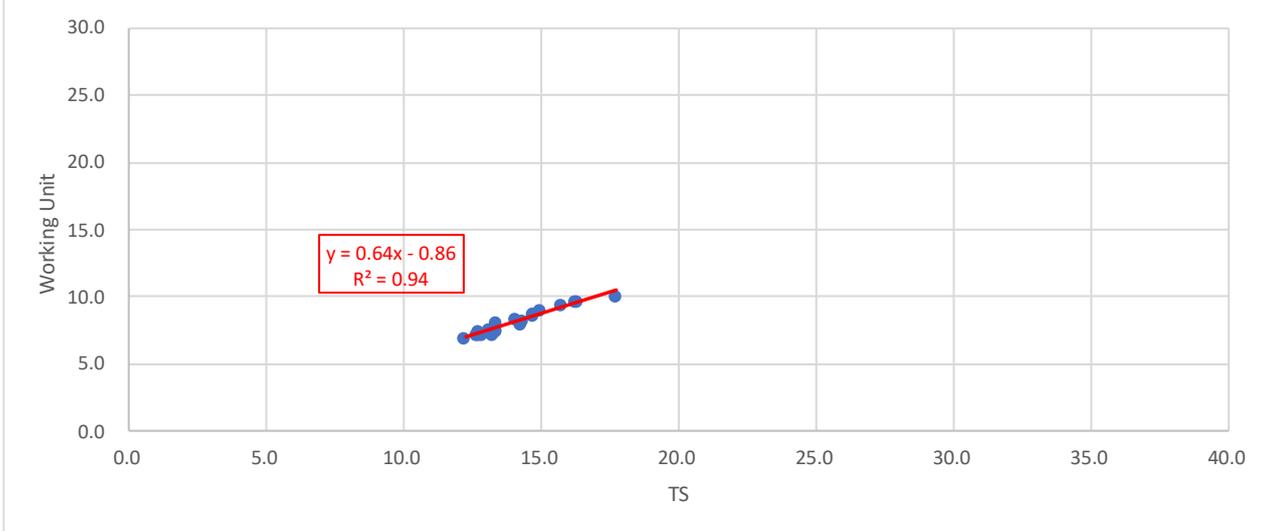
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 Passed.



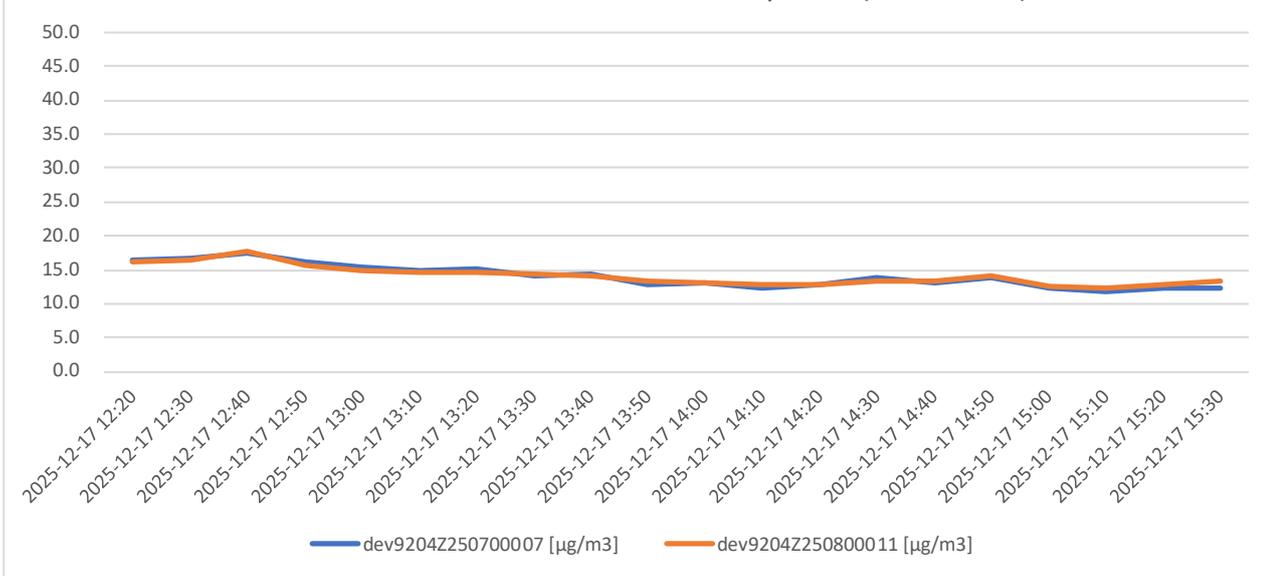
FSP Concentration - Before Parameter Update (2025-12-17)



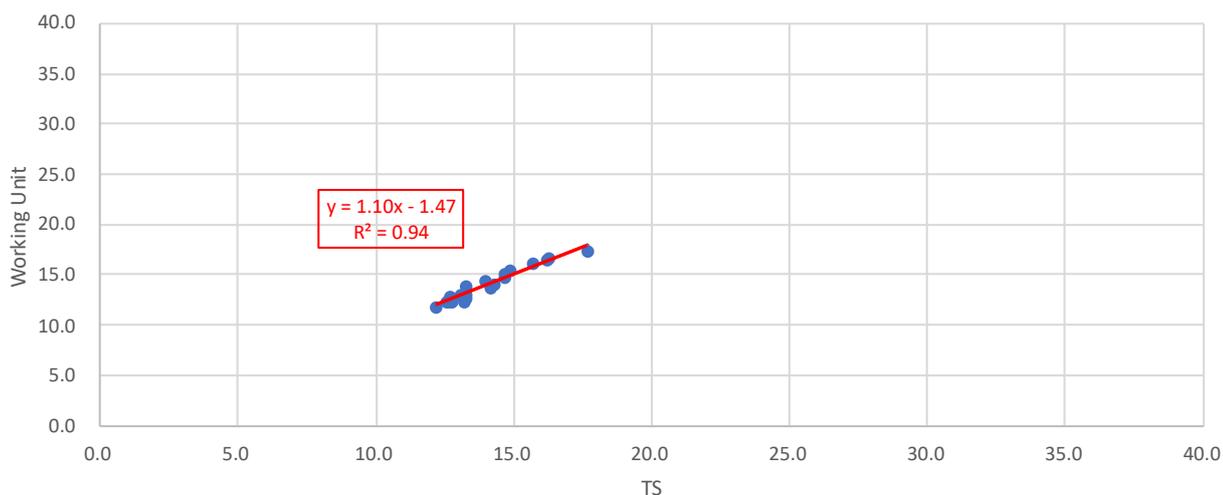
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



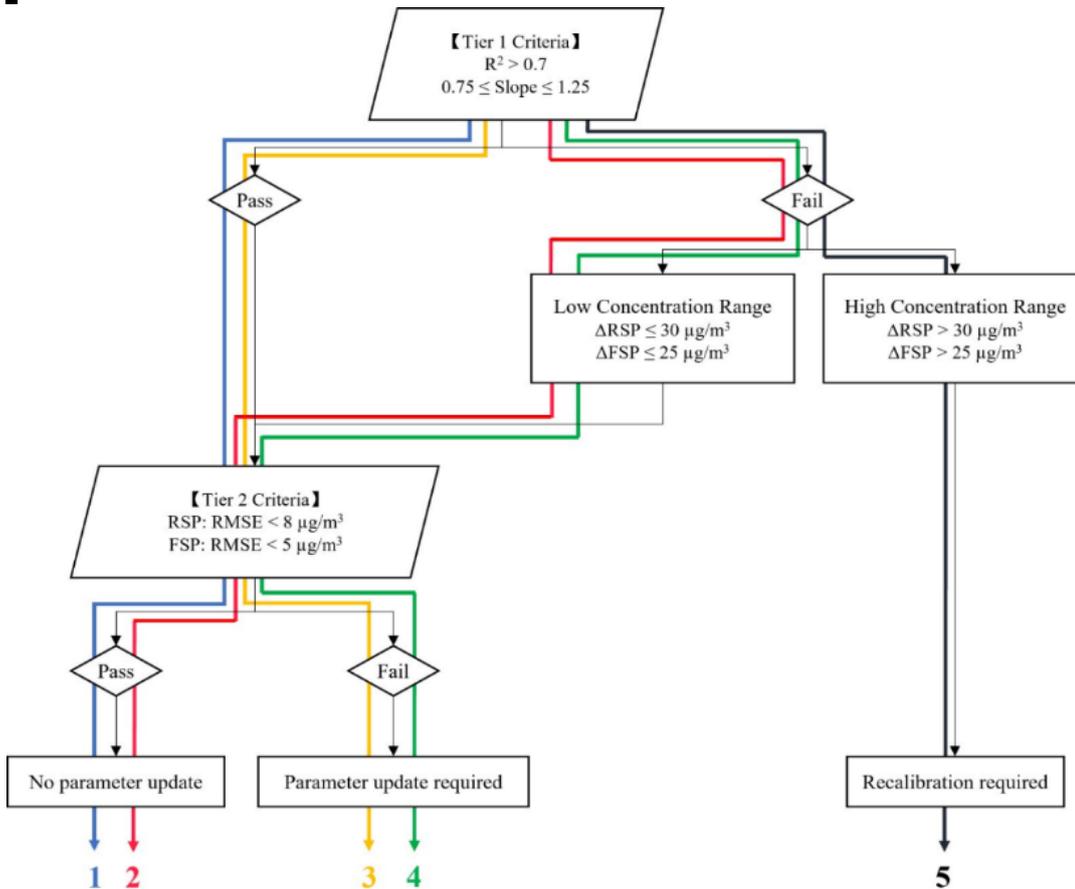
FSP Concentration - After Parameter Update (2025-12-17)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z13		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800013
Issue Date:	2025-12-29		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9524Z250800012 Location: M11 Shek Wu Wai Collocation Data Period: 2025-12-24 11:30 to 2025-12-24 15:40

### Calibration Result:

#### RSP (Before parameter update):

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.68	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.86	<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	13.7 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	13.3 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.937		

Remark: Follow QAQC Protocol Path 4 which is both Criteria Tier 1 and Tier 2 Failed, parameter update is required.

#### RSP (After parameter update):

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.49	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.86	<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	13.7 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			

<b>Error (RMSE)</b>	< 8 $\mu\text{g}/\text{m}^3$ for RSP	2.1 $\mu\text{g}/\text{m}^3$	<input checked="" type="checkbox"/> PASS
<b>Deploy K factor</b>	<b>0.665</b>		

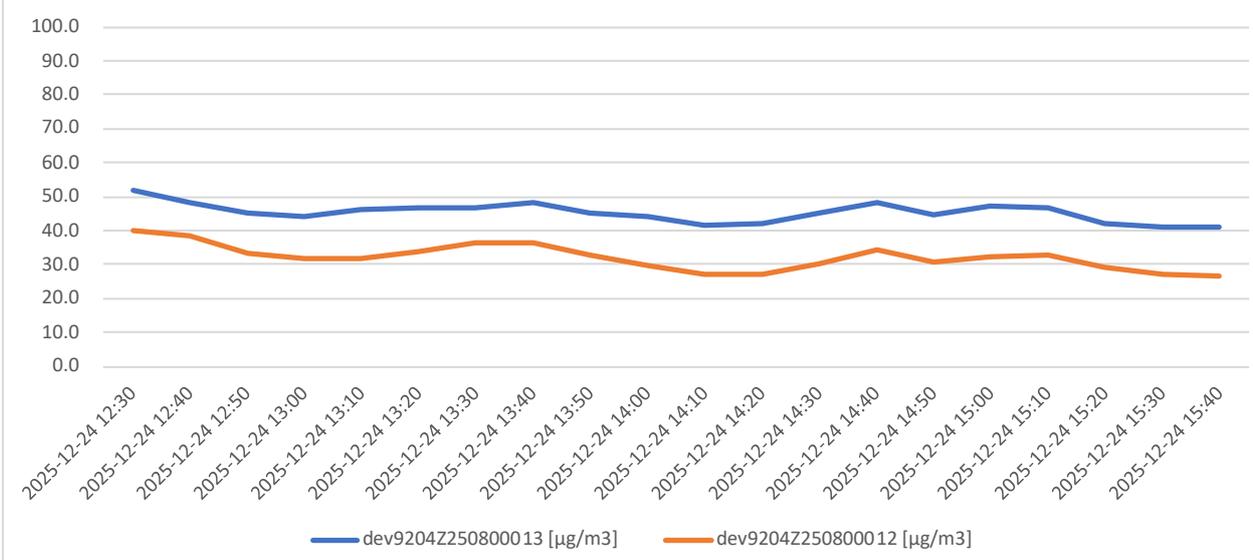
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 Failed while Tier 2 Passed.

**FSP:**

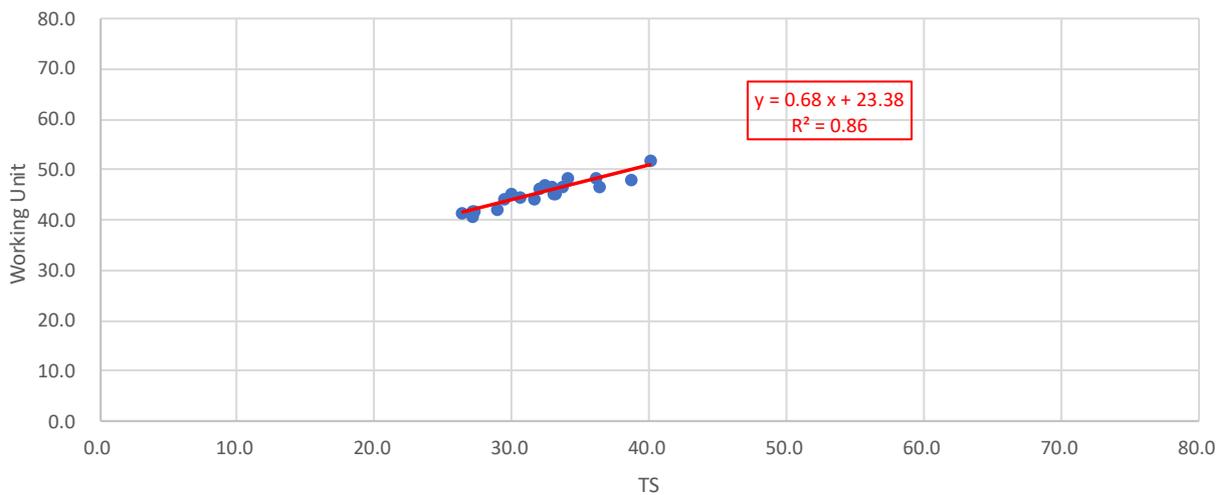
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	0.66	<input checked="" type="checkbox"/> FAIL
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.59	<input checked="" type="checkbox"/> FAIL
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP $\leq$ 25 $\mu\text{g}/\text{m}^3$ is low conc. range	3.5 $\mu\text{g}/\text{m}^3$	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 $\mu\text{g}/\text{m}^3$ for FSP	1.4 $\mu\text{g}/\text{m}^3$	<input checked="" type="checkbox"/> PASS
<b>Current K factor</b>	<b>0.758</b>		

Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 Failed while Tier 2 Passed.

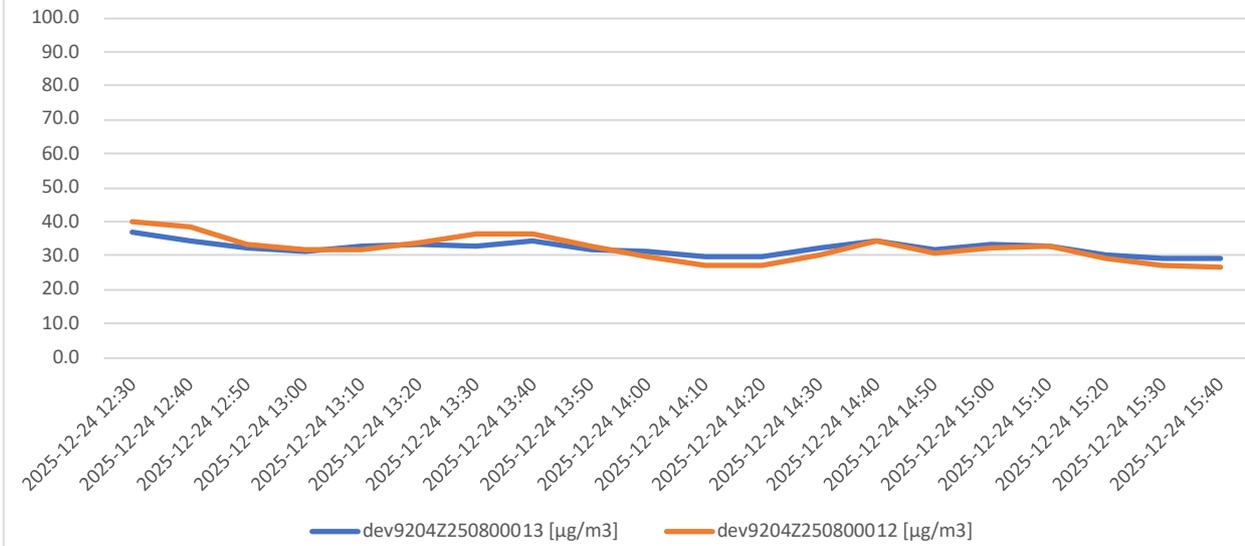
RSP Concentration - Before Parameter Update (2025-12-24)



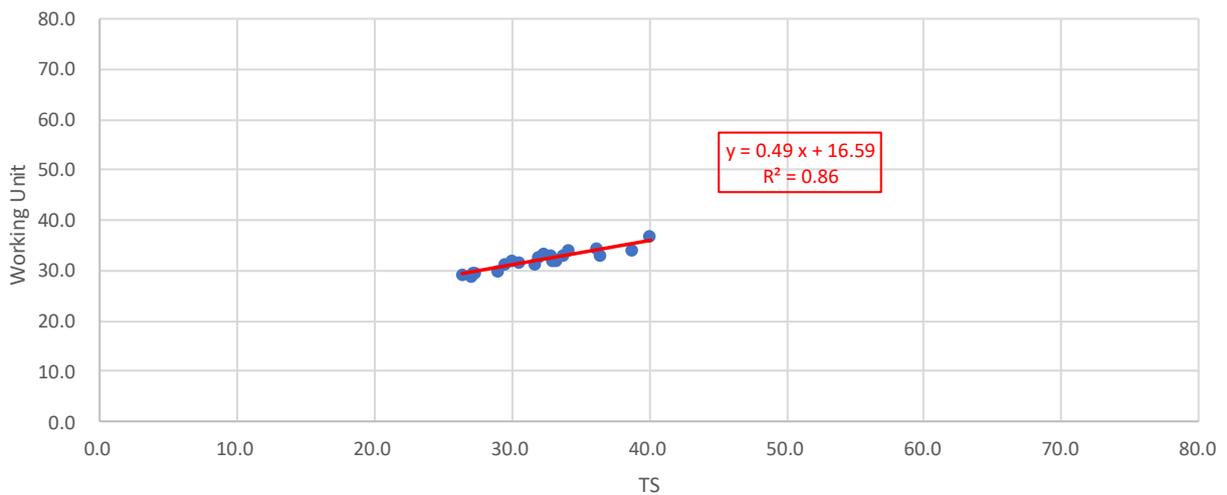
RSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)

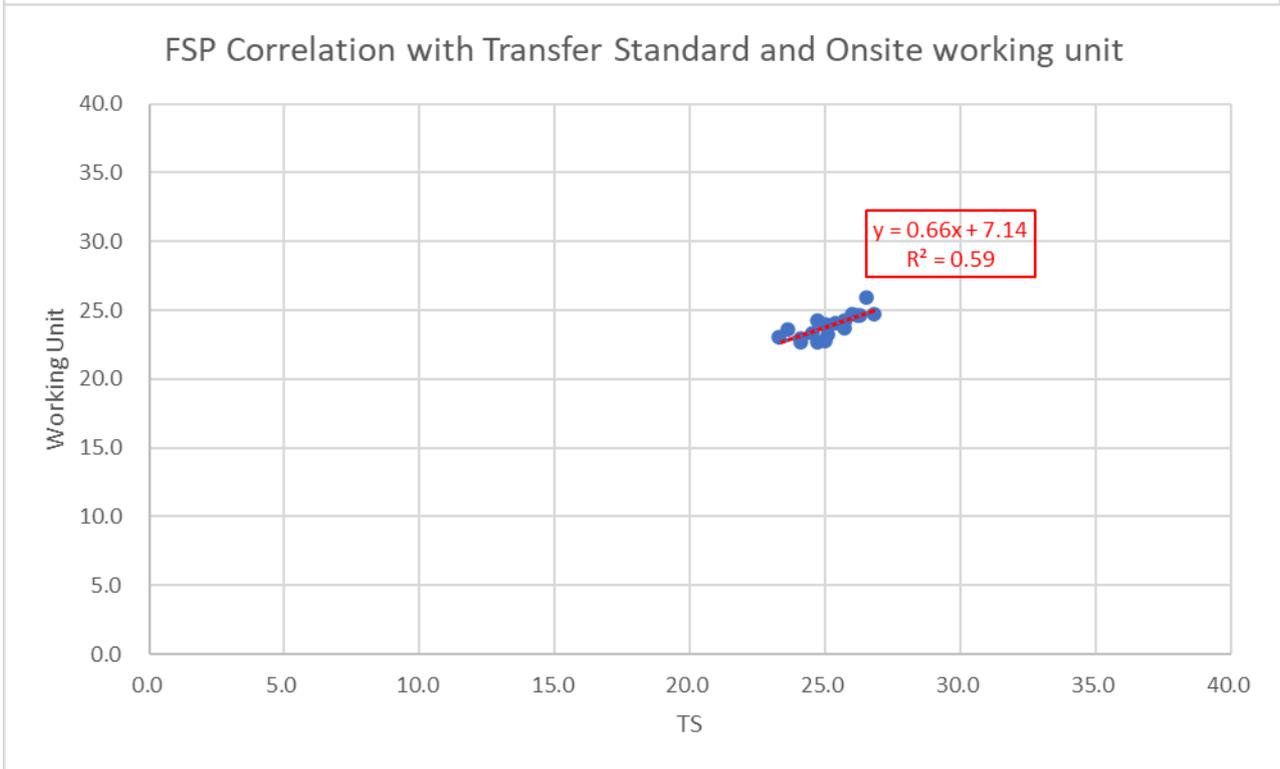
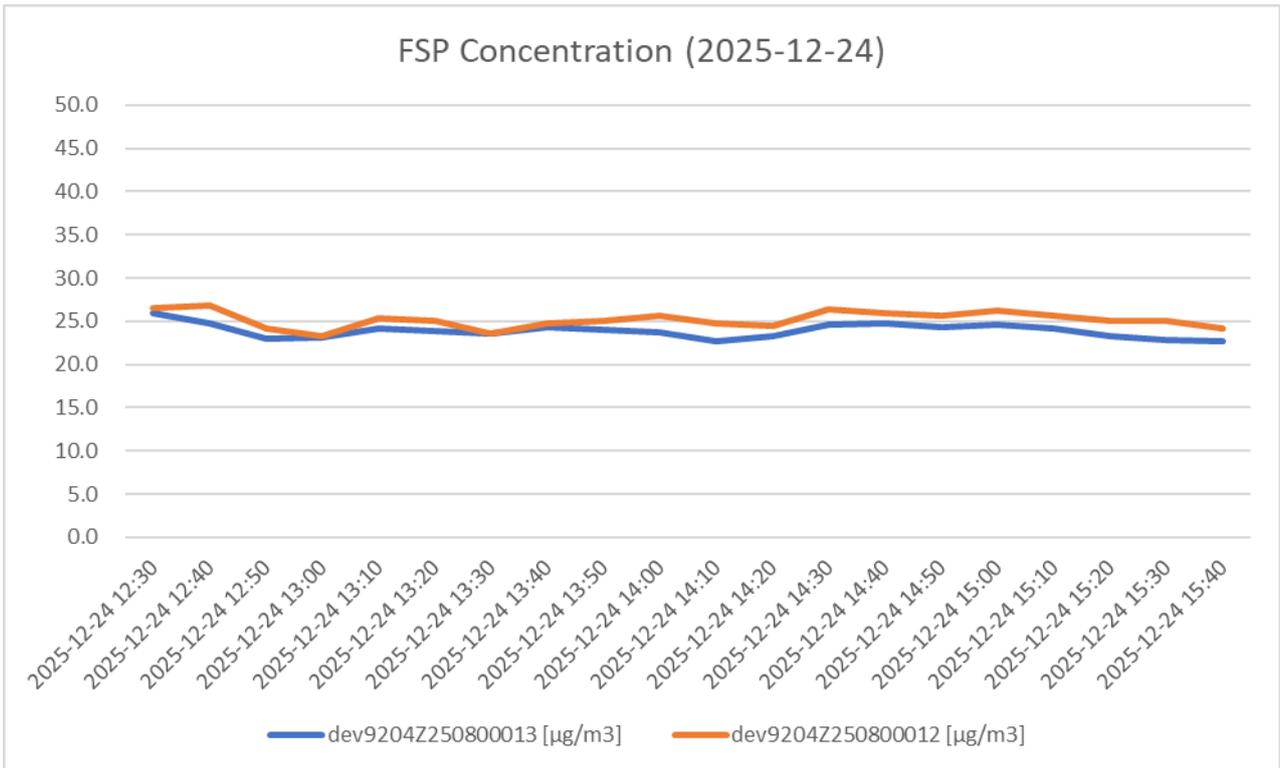


RSP Concentration - After Parameter Update (2025-12-24)

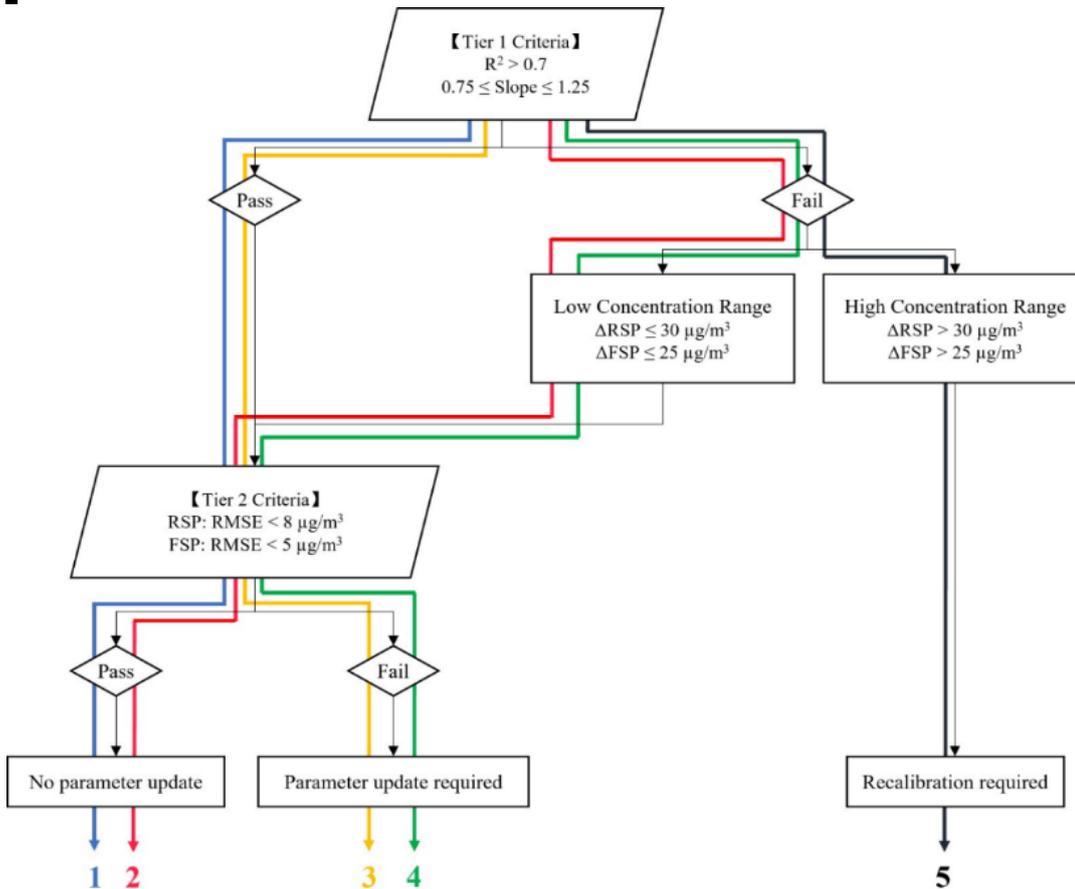


RSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)





**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z14		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800014
Issue Date:	2025-12-29		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9524Z250800011 Location: M06 Mai Po San Tsuen Collocation Data Period: 2025-12-24 11:30 to 2025-12-24 15:40

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	1.15	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.93	<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	11.3 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	4.2 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.857		

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

#### FSP (Before parameter update):

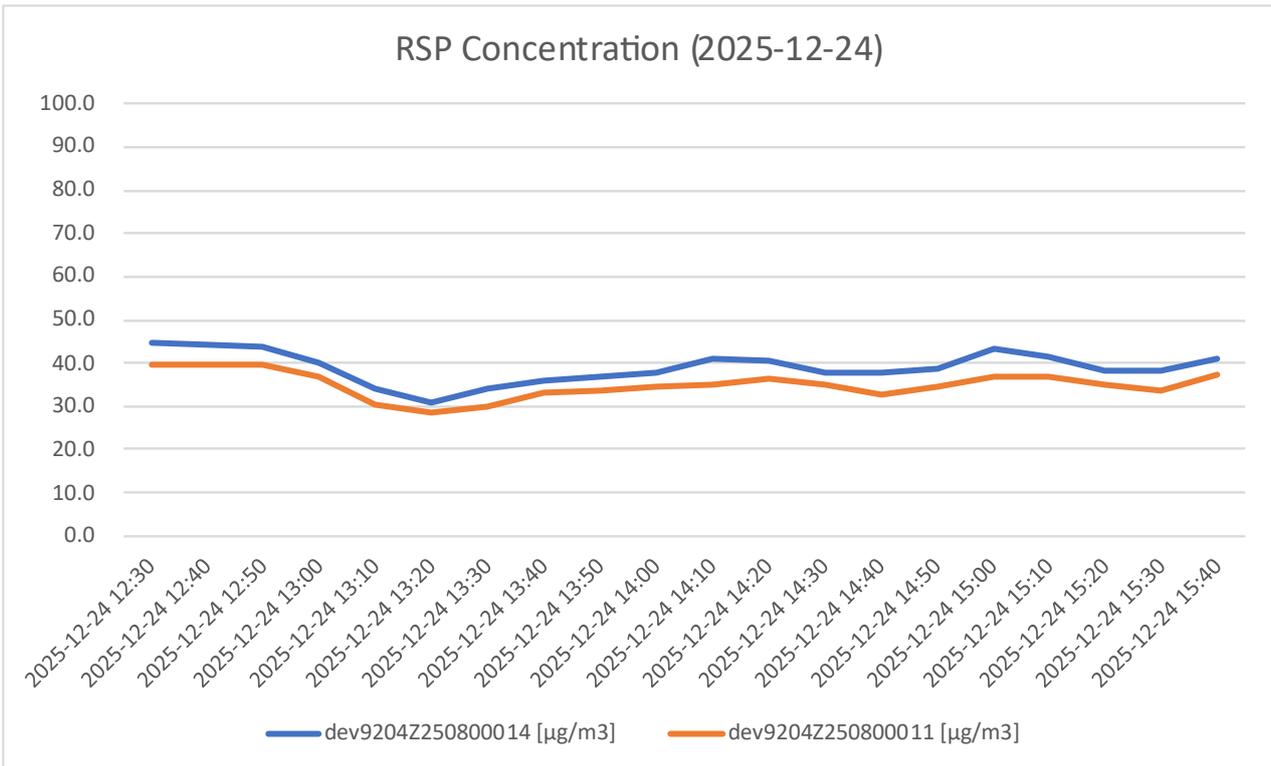
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.40	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.93	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 30 µg/m <sup>3</sup> is low conc. range	9.1 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	13.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.617		

Remark: Follow QAQC Protocol Path 4 which is both Criteria Tier 1 and Tier 2 Failed, parameter update is required.

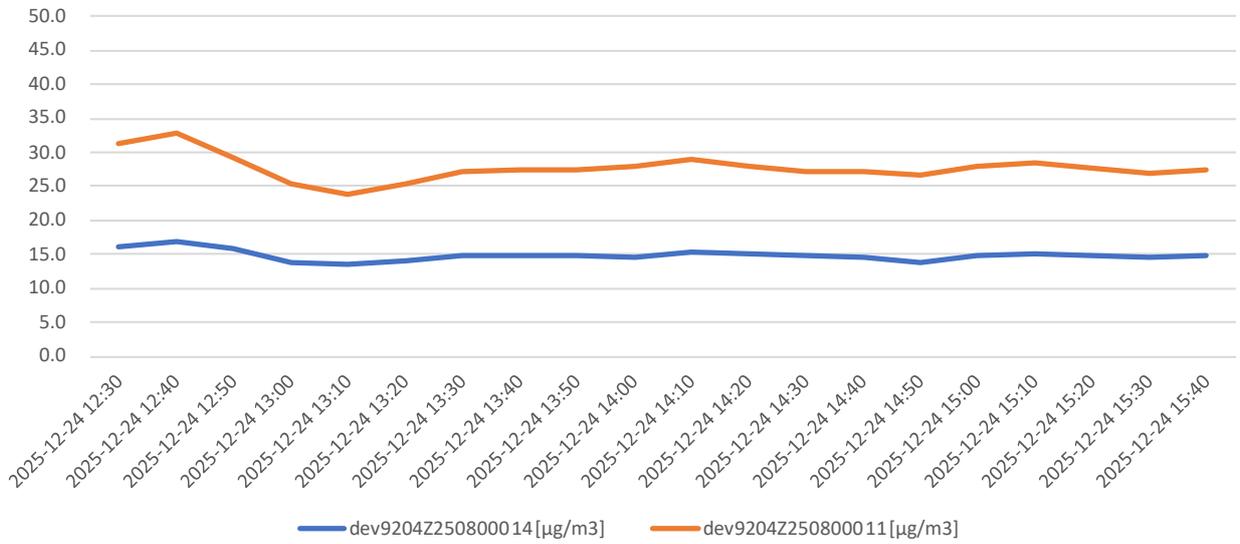
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b><i>Bias (Slope)</i></b>	1.00±0.25	0.76	<input checked="" type="checkbox"/> PASS
<b><i>Linearity (R<sup>2</sup>)</i></b>	> 0.70	0.93	<input checked="" type="checkbox"/> PASS
<b><i>If Tier 1 fails, Conc. Range will be checked</i></b>	<i>FSP ≤ 25 µg/m<sup>3</sup> is low conc. range</i>	9.1 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
<b><i>Error (RMSE)</i></b>	< 5 µg/m <sup>3</sup> for FSP	0.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b><i>Deploy K factor</i></b>	1.157		

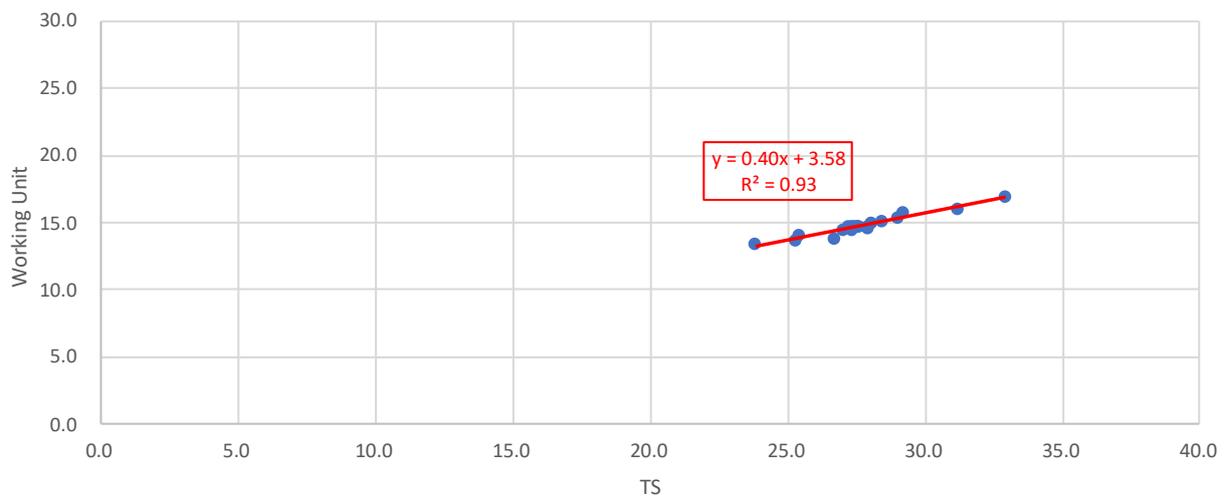
Remark: Follow QAQC Protocol Path 1 which is both Criteria Tier 1 and Tier 2 Passed.



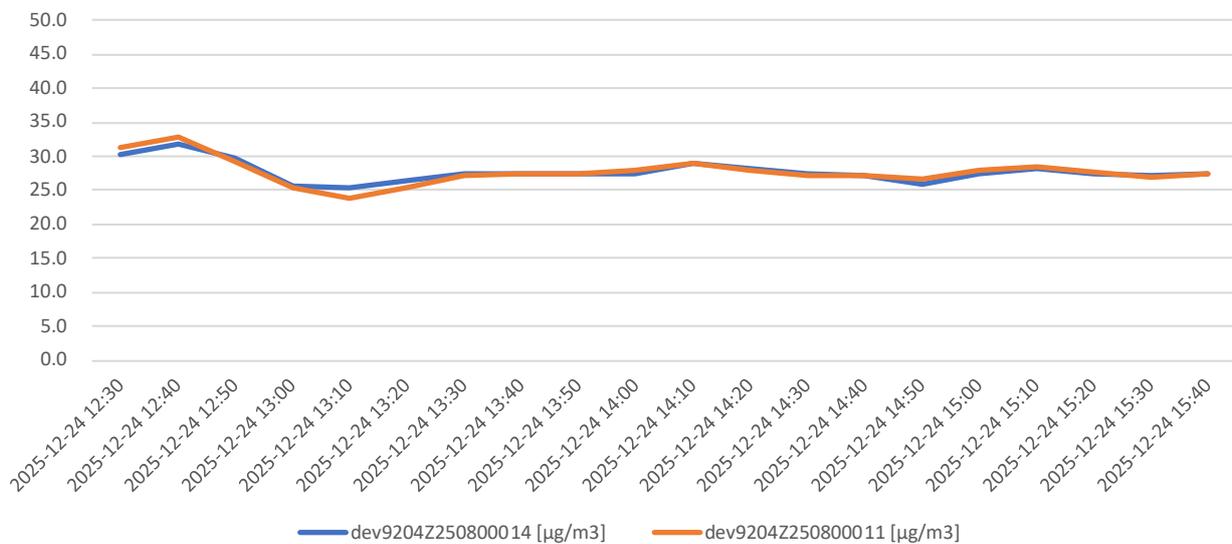
FSP Concentration - Before Parameter Update (2025-12-24)



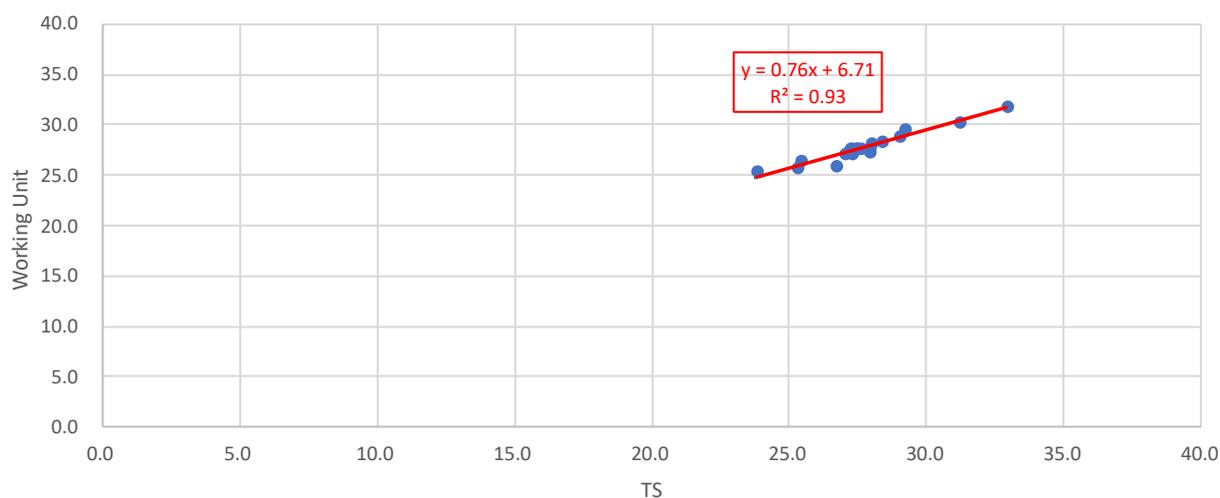
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



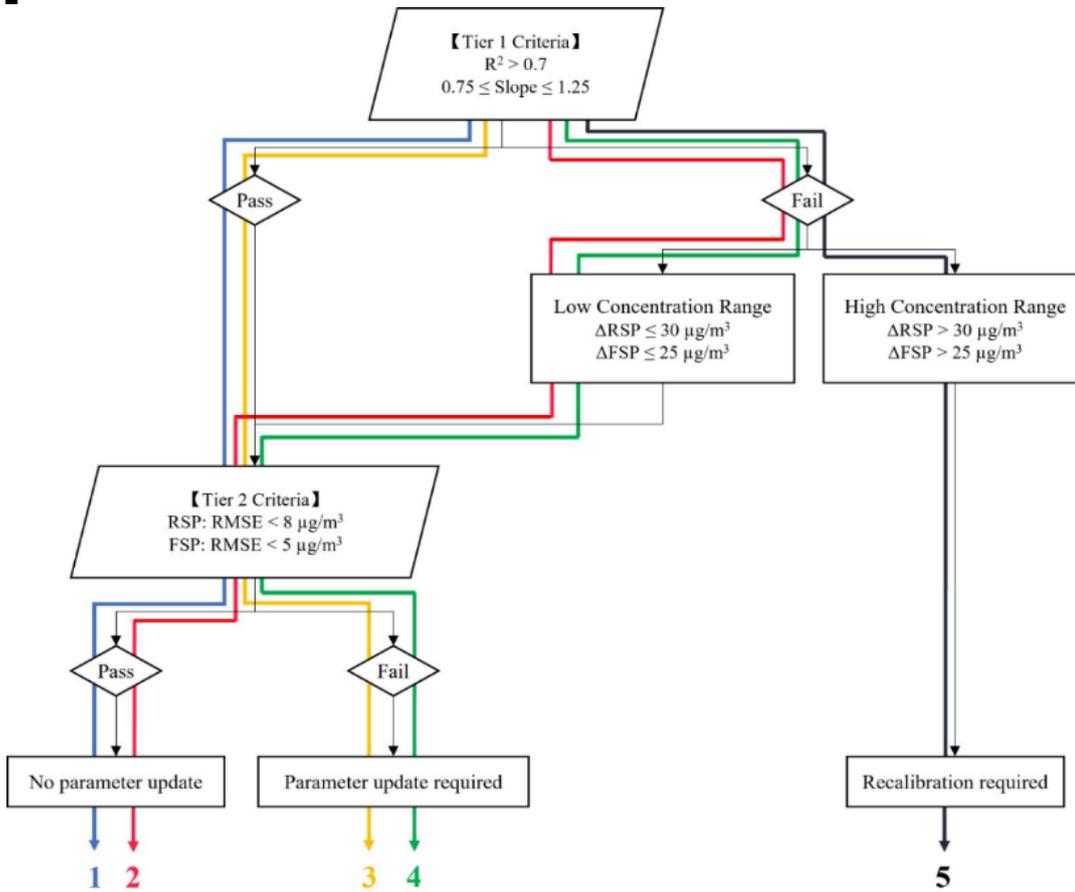
FSP Concentration - After Parameter Update (2025-12-24)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z15		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800015
Issue Date:	2025-12-31		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9524Z250800011 Location: M14 Rolling Hill – Outside of Rolling Hill Collocation Data Period: 2025-12-24 01:00 to 2025-12-24 04:10

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.76	<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	RSP ≤ 30 µg/m <sup>3</sup> is low conc. range	7.5 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	1.5 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.652		

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

#### FSP (Before parameter update):

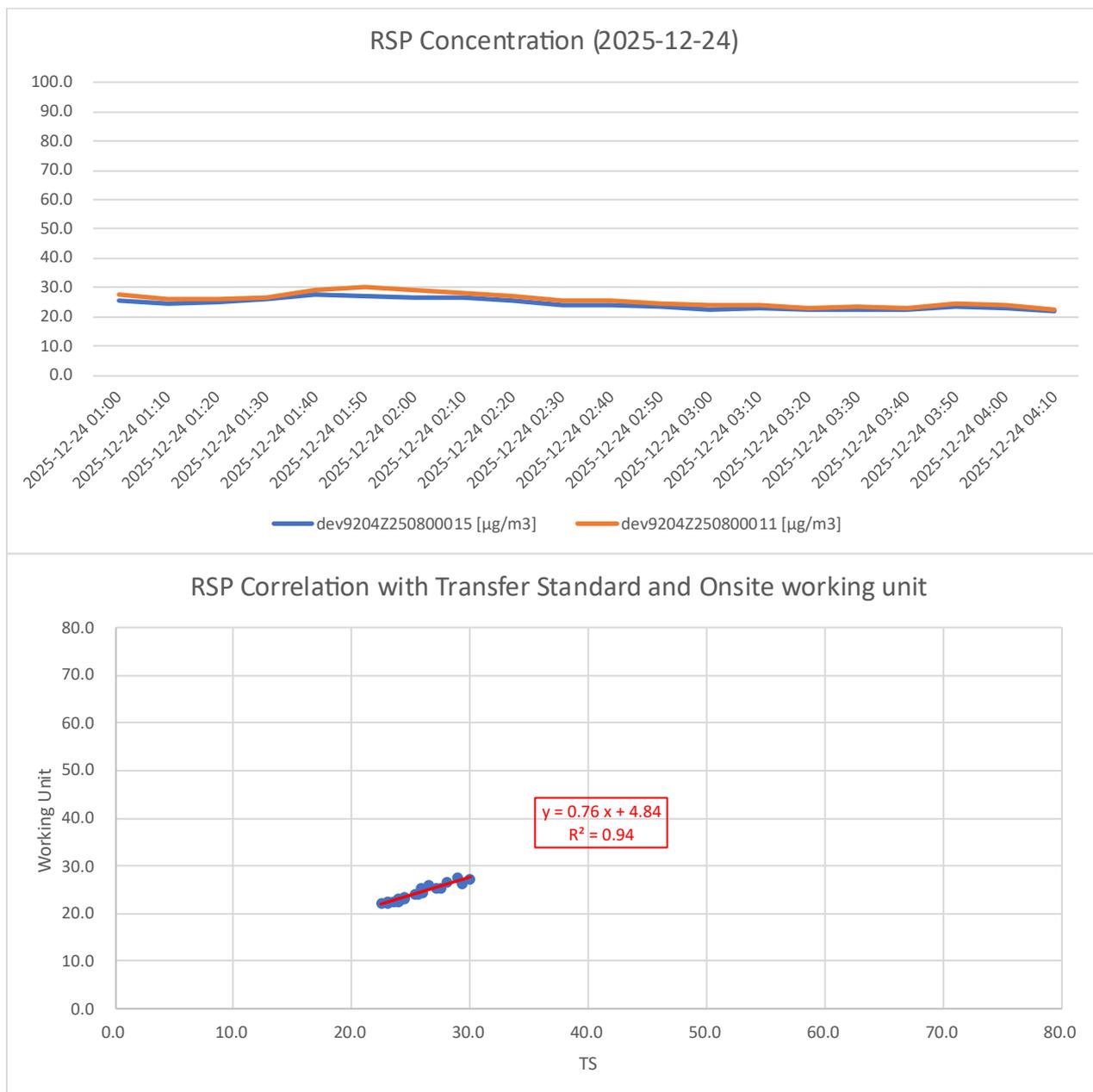
Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
Bias (Slope)	1.00±0.25	0.49	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.98	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 30 µg/m <sup>3</sup> is low conc. range	6.5 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b><u>Tier 2</u></b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	12.0 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.606		

Remark: Follow QAQC Protocol Path 4 which is Criteria Tier 1 and Tier 2 Failed, parameter update is required.

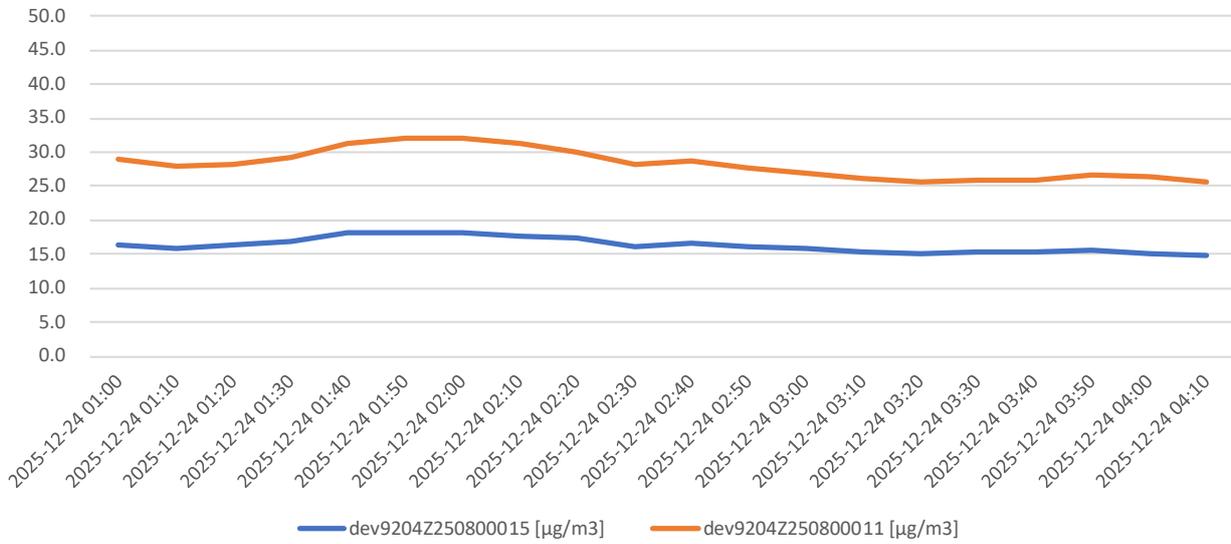
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	0.85	<input checked="" type="checkbox"/> PASS
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.98	<input checked="" type="checkbox"/> PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	6.5 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	0.4 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b><u>Deploy K factor</u></b>	<b>1.050</b>		

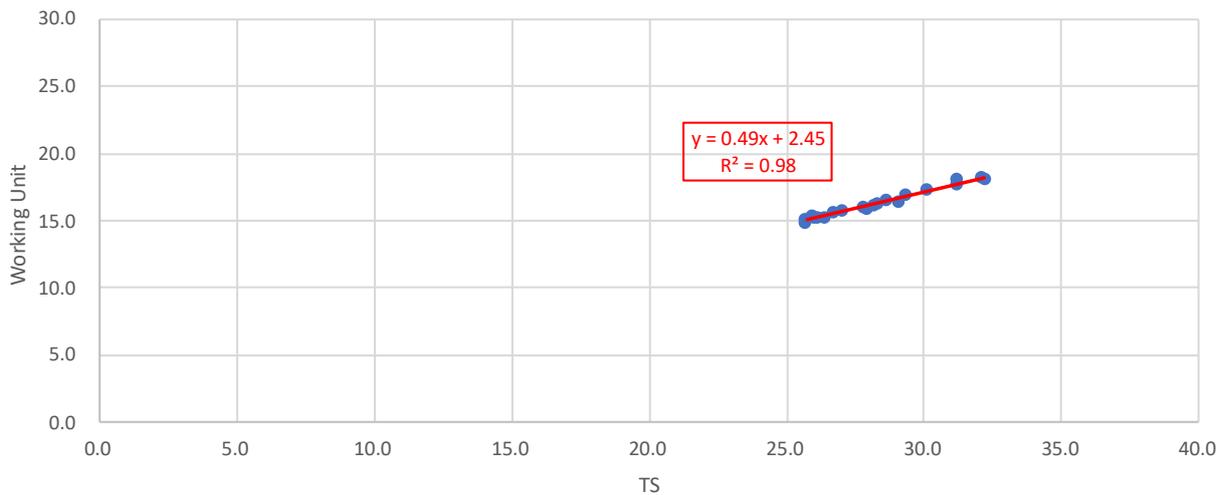
Remark: Follow QAQC Protocol Path 1 which is both Criteria Tier 1 and Tier 2 Passed.



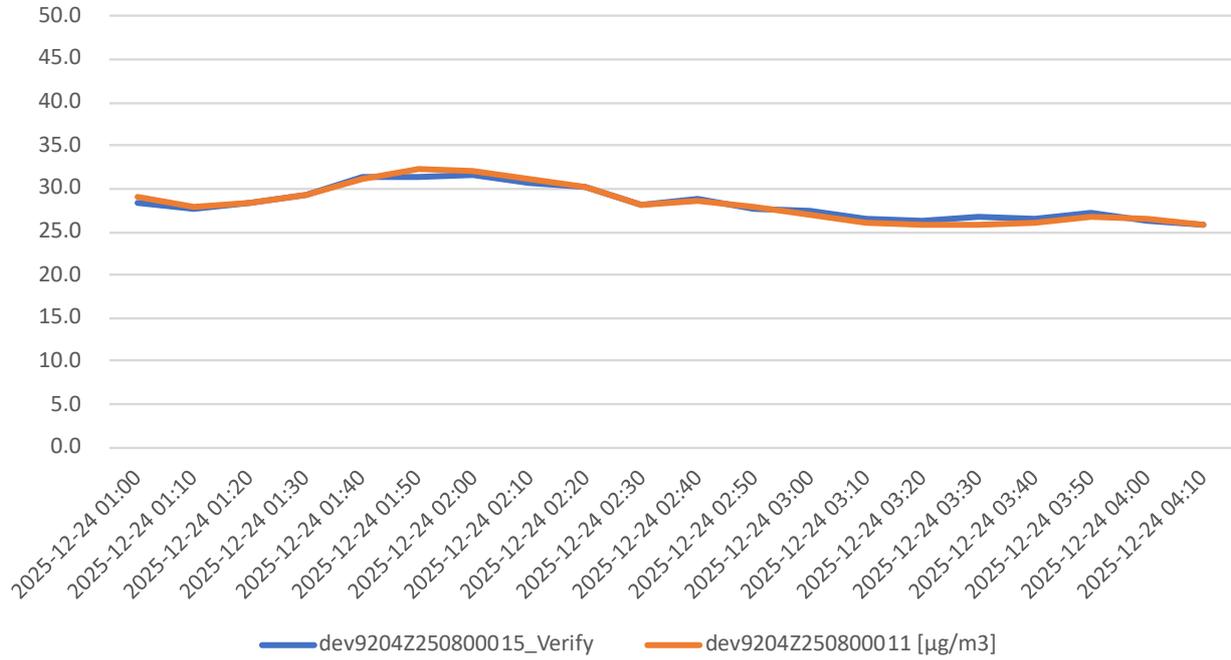
FSP Concentration - Before Parameter Update (2025-12-24)



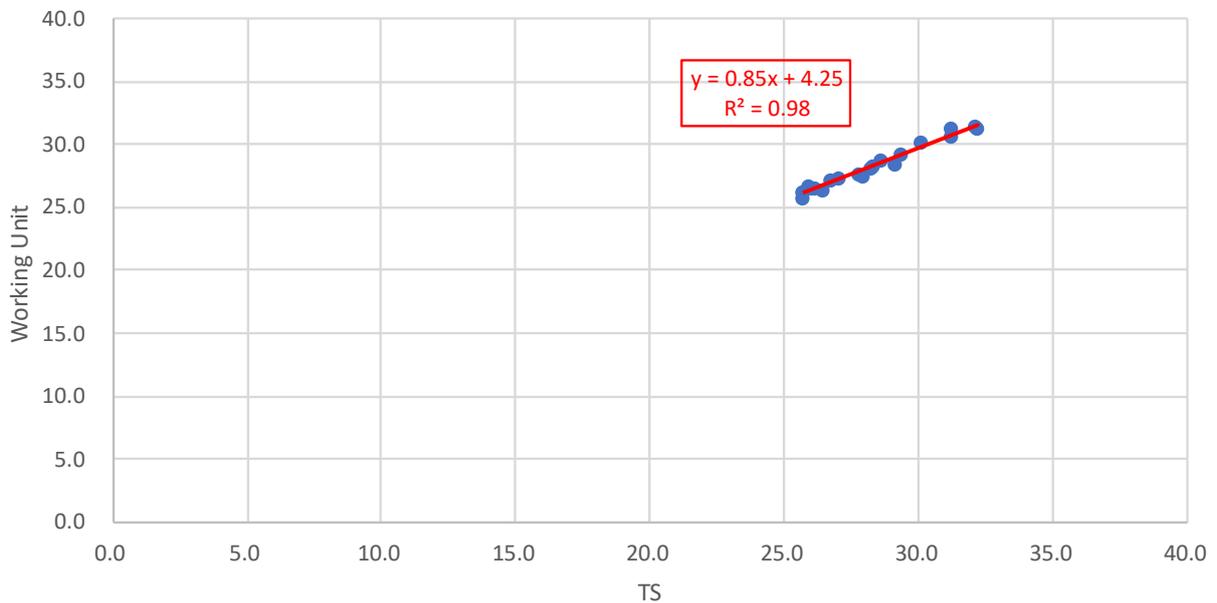
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



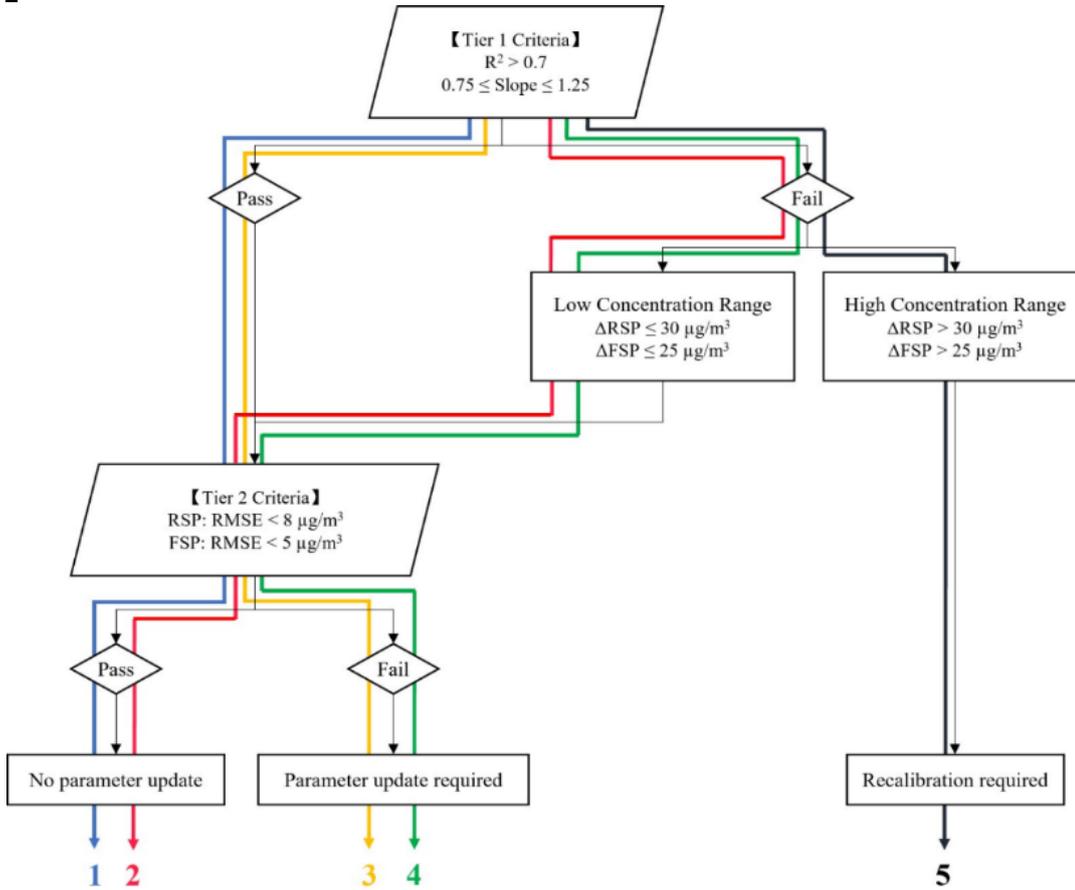
FSP Concentration - After Parameter Update (2025-12-24)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

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-Z16		
Product Model:	MAS Dust	Serial No.:	dev9204Z250800016
Issue Date:	2025-12-31		
Version	V4.0_20260114		

### Traceability of Calibration Instrument:

Test Item	Calibration Instrument
PM <sub>2.5</sub> (FSP) PM <sub>10</sub> (RSP)	Transfer Standard: dev9524Z250800012 Location: M13 Rolling Hill – Rooftop Area Collocation Data Period: 2025-12-24 01:00 to 2025-12-24 04:10

### Calibration Result:

#### RSP:

Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
Bias (Slope)	1.00±0.25	0.95	<input checked="" type="checkbox"/> PASS
Linearity (R <sup>2</sup> )	> 0.70	0.92	<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	4.7 µg/m <sup>3</sup>	Not applicable.
<b>Tier 2</b>			
Error (RMSE)	< 8 µg/m <sup>3</sup> for RSP	2.6 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
Current K factor	0.793		

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

#### FSP (Before parameter update):

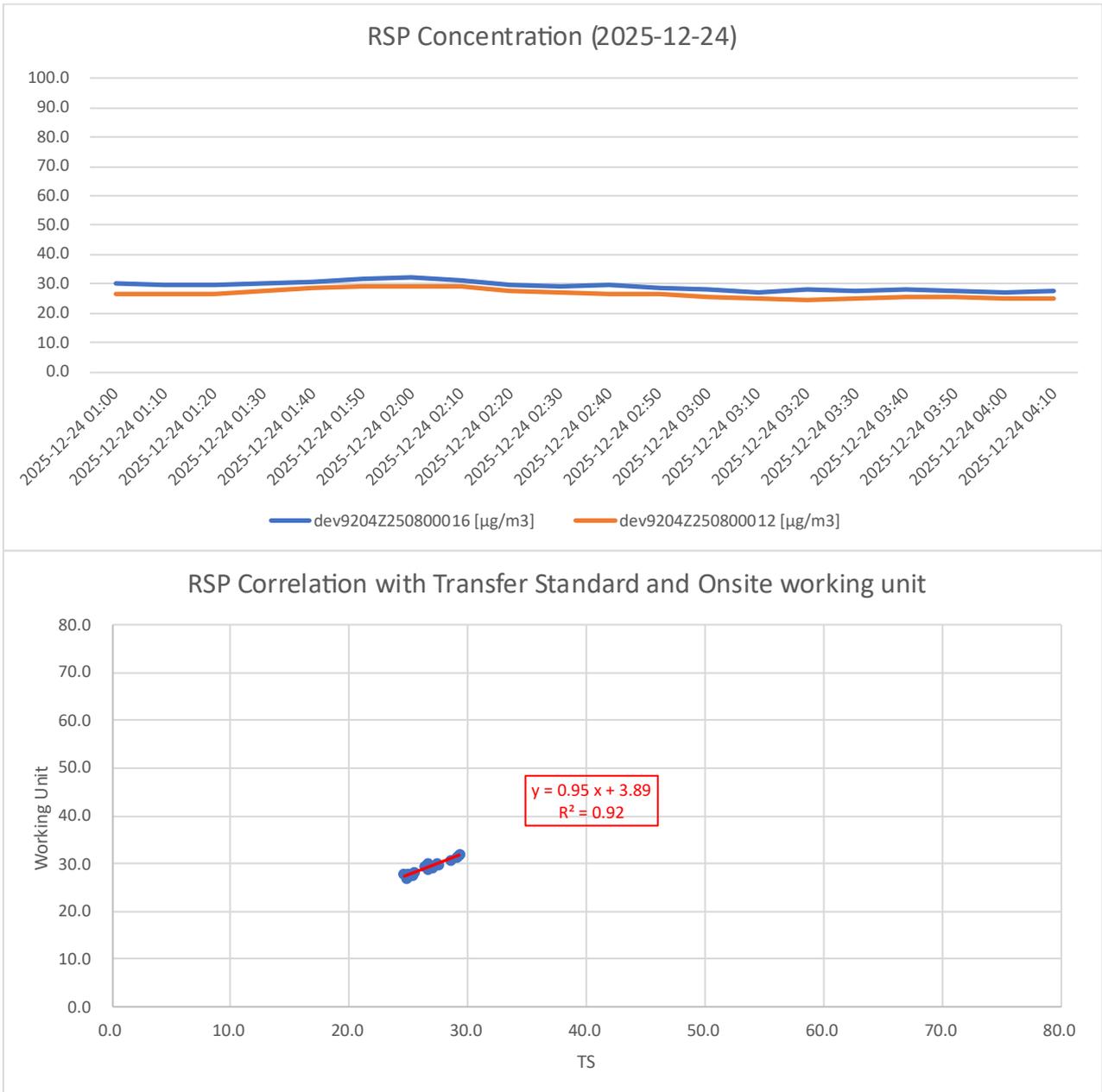
Performance Metric	Target Value	Actual Value	Result
<b>Tier 1</b>			
Bias (Slope)	1.00±0.25	0.52	<input checked="" type="checkbox"/> FAIL
Linearity (R <sup>2</sup> )	> 0.70	0.96	<input checked="" type="checkbox"/> PASS
If Tier 1 fails, Conc. Range will be checked	FSP ≤ 30 µg/m <sup>3</sup> is low conc. range	5.0 µg/m <sup>3</sup>	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
<b>Tier 2</b>			
Error (RMSE)	< 5 µg/m <sup>3</sup> for FSP	14.2 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> FAIL
Current K factor	0.620		

Remark: Follow QAQC Protocol Path 4 which is both Criteria Tier 1 and Tier 2 Failed, parameter update is required.

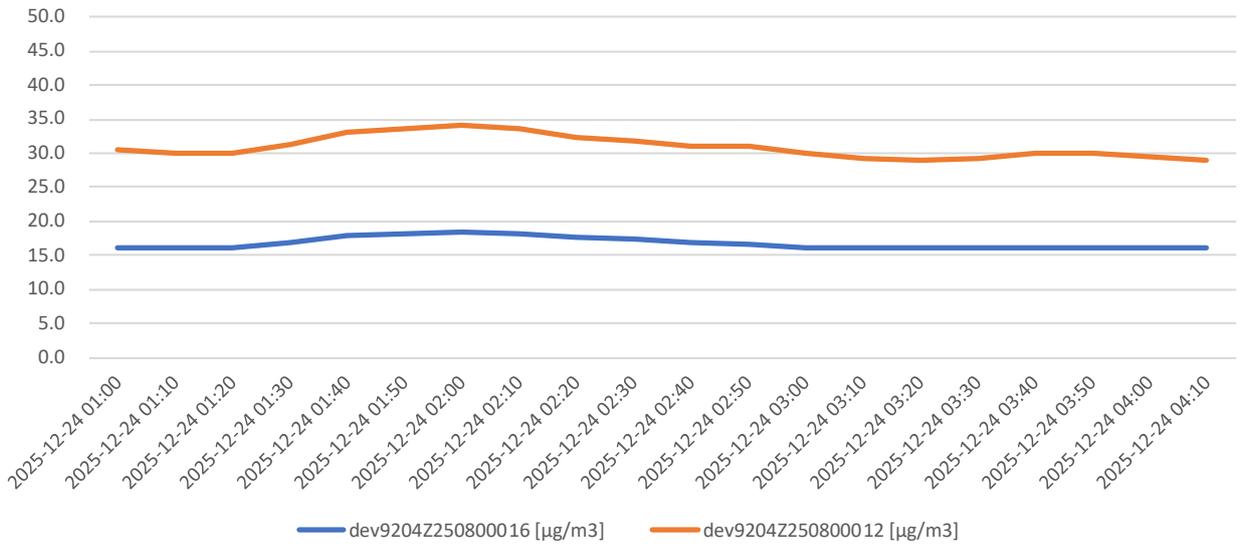
**FSP (After parameter update):**

Performance Metric	Target Value	Actual Value	Result
<b><u>Tier 1</u></b>			
<b>Bias (Slope)</b>	1.00±0.25	0.95	<input checked="" type="checkbox"/> PASS
<b>Linearity (R<sup>2</sup>)</b>	> 0.70	0.96	<input checked="" type="checkbox"/> PASS
<b>If Tier 1 fails, Conc. Range will be checked</b>	FSP ≤ 25 µg/m <sup>3</sup> is low conc. range	5.0 µg/m <sup>3</sup>	Not applicable.
<b><u>Tier 2</u></b>			
<b>Error (RMSE)</b>	< 5 µg/m <sup>3</sup> for FSP	0.3 µg/m <sup>3</sup>	<input checked="" type="checkbox"/> PASS
<b>Deploy K factor</b>	<b>1.145</b>		

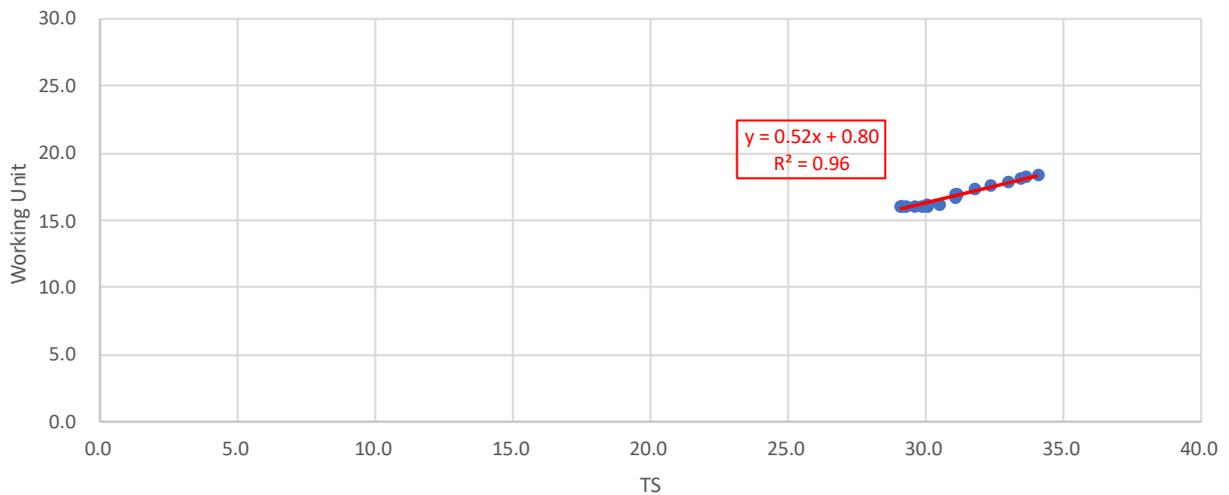
Remark: Follow QAQC Protocol Path 1 which is both Criteria Tier 1 and Tier 2 Passed.



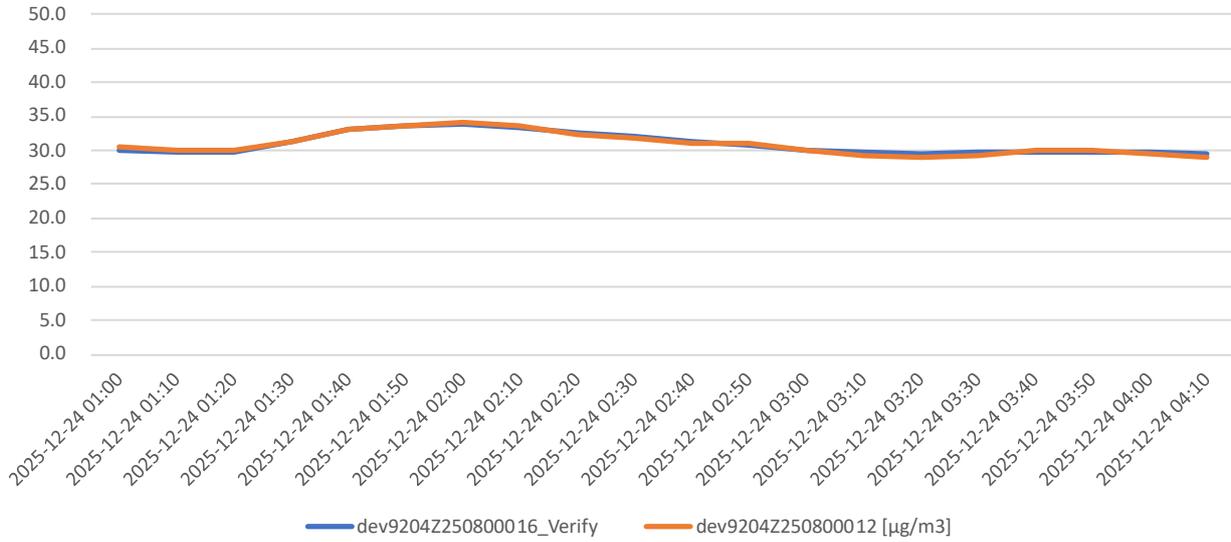
FSP Concentration - Before Parameter Update (2025-12-24)



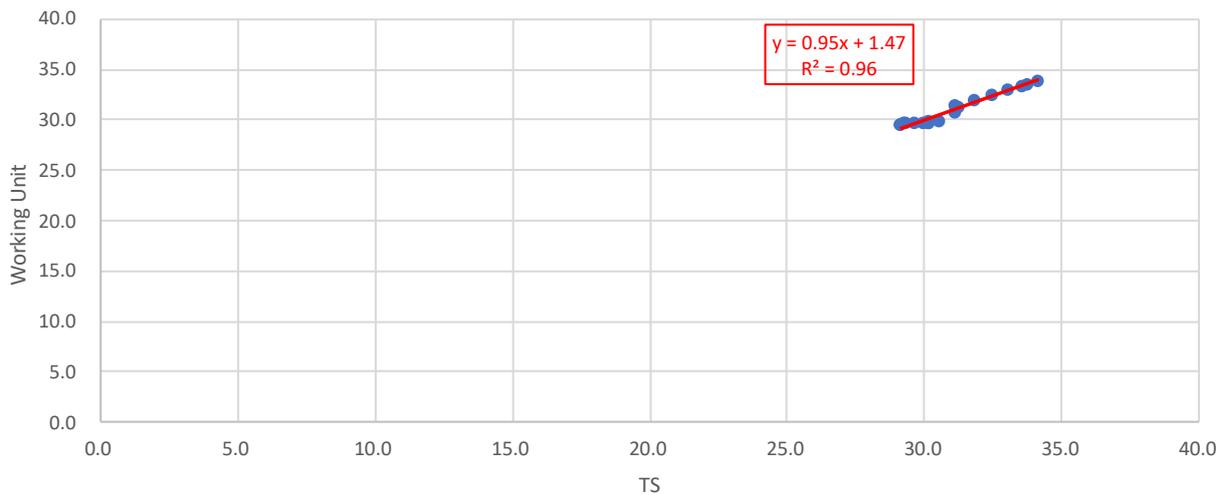
FSP Correlation with Transfer Standard and Onsite working unit (Before Parameter Update)



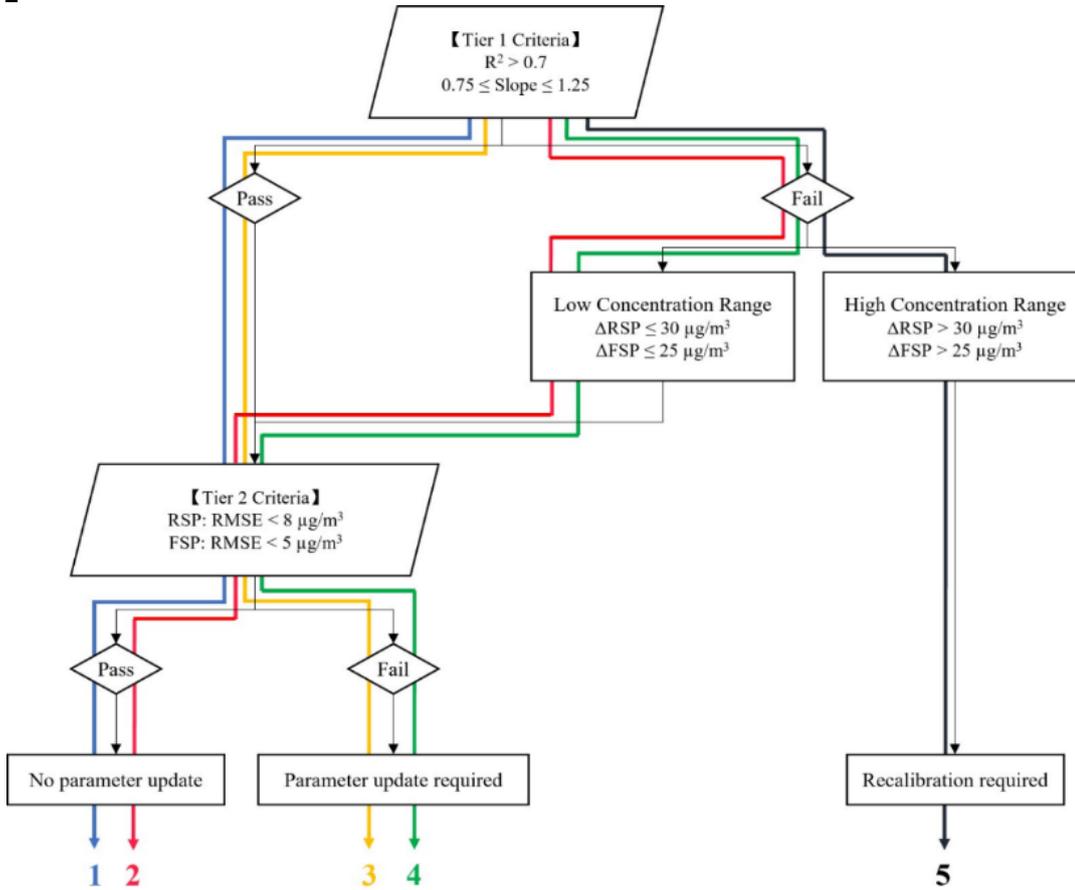
FSP Concentration - After Parameter Update (2025-12-24)



FSP Correlation with Transfer Standard and Onsite working unit (After Parameter Update)



**QAQC Protocol chart flow**



**Conclusion:**

The report approves that each calibrated item of the product meets its technical specifications.

Prepared by:	Yannis Qiu	Reviewed by:	George Zhang
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