ANNEX D1 CALIBRATION CERTIFICATES (ONSITE SENSORS)

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z16		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250800016
Issue Date:	2025-11-12		
Version	V3.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800011 Location: M13 Rolling Hill – Rooftop Area Collocation Data Period: 2025-10-24 06:40 to 2025-10-24 09:50

Calibration Result:

RSP:

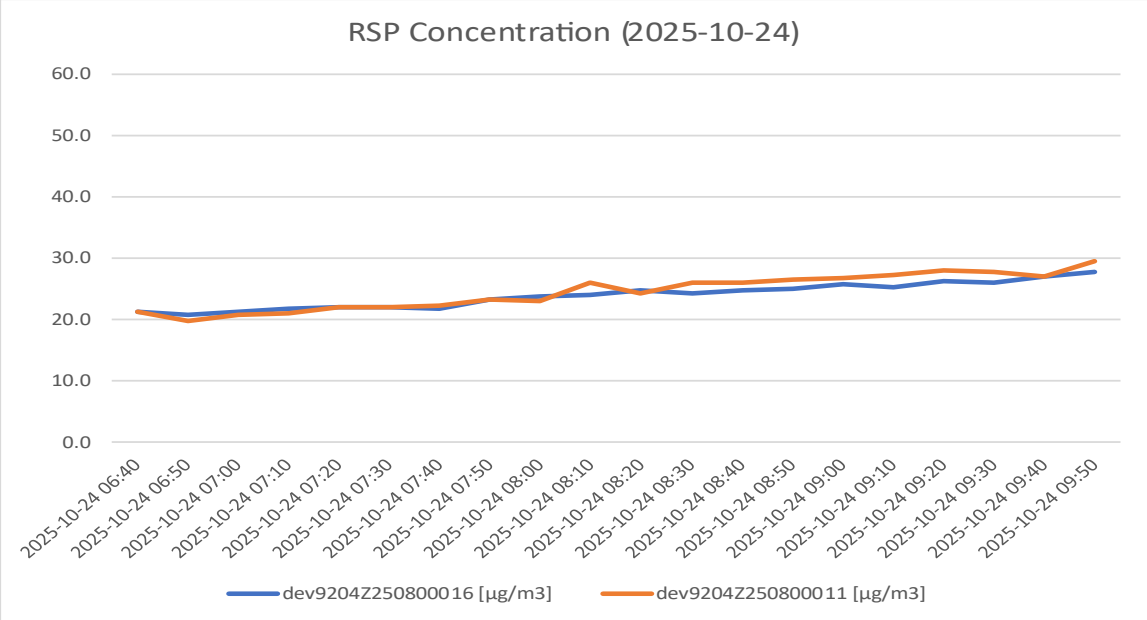
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.70	☒ FAIL
Linearity (R^2)	*> 0.70*	0.93	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	9.7 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	1.2 μg/m³	☑ PASS

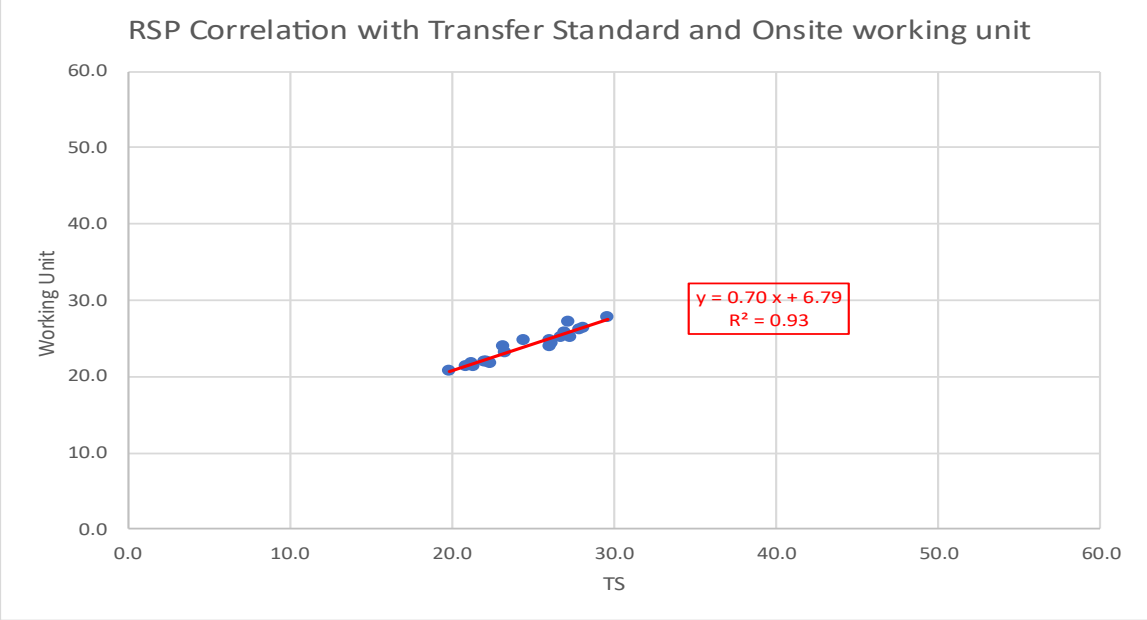
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

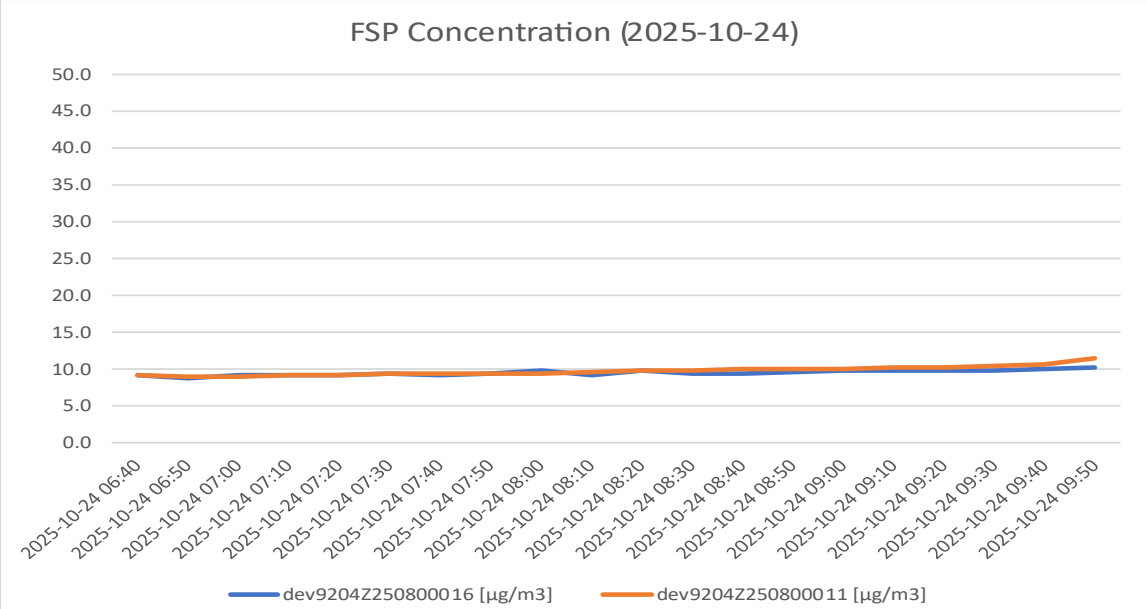
FSP:

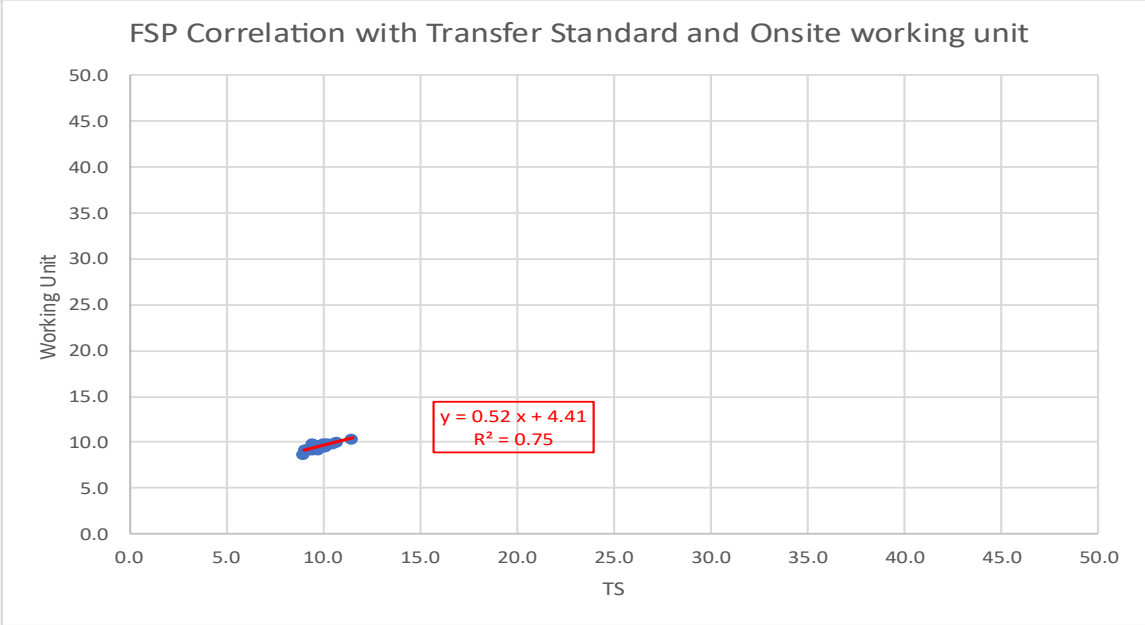
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.52	☒ FAIL
Linearity (R^2)	*> 0.70*	0.75	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	2.5 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	0.4 μg/m³	☑ PASS

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

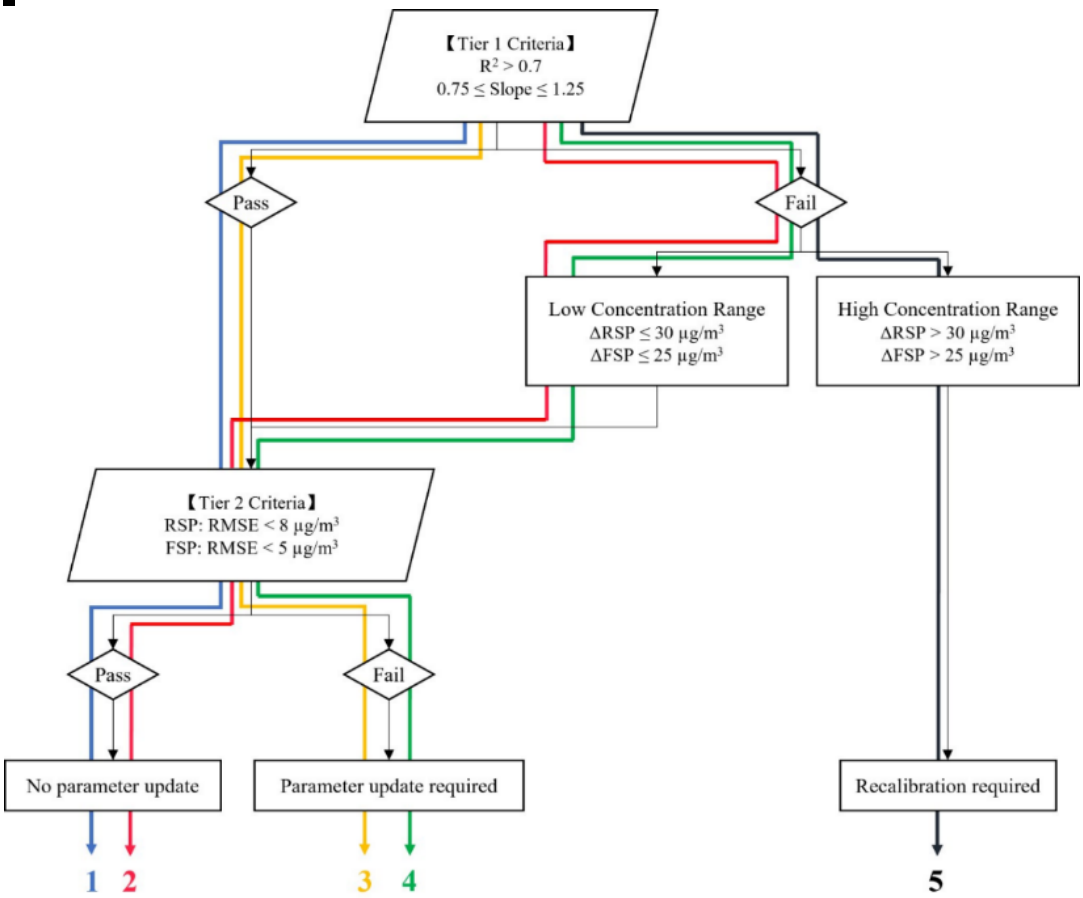

RSP Concentration (2025-10-24)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-10-24 06:40
2025-10-24 06:50
2025-10-24 07:00
2025-10-24 07:10
2025-10-24 07:20
2025-10-24 07:30
2025-10-24 07:40
2025-10-24 07:50
2025-10-24 08:00
2025-10-24 08:10
2025-10-24 08:20
2025-10-24 08:30
2025-10-24 08:40
2025-10-24 08:50
2025-10-24 09:00
2025-10-24 09:10
2025-10-24 09:20
2025-10-24 09:30
2025-10-24 09:40
2025-10-24 09:50
dev9204Z250800016 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.70 x + 6.79
R² = 0.93
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0


FSP Concentration (2025-10-24)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-10-24 06:40
2025-10-24 06:50
2025-10-24 07:00
2025-10-24 07:10
2025-10-24 07:20
2025-10-24 07:30
2025-10-24 07:40
2025-10-24 07:50
2025-10-24 08:00
2025-10-24 08:10
2025-10-24 08:20
2025-10-24 08:30
2025-10-24 08:40
2025-10-24 08:50
2025-10-24 09:00
2025-10-24 09:10
2025-10-24 09:20
2025-10-24 09:30
2025-10-24 09:40
2025-10-24 09:50
dev9204Z250800016 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.52 x + 4.41
R² = 0.75
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z15		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250800015
Issue Date:	2025-11-12		
Version	V3.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800012 Location: M14 Rolling Hill – Outside of Rolling Hill Collocation Data Period: 2025-10-24 06:40 to 2025-10-24 09:50

Calibration Result:

RSP:

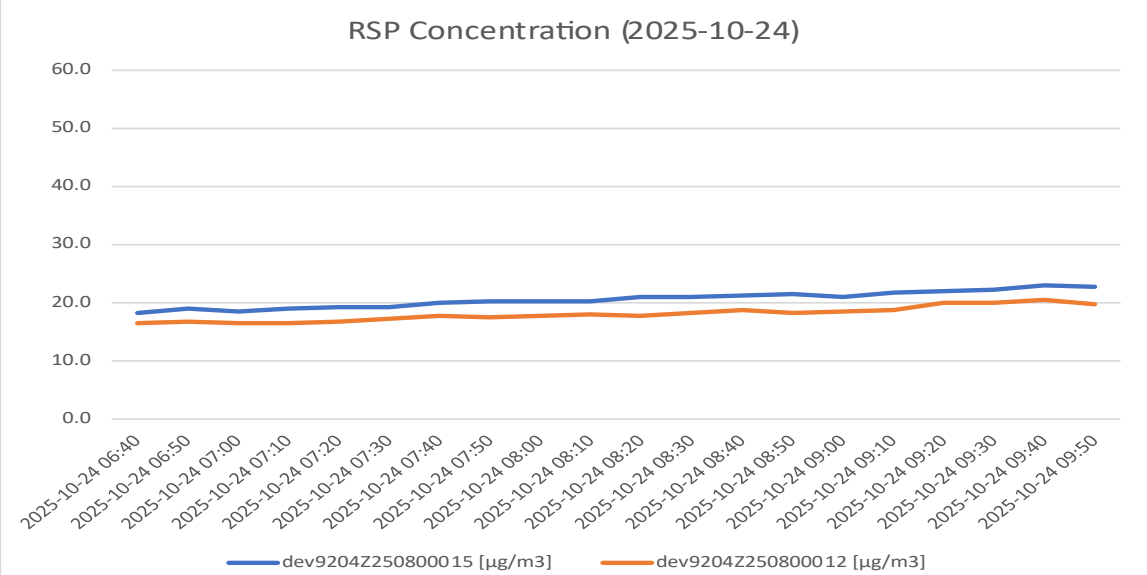
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.09	☑ PASS
Linearity (R^2)	*> 0.70*	0.93	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	4.0 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	2.5 μg/m³	☑ PASS

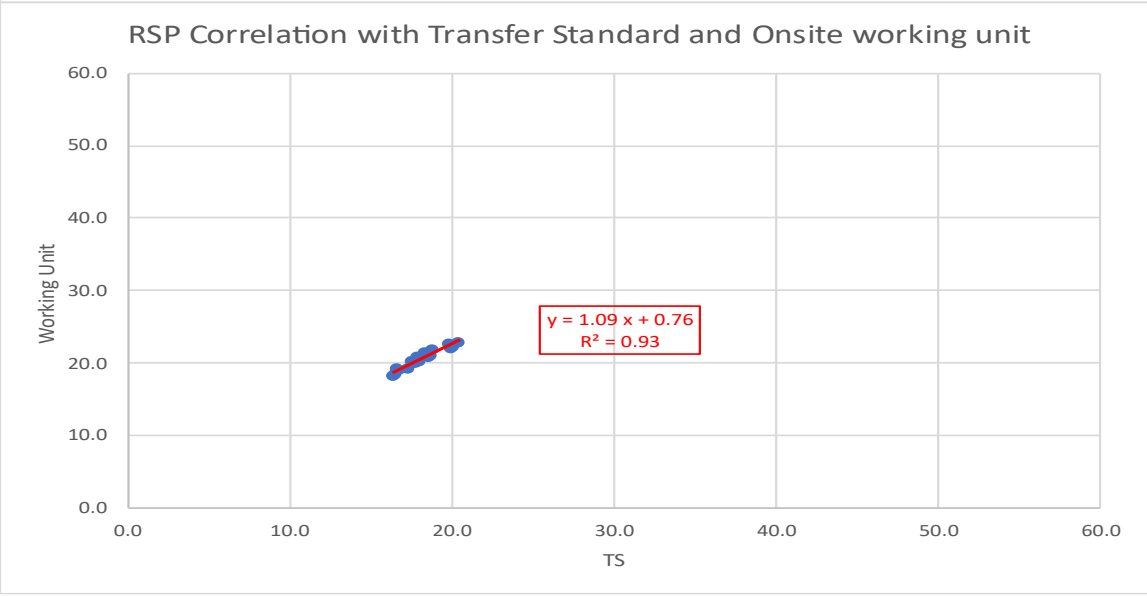
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

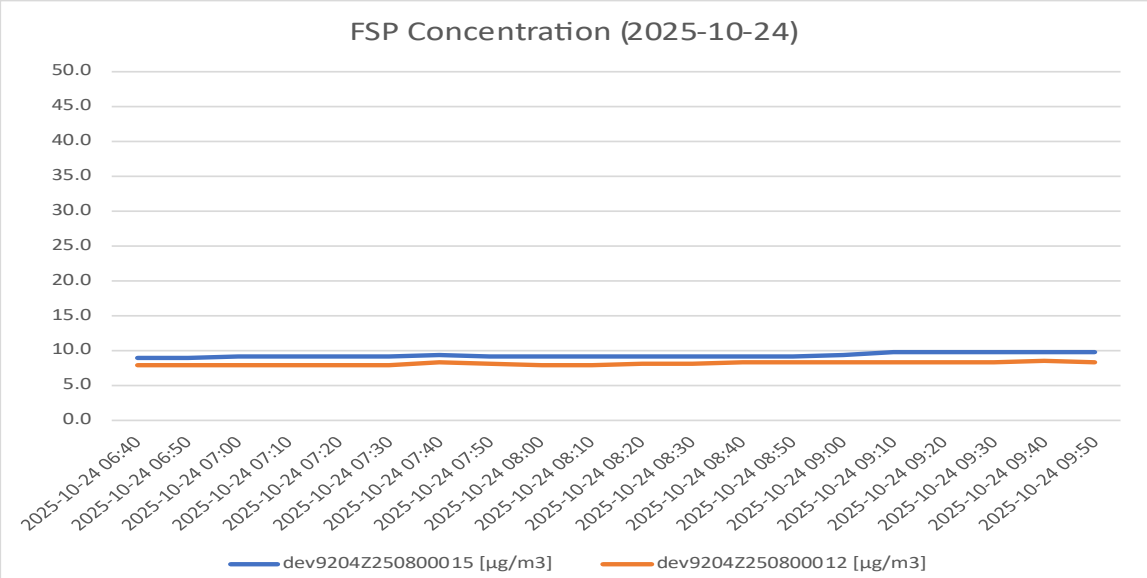
FSP:

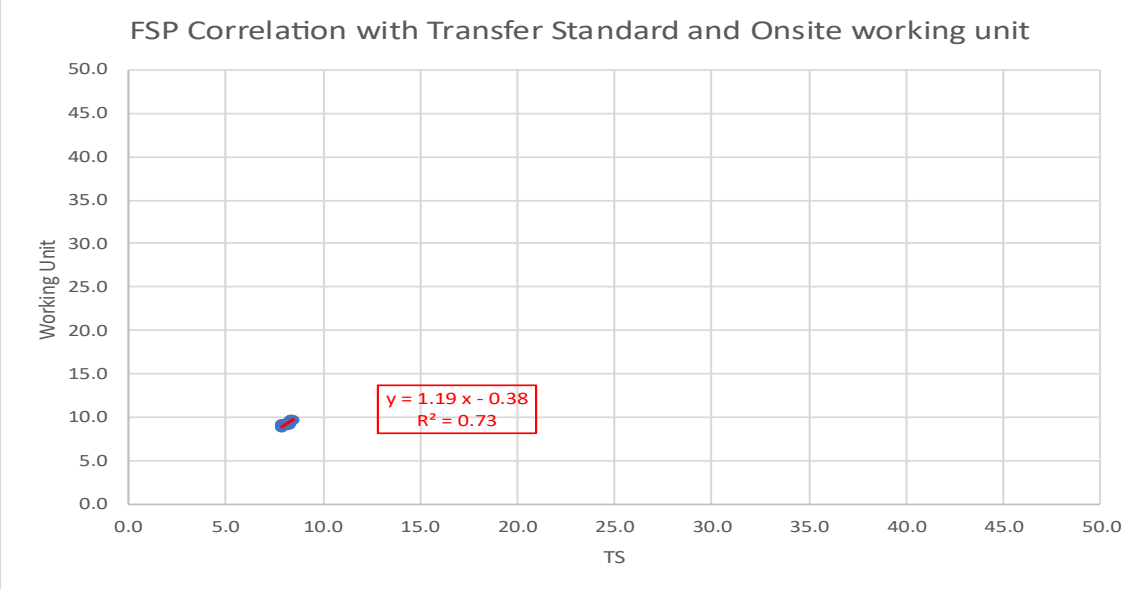
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.19	☑ PASS
Linearity (R^2)	*> 0.70*	0.73	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	0.6 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	1.2 μg/m³	☑ PASS

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

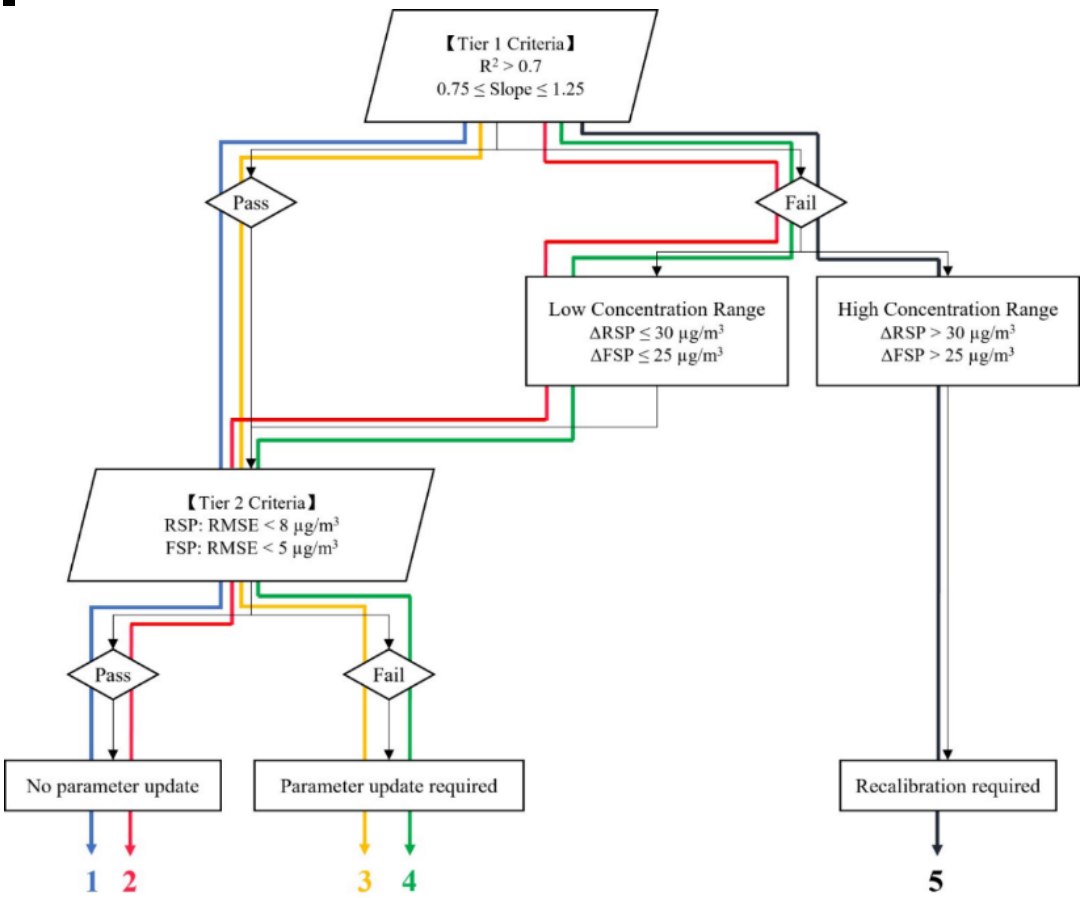

RSP Concentration (2025-10-24)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-10-24 06:40
2025-10-24 06:50
2025-10-24 07:00
2025-10-24 07:10
2025-10-24 07:20
2025-10-24 07:30
2025-10-24 07:40
2025-10-24 07:50
2025-10-24 08:00
2025-10-24 08:10
2025-10-24 08:20
2025-10-24 08:30
2025-10-24 08:40
2025-10-24 08:50
2025-10-24 09:00
2025-10-24 09:10
2025-10-24 09:20
2025-10-24 09:30
2025-10-24 09:40
2025-10-24 09:50
dev9204Z250800015 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.09 x + 0.76
R² = 0.93
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0


FSP Concentration (2025-10-24)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-10-24 06:40
2025-10-24 06:50
2025-10-24 07:00
2025-10-24 07:10
2025-10-24 07:20
2025-10-24 07:30
2025-10-24 07:40
2025-10-24 07:50
2025-10-24 08:00
2025-10-24 08:10
2025-10-24 08:20
2025-10-24 08:30
2025-10-24 08:40
2025-10-24 08:50
2025-10-24 09:00
2025-10-24 09:10
2025-10-24 09:20
2025-10-24 09:30
2025-10-24 09:40
2025-10-24 09:50
dev9204Z250800015 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.19 x - 0.38
R² = 0.73
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z13		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250800013
Issue Date:	2025-11-12		
Version	V3.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800012 Location: M11 Shek Wu Wai Collocation Data Period: 2025-10-24 12:10 to 2025-10-24 15:20

Calibration Result:

RSP:

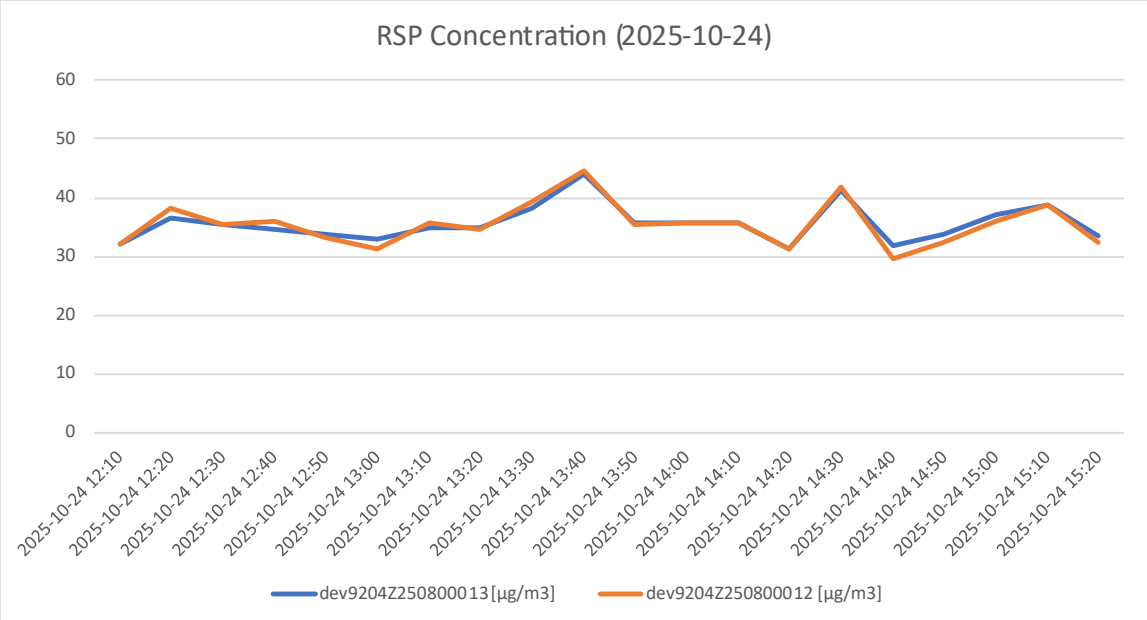
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.82	☑ PASS
Linearity (R^2)	*> 0.70*	0.94	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	15.0 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	1.0 μg/m³	☑ PASS

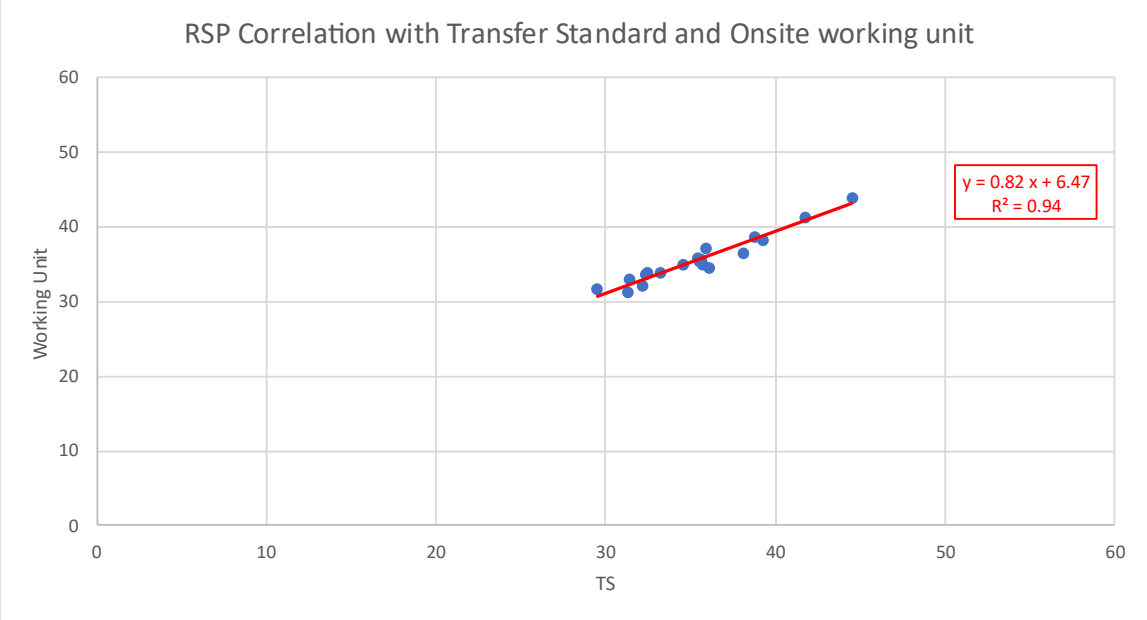
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

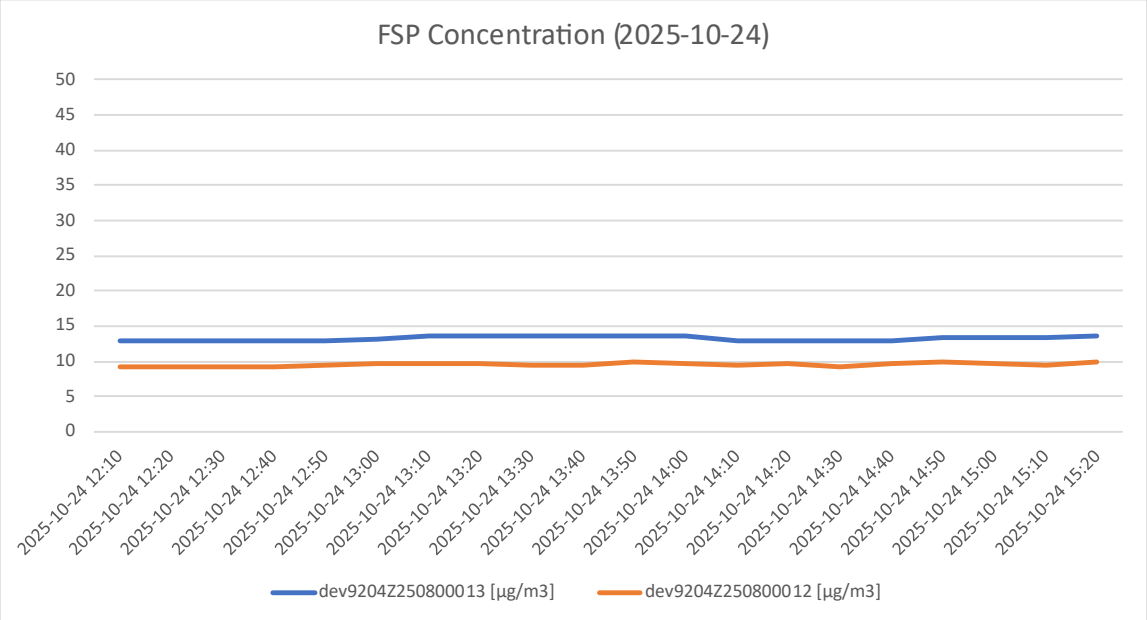
FSP:

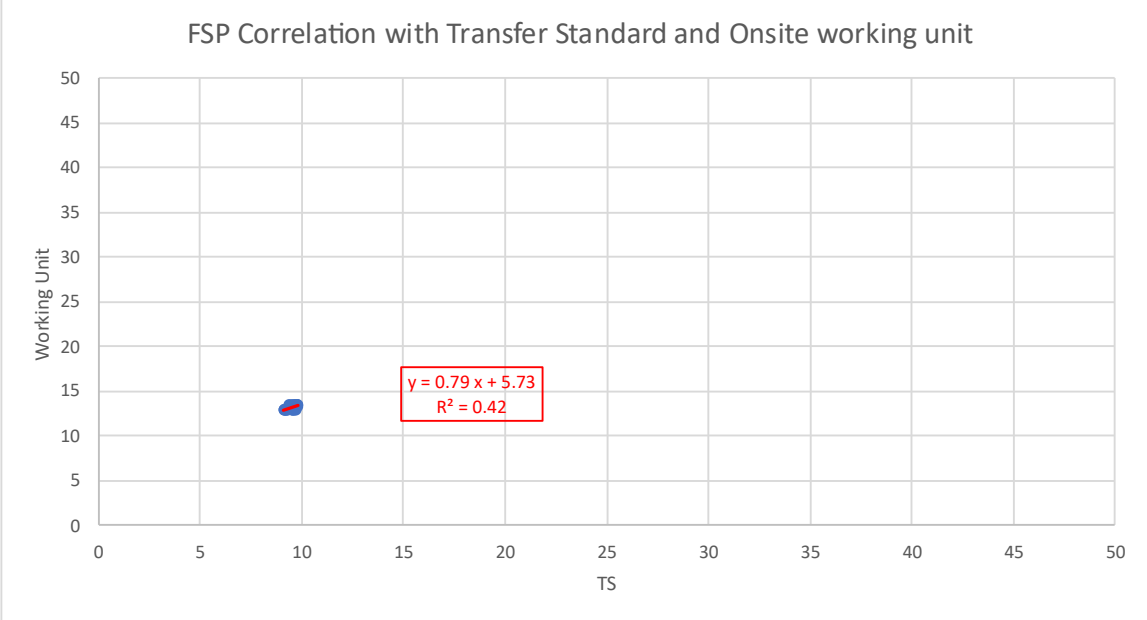
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.79	☑ PASS
Linearity (R^2)	*> 0.70*	0.42	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	0.7 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	3.7 μg/m³	☑ PASS

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

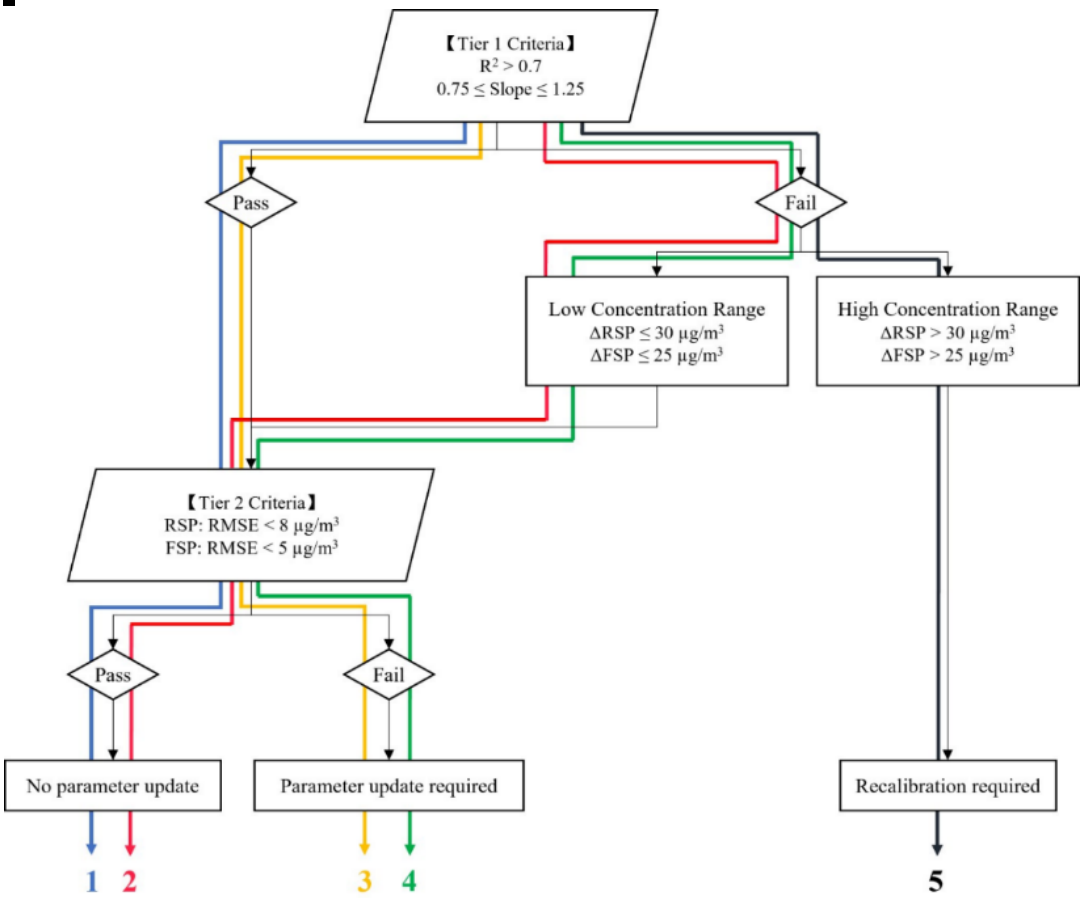

RSP Concentration (2025-10-24)
60
50
40
30
20
10
0
2025-10-24 12:10
2025-10-24 12:20
2025-10-24 12:30
2025-10-24 12:40
2025-10-24 12:50
2025-10-24 13:00
2025-10-24 13:10
2025-10-24 13:20
2025-10-24 13:30
2025-10-24 13:40
2025-10-24 13:50
2025-10-24 14:00
2025-10-24 14:10
2025-10-24 14:20
2025-10-24 14:30
2025-10-24 14:40
2025-10-24 14:50
2025-10-24 15:00
2025-10-24 15:10
2025-10-24 15:20
dev9204Z250800013 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.82 x + 6.47
R² = 0.94
0
10
20
30
40
50
60


FSP Concentration (2025-10-24)
50
45
40
35
30
25
20
15
10
5
0
2025-10-24 12:10
2025-10-24 12:20
2025-10-24 12:30
2025-10-24 12:40
2025-10-24 12:50
2025-10-24 13:00
2025-10-24 13:10
2025-10-24 13:20
2025-10-24 13:30
2025-10-24 13:40
2025-10-24 13:50
2025-10-24 14:00
2025-10-24 14:10
2025-10-24 14:20
2025-10-24 14:30
2025-10-24 14:40
2025-10-24 14:50
2025-10-24 15:00
2025-10-24 15:10
2025-10-24 15:20
dev9204Z250800013 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.79 x + 5.73
R² = 0.42
0
5
10
15
20
25
30
35
40
45
50

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z14		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250800014
Issue Date:	2025-11-12		
Version	V2.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800011 Location: M06 Mai Po San Tsuen Collocation Data Period: 2025-10-24 12:10 to 2025-10-24 15:20

Calibration Result:

RSP:

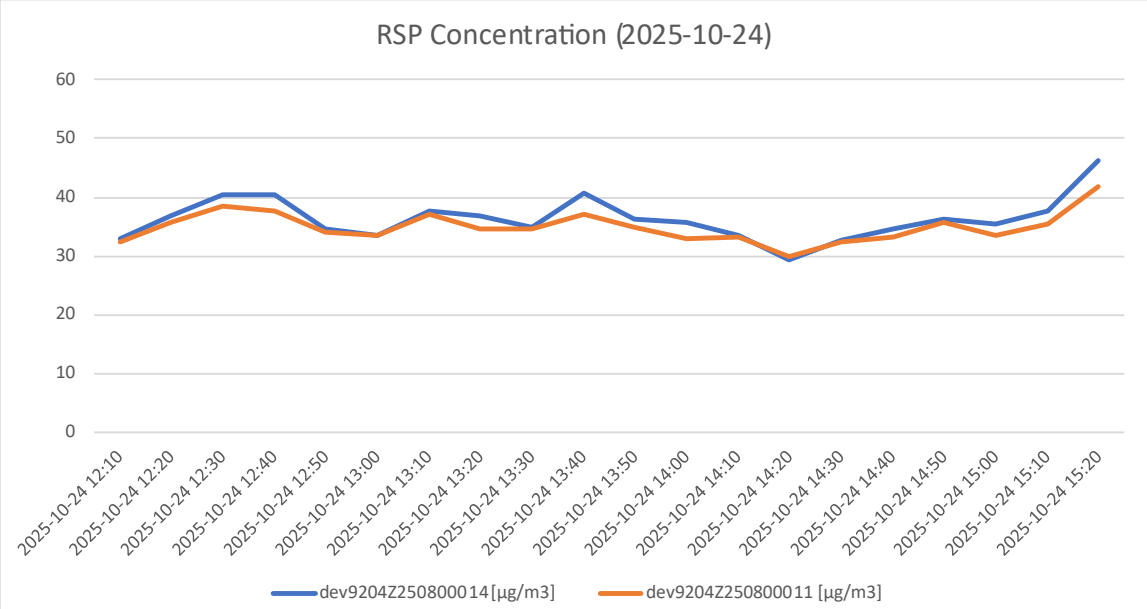
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.34	☒ FAIL
Linearity (R^2)	*> 0.70*	0.93	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	11.8 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	1.9 μg/m³	☑ PASS

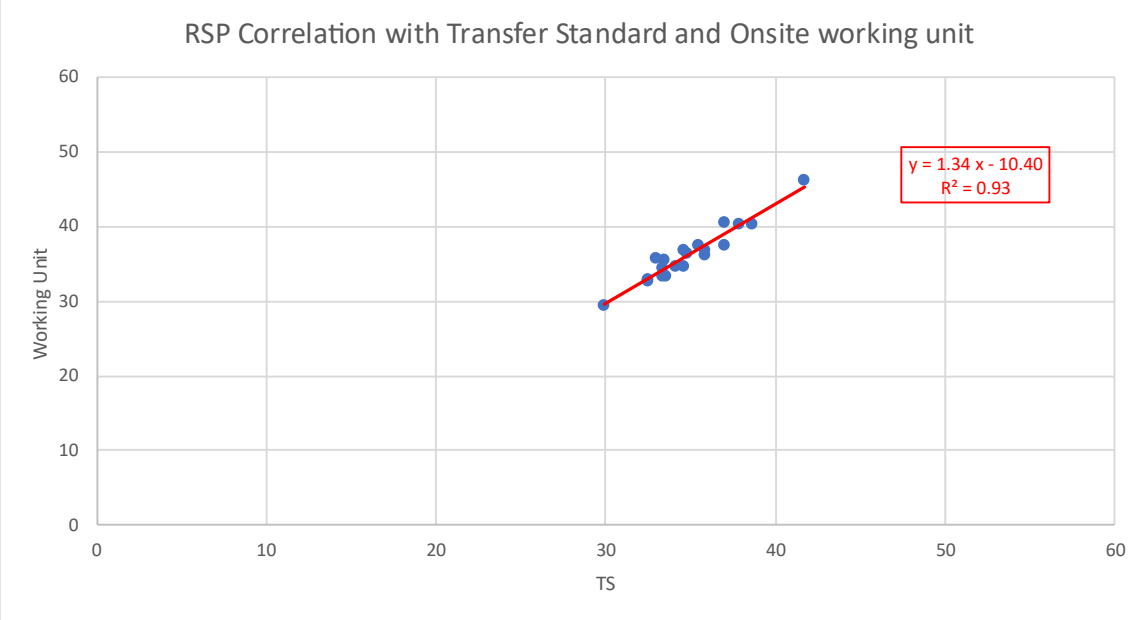
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

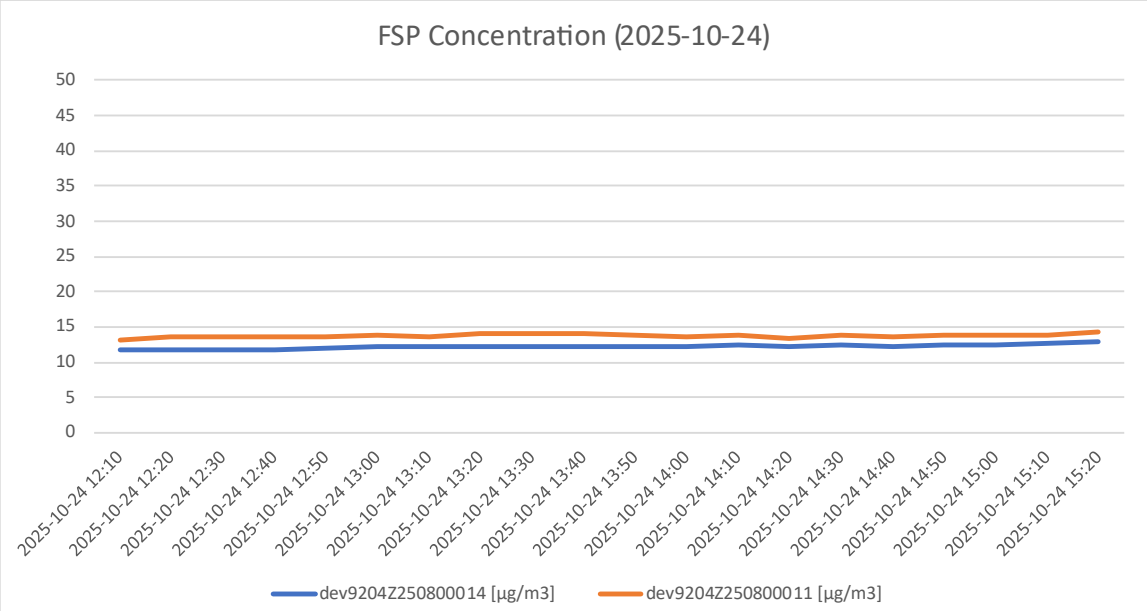
FSP:

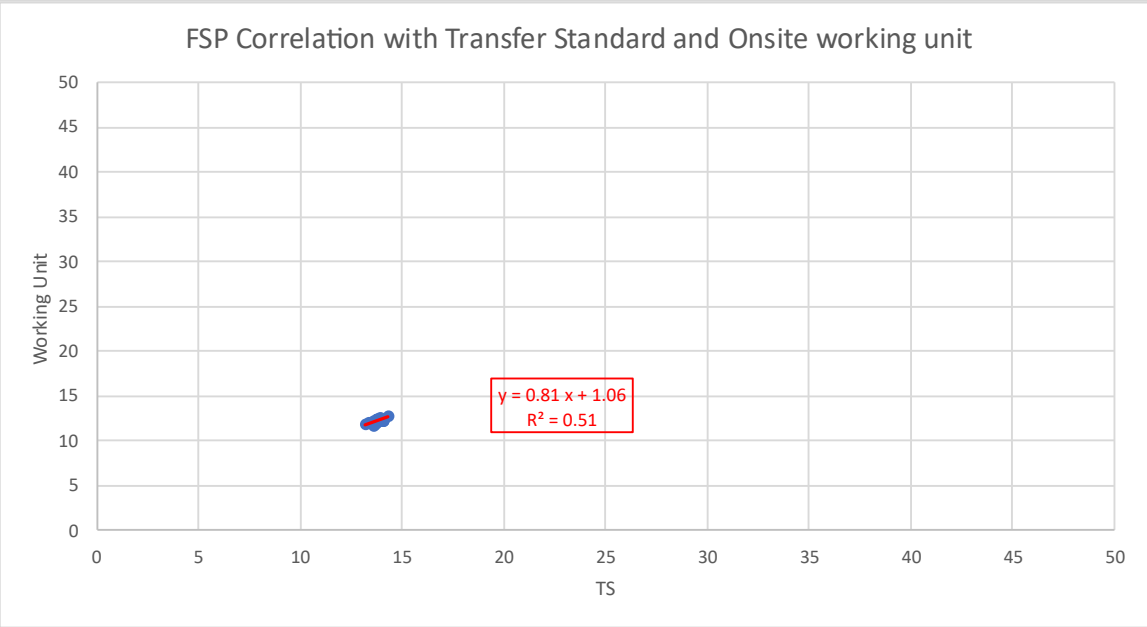
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.81	☑ PASS
Linearity (R^2)	*> 0.70*	0.51	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	1.1 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	1.6 μg/m³	☑ PASS

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

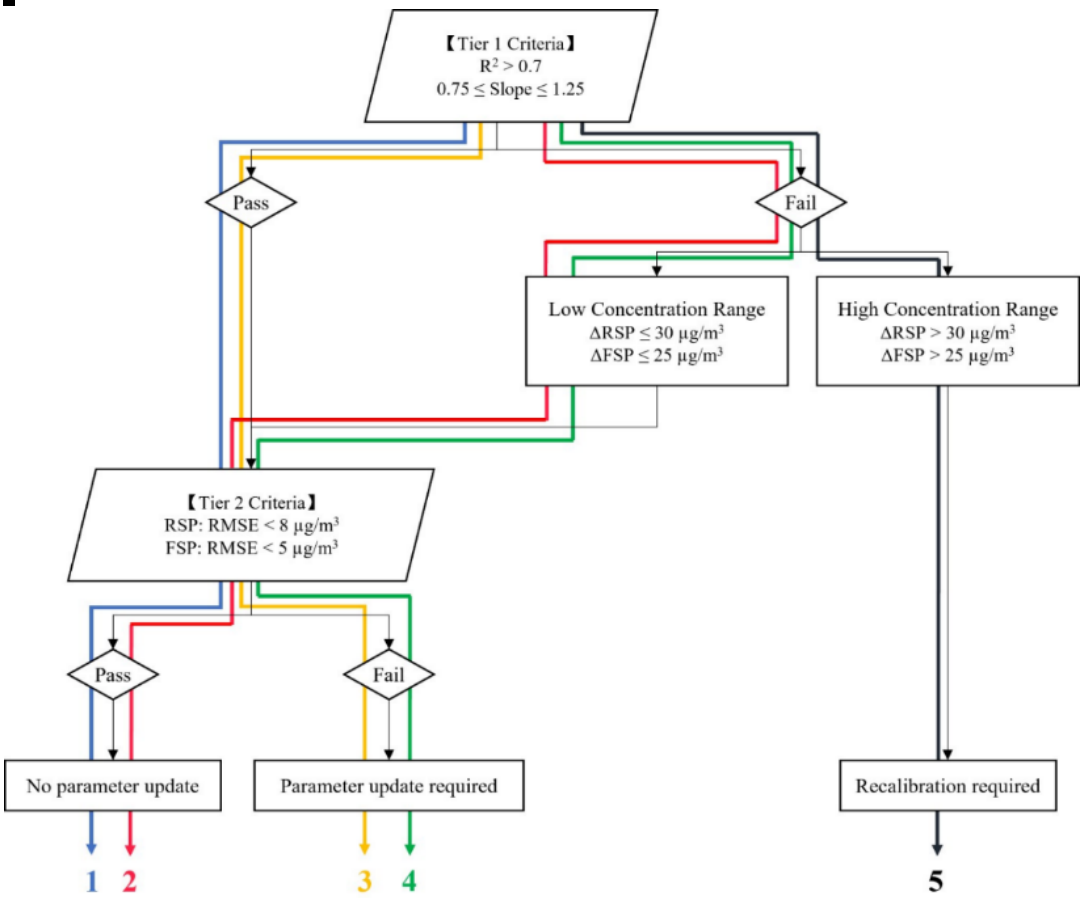

RSP Concentration (2025-10-24)
60
50
40
30
20
10
0
2025-10-24 12:10
2025-10-24 12:20
2025-10-24 12:30
2025-10-24 12:40
2025-10-24 12:50
2025-10-24 13:00
2025-10-24 13:10
2025-10-24 13:20
2025-10-24 13:30
2025-10-24 13:40
2025-10-24 13:50
2025-10-24 14:00
2025-10-24 14:10
2025-10-24 14:20
2025-10-24 14:30
2025-10-24 14:40
2025-10-24 14:50
2025-10-24 15:00
2025-10-24 15:10
2025-10-24 15:20
dev9204Z250800014 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.34 x - 10.40
R² = 0.93
0
10
20
30
40
50
60


FSP Concentration (2025-10-24)
50
45
40
35
30
25
20
15
10
5
0
2025-10-24 12:10
2025-10-24 12:20
2025-10-24 12:30
2025-10-24 12:40
2025-10-24 12:50
2025-10-24 13:00
2025-10-24 13:10
2025-10-24 13:20
2025-10-24 13:30
2025-10-24 13:40
2025-10-24 13:50
2025-10-24 14:00
2025-10-24 14:10
2025-10-24 14:20
2025-10-24 14:30
2025-10-24 14:40
2025-10-24 14:50
2025-10-24 15:00
2025-10-24 15:10
2025-10-24 15:20
dev9204Z250800014 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.81 x + 1.06
R² = 0.51
0
5
10
15
20
25
30
35
40
45
50

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z19		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250900019
Issue Date:	2025-11-12		
Version	V2.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800011 Location: M15a The STEP Collocation Data Period: 2025-10-17 12:40 to 2025-10-17 15:50

Calibration Result:

RSP:

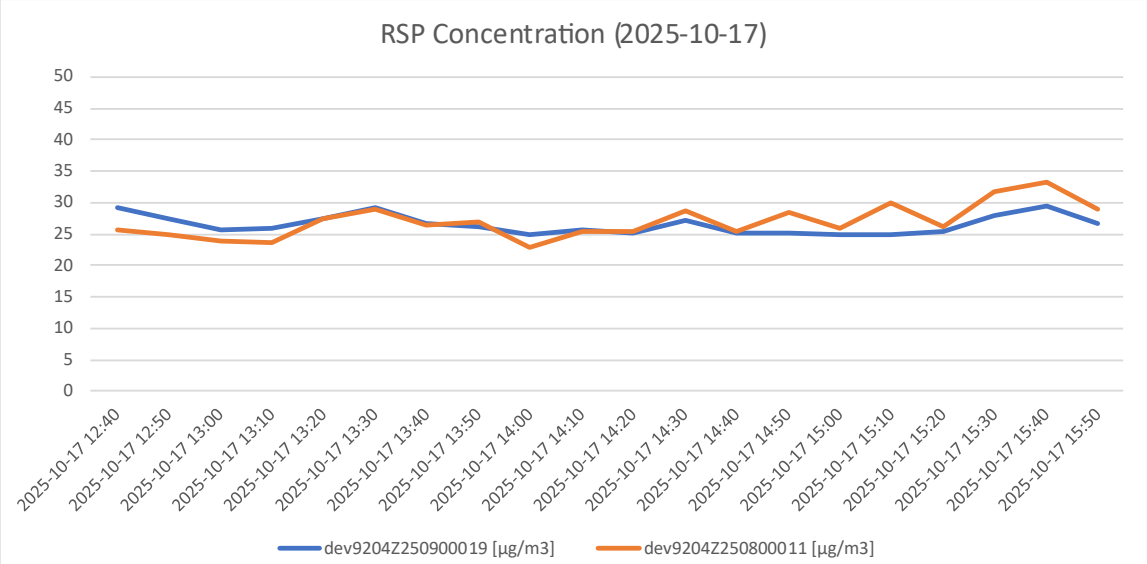
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.30	☒ FAIL
Linearity (R^2)	*> 0.70*	0.28	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	10.3 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	2.3 μg/m³	☑ PASS

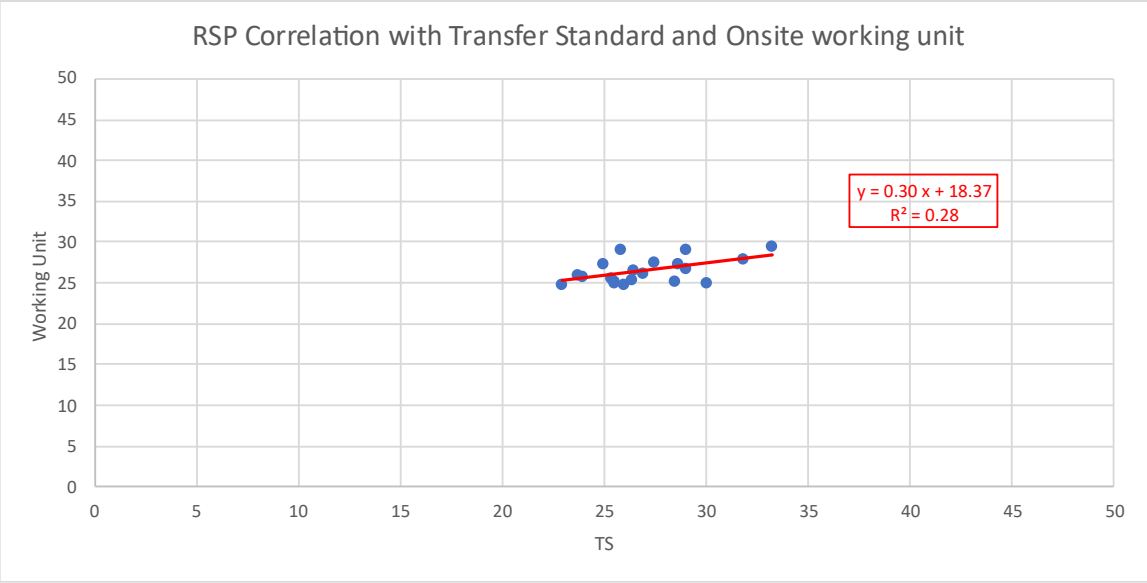
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

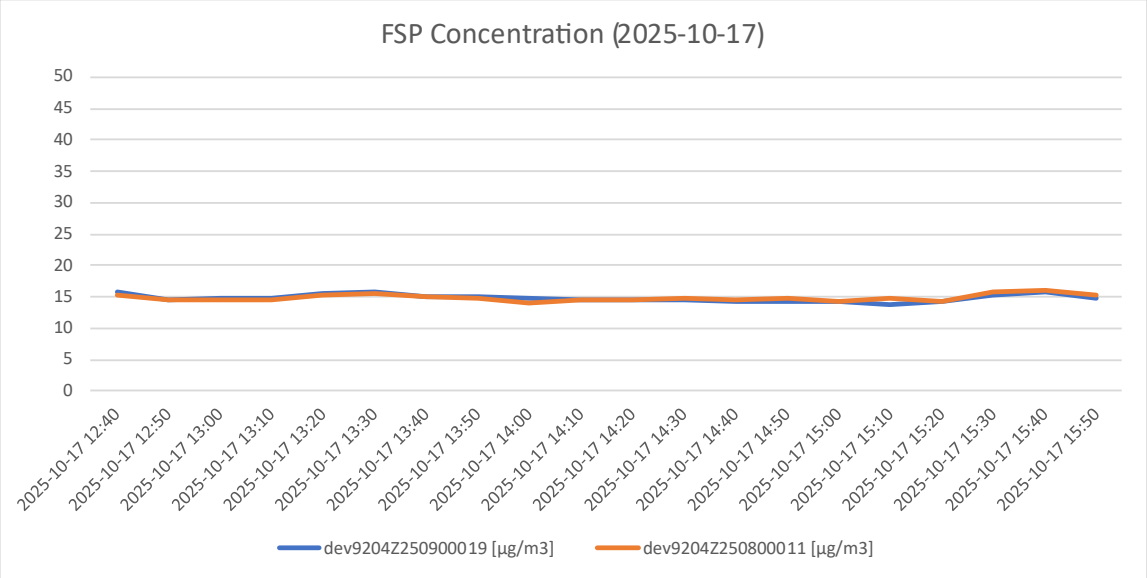
FSP:

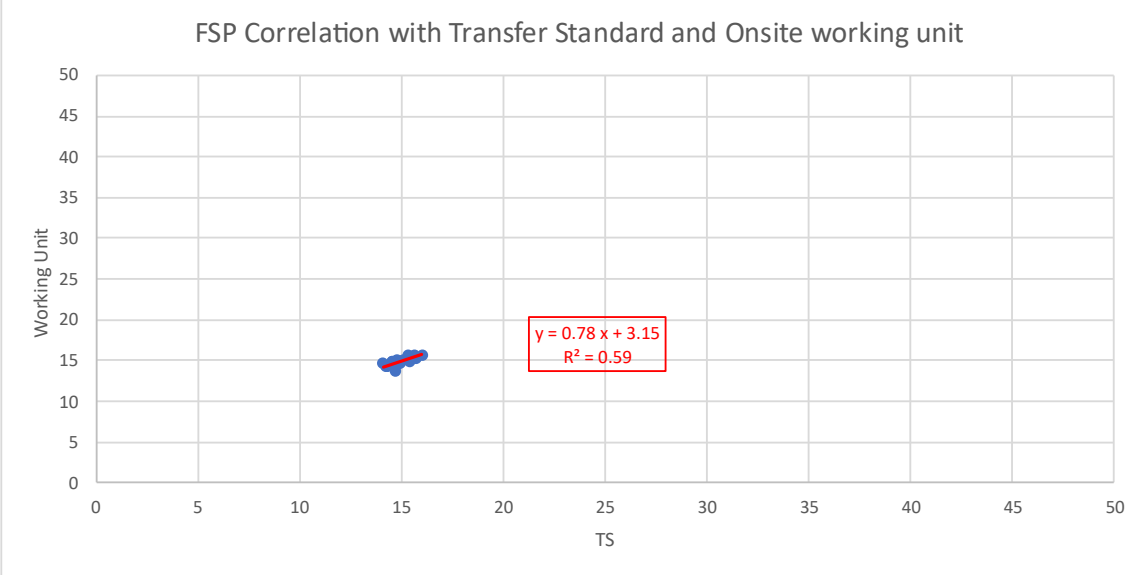
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.78	☑ PASS
Linearity (R^2)	*> 0.70*	0.59	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	1.9 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	0.4 μg/m³	☑ PASS

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

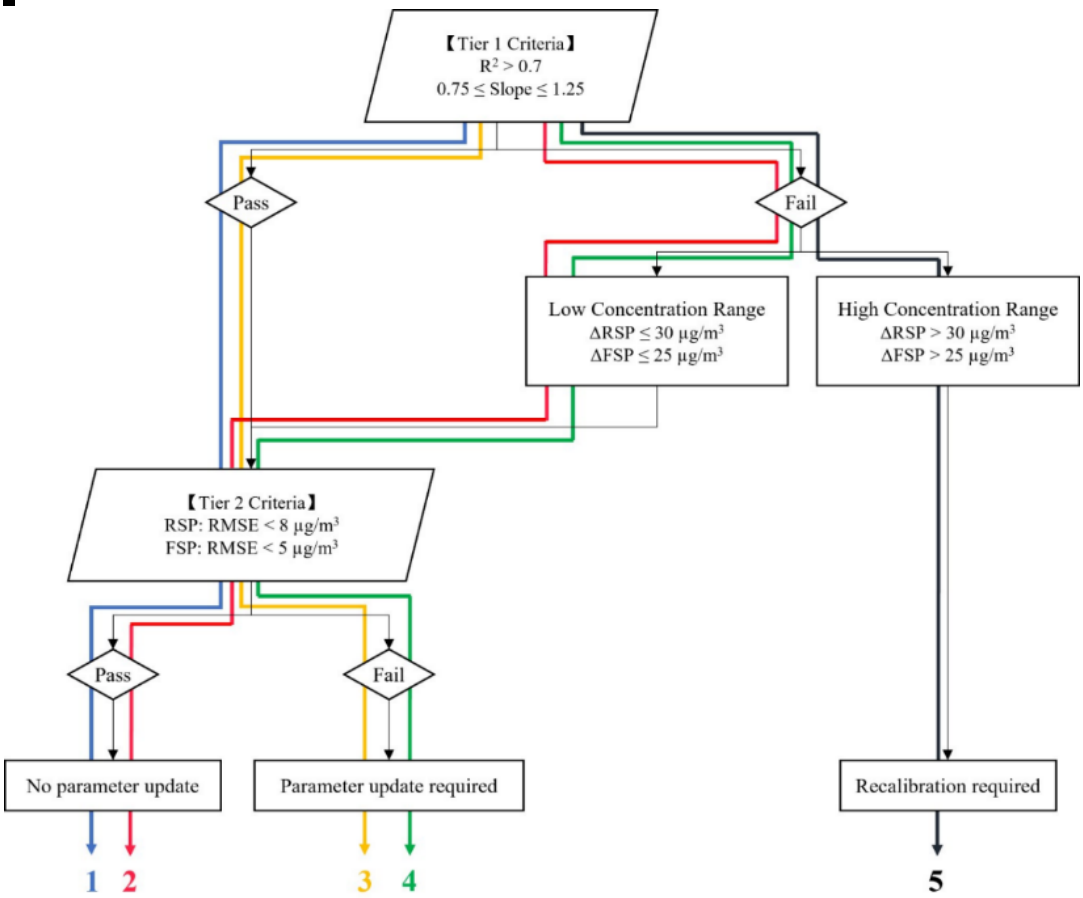

RSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 12:40
2025-10-17 12:50
2025-10-17 13:00
2025-10-17 13:10
2025-10-17 13:20
2025-10-17 13:30
2025-10-17 13:40
2025-10-17 13:50
2025-10-17 14:00
2025-10-17 14:10
2025-10-17 14:20
2025-10-17 14:30
2025-10-17 14:40
2025-10-17 14:50
2025-10-17 15:00
2025-10-17 15:10
2025-10-17 15:20
2025-10-17 15:30
2025-10-17 15:40
2025-10-17 15:50
dev9204Z250900019 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.30 x + 18.37
R² = 0.28
0
5
10
15
20
25
30
35
40
45
50


FSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 12:40
2025-10-17 12:50
2025-10-17 13:00
2025-10-17 13:10
2025-10-17 13:20
2025-10-17 13:30
2025-10-17 13:40
2025-10-17 13:50
2025-10-17 14:00
2025-10-17 14:10
2025-10-17 14:20
2025-10-17 14:30
2025-10-17 14:40
2025-10-17 14:50
2025-10-17 15:00
2025-10-17 15:10
2025-10-17 15:20
2025-10-17 15:30
2025-10-17 15:40
2025-10-17 15:50
dev9204Z250900019 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.78 x + 3.15
R² = 0.59
0
5
10
15
20
25
30
35
40
45
50

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z05		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250700005
Issue Date:	2025-11-12		
Version	V3.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800011 Location: M09 Wing Ping Tsuen Collocation Data Period: 2025-10-17 06:40 to 2025-10-17 09:50

Calibration Result:

RSP:

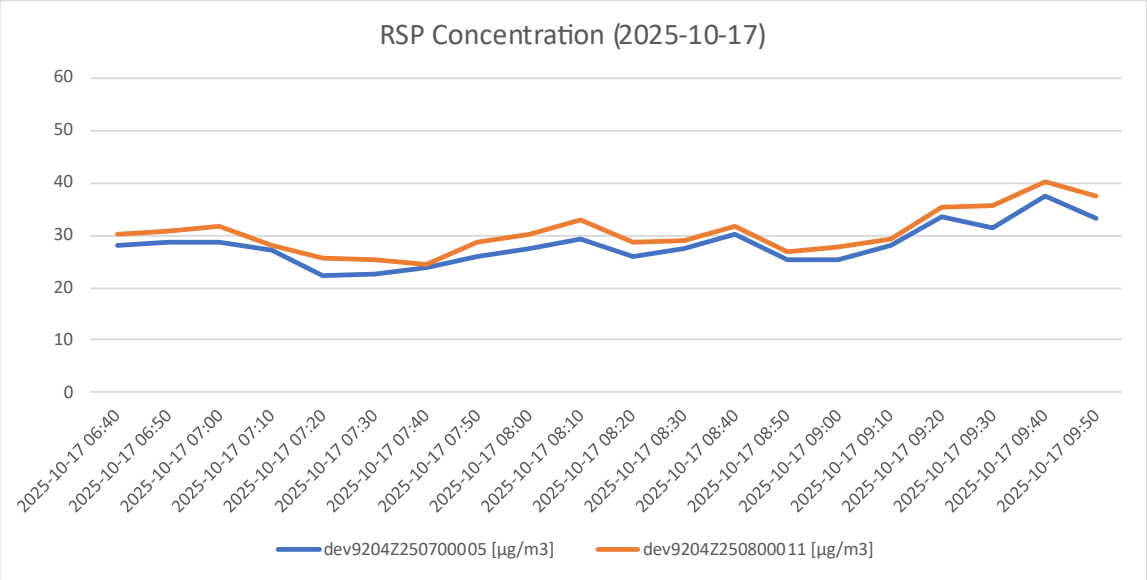
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.88	☑ PASS
Linearity (R^2)	*> 0.70*	0.94	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	15.8 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	2.6 μg/m³	☑ PASS

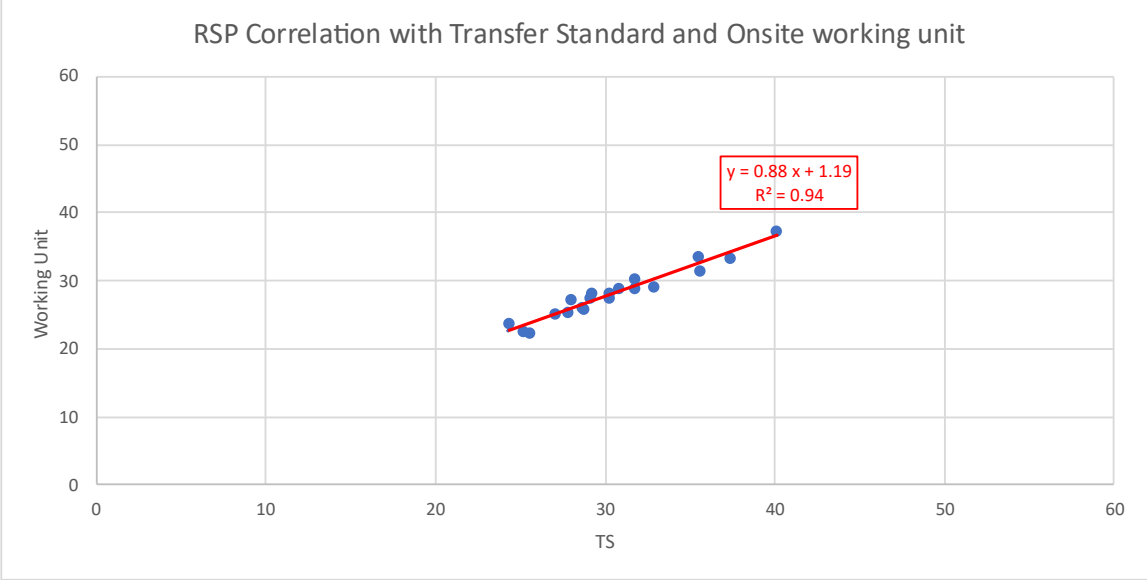
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

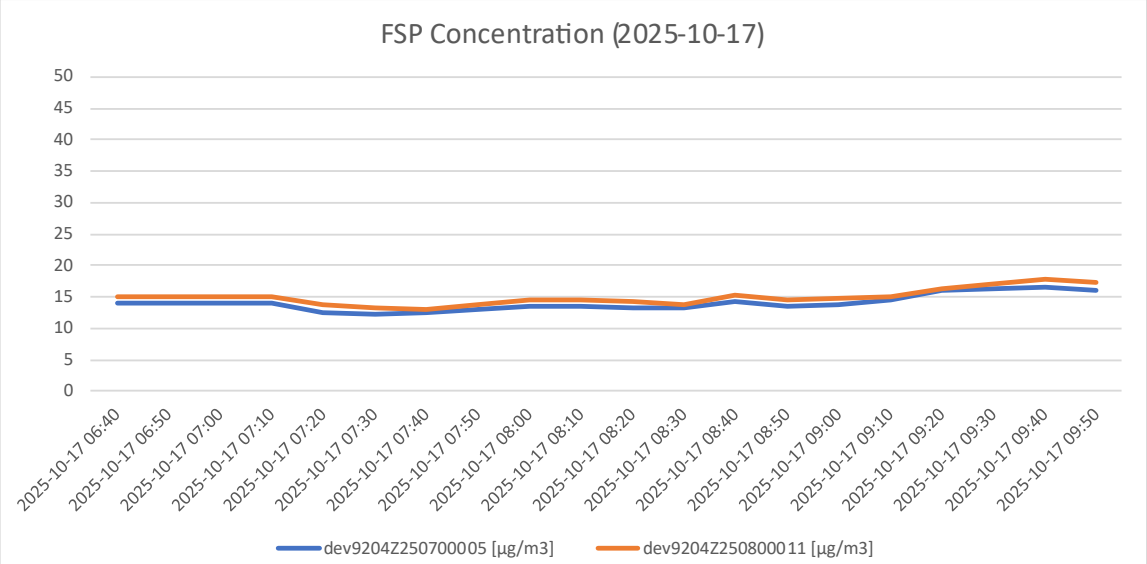
FSP:

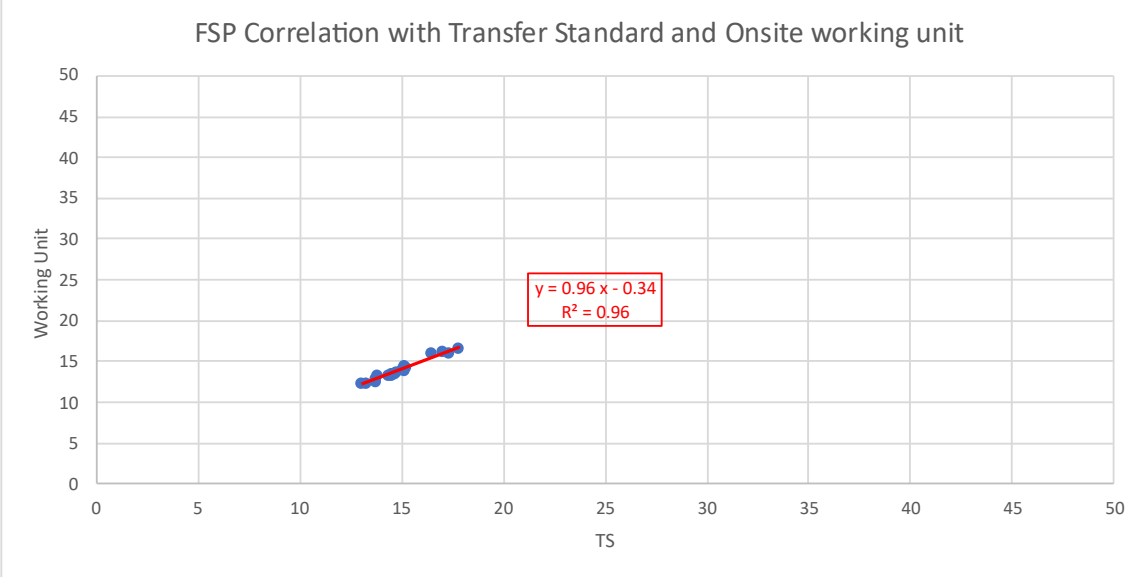
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.96	☑ PASS
Linearity (R^2)	*> 0.70*	0.96	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	4.8 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	0.9 μg/m³	☑ PASS

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

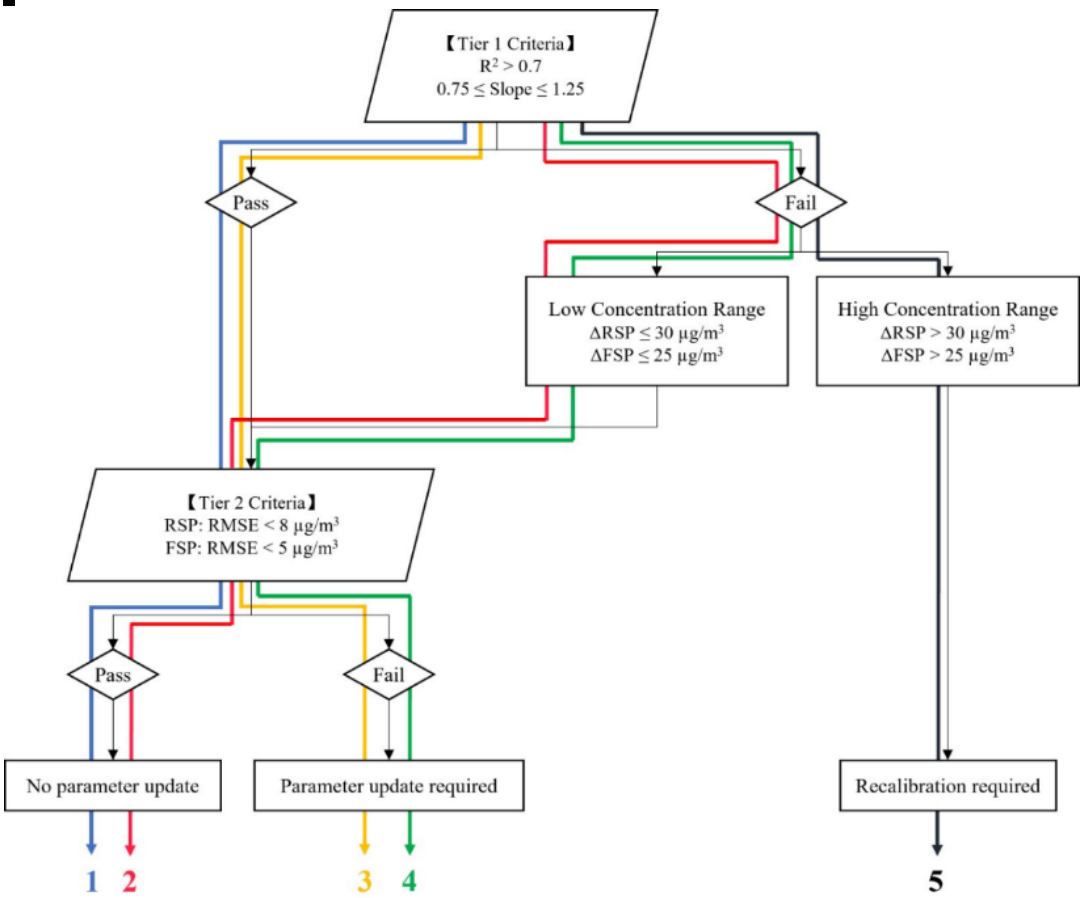

RSP Concentration (2025-10-17)
60
50
40
30
20
10
0
2025-10-17 06:40
2025-10-17 06:50
2025-10-17 07:00
2025-10-17 07:10
2025-10-17 07:20
2025-10-17 07:30
2025-10-17 07:40
2025-10-17 07:50
2025-10-17 08:00
2025-10-17 08:10
2025-10-17 08:20
2025-10-17 08:30
2025-10-17 08:40
2025-10-17 08:50
2025-10-17 09:00
2025-10-17 09:10
2025-10-17 09:20
2025-10-17 09:30
2025-10-17 09:40
2025-10-17 09:50
dev9204Z250700005 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 0.88 x + 1.19
R² = 0.94
Working Unit
TS
0
10
20
30
40
50
60


FSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 06:40
2025-10-17 06:50
2025-10-17 07:00
2025-10-17 07:10
2025-10-17 07:20
2025-10-17 07:30
2025-10-17 07:40
2025-10-17 07:50
2025-10-17 08:00
2025-10-17 08:10
2025-10-17 08:20
2025-10-17 08:30
2025-10-17 08:40
2025-10-17 08:50
2025-10-17 09:00
2025-10-17 09:10
2025-10-17 09:20
2025-10-17 09:30
2025-10-17 09:40
2025-10-17 09:50
dev9204Z250700005 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.96 x - 0.34
R² = 0.96
0
5
10
15
20
25
30
35
40
45
50

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z06		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250700006
Issue Date:	2025-11-12		
Version	V2.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800012 Location: M04 Chau Tau Tsuen Collocation Data Period: 2025-10-17 06:40 to 2025-10-17 09:50

Calibration Result:

RSP:

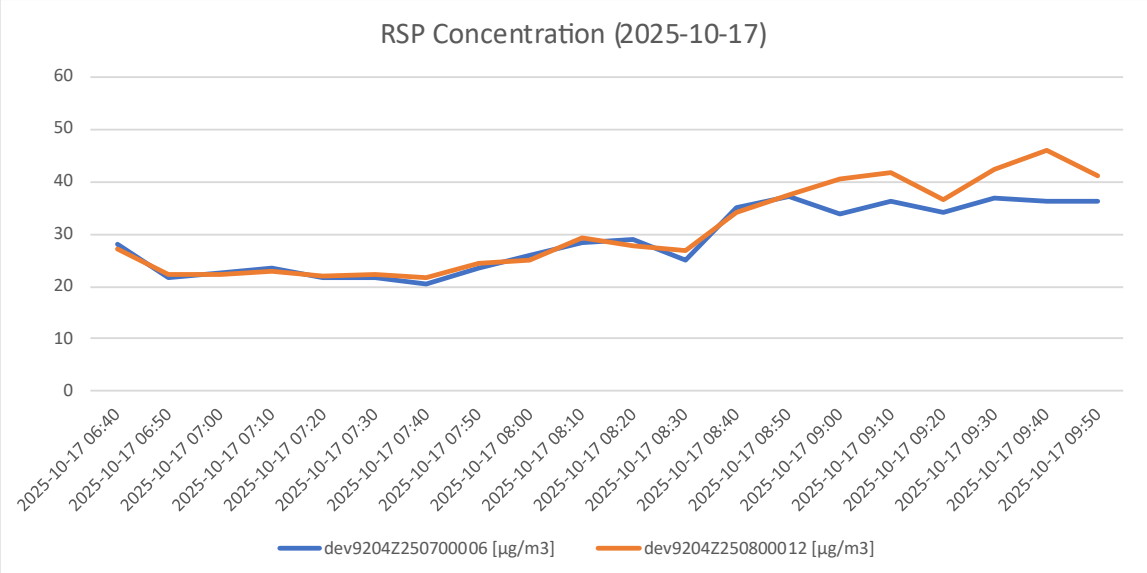
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.72	☒ FAIL
Linearity (R^2)	*> 0.70*	0.91	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	24.1 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	3.4 μg/m³	☑ PASS

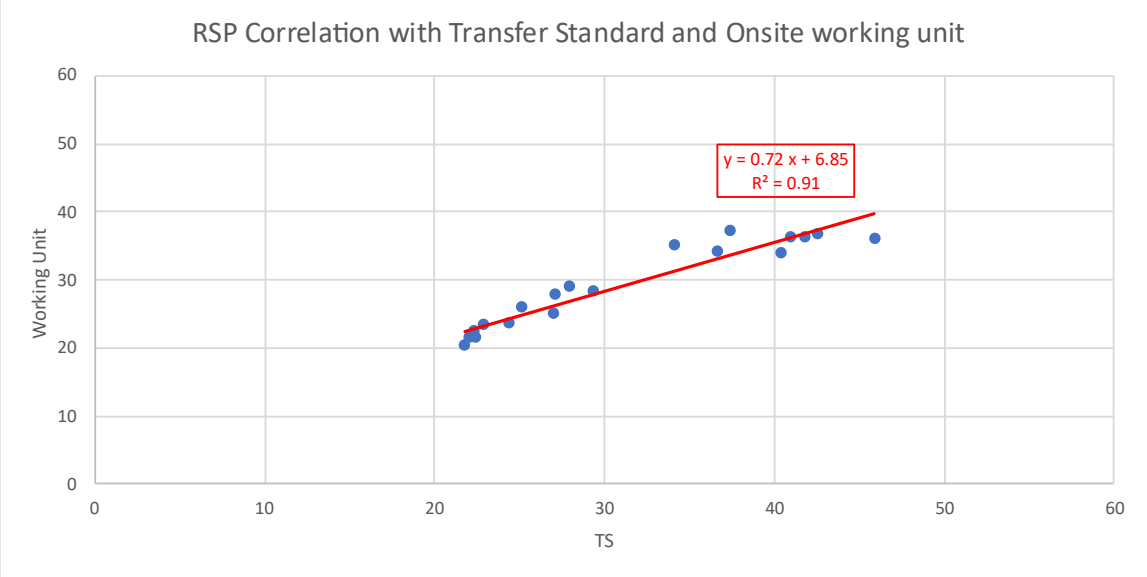
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

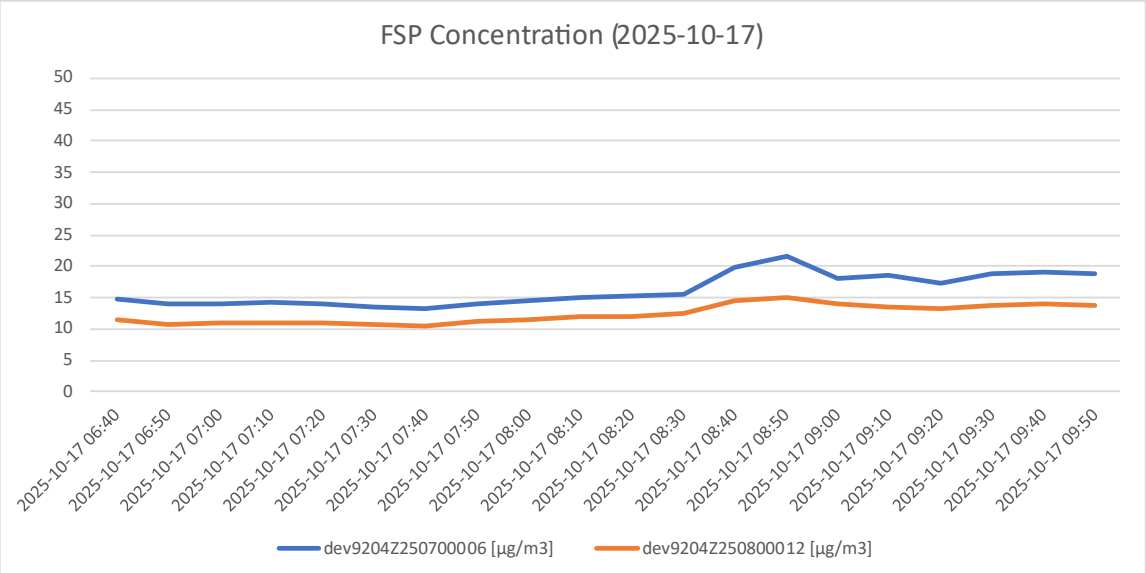
FSP:

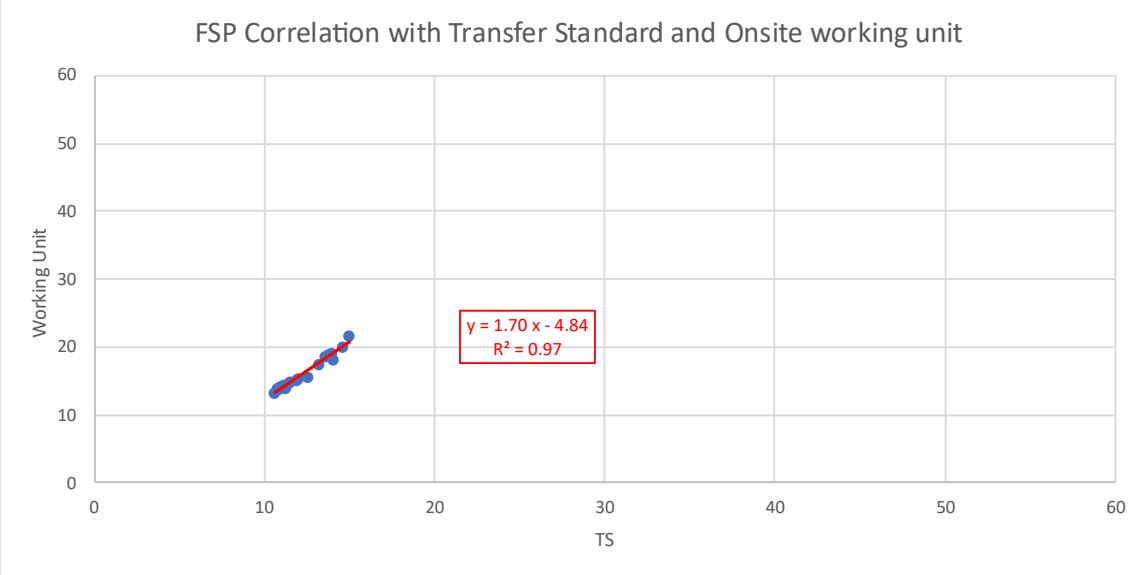
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.70	☒ FAIL
Linearity (R^2)	*> 0.70*	0.97	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	4.4 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	4.0 μg/m³	☑ PASS

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

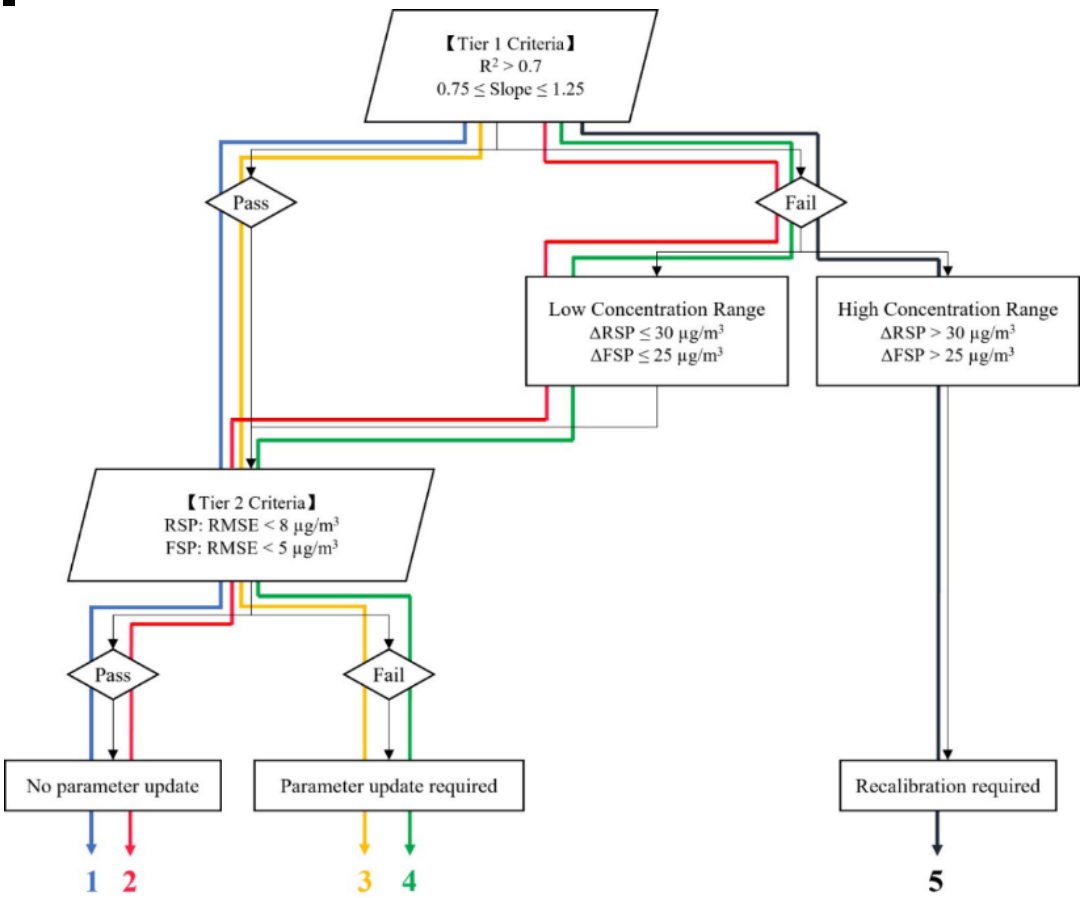

RSP Concentration (2025-10-17)
60
50
40
30
20
10
0
2025-10-17 06:40
2025-10-17 06:50
2025-10-17 07:00
2025-10-17 07:10
2025-10-17 07:20
2025-10-17 07:30
2025-10-17 07:40
2025-10-17 07:50
2025-10-17 08:00
2025-10-17 08:10
2025-10-17 08:20
2025-10-17 08:30
2025-10-17 08:40
2025-10-17 08:50
2025-10-17 09:00
2025-10-17 09:10
2025-10-17 09:20
2025-10-17 09:30
2025-10-17 09:40
2025-10-17 09:50
dev9204Z250700006 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 0.72 x + 6.85
R² = 0.91
Working Unit
TS
0
10
20
30
40
50
60


FSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 06:40
2025-10-17 06:50
2025-10-17 07:00
2025-10-17 07:10
2025-10-17 07:20
2025-10-17 07:30
2025-10-17 07:40
2025-10-17 07:50
2025-10-17 08:00
2025-10-17 08:10
2025-10-17 08:20
2025-10-17 08:30
2025-10-17 08:40
2025-10-17 08:50
2025-10-17 09:00
2025-10-17 09:10
2025-10-17 09:20
2025-10-17 09:30
2025-10-17 09:40
2025-10-17 09:50
dev9204Z250700006 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.70 x - 4.84
R² = 0.97
0
10
20
30
40
50
60

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

ONSITE EQUIPMENT VALIDATION RECORD

Product Information:

Report No.:	ZR/T CS.004-2025-10-Z07		
Product Model:	MAS Dust	**Serial No.:**	dev9204Z250700007
Issue Date:	2025-11-12		
Version	V3.0_20251112		

Traceability of Calibration Instrument:

Test Item	Calibration Instrument
$PM_{2.5}$ (FSP) PM_{10} (RSP)	Transfer Standard: dev9204Z250800012 Location: M03 Pun Uk Tsuen Collocation Data Period: 2025-10-17 12:40 to 2025-10-17 15:50

Calibration Result:

RSP:

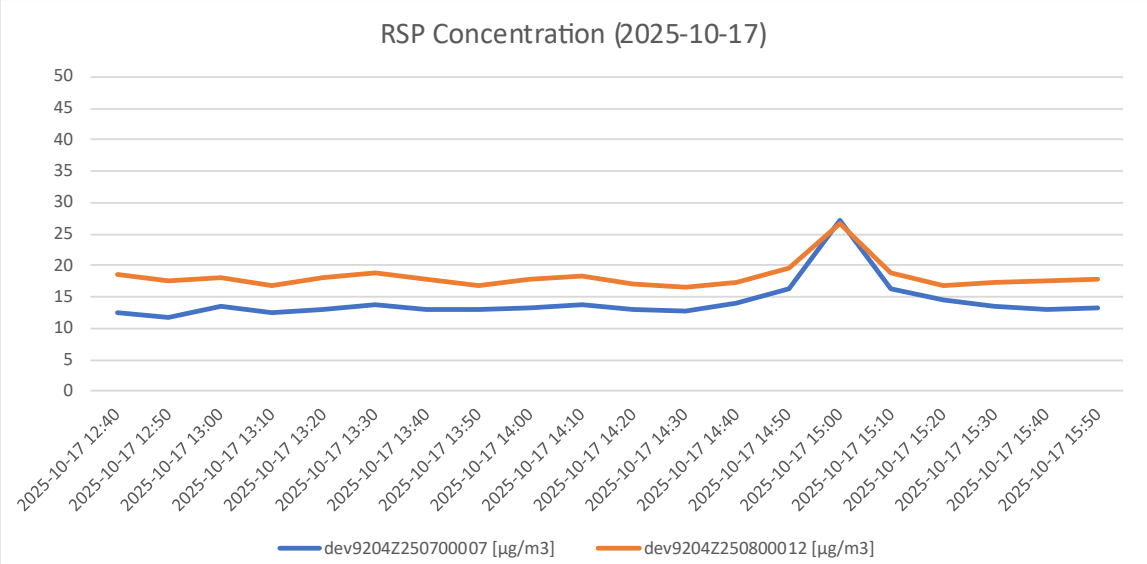
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.43	☒ FAIL
Linearity (R^2)	*> 0.70*	0.89	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	10.2 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	4.2 μg/m³	☑ PASS

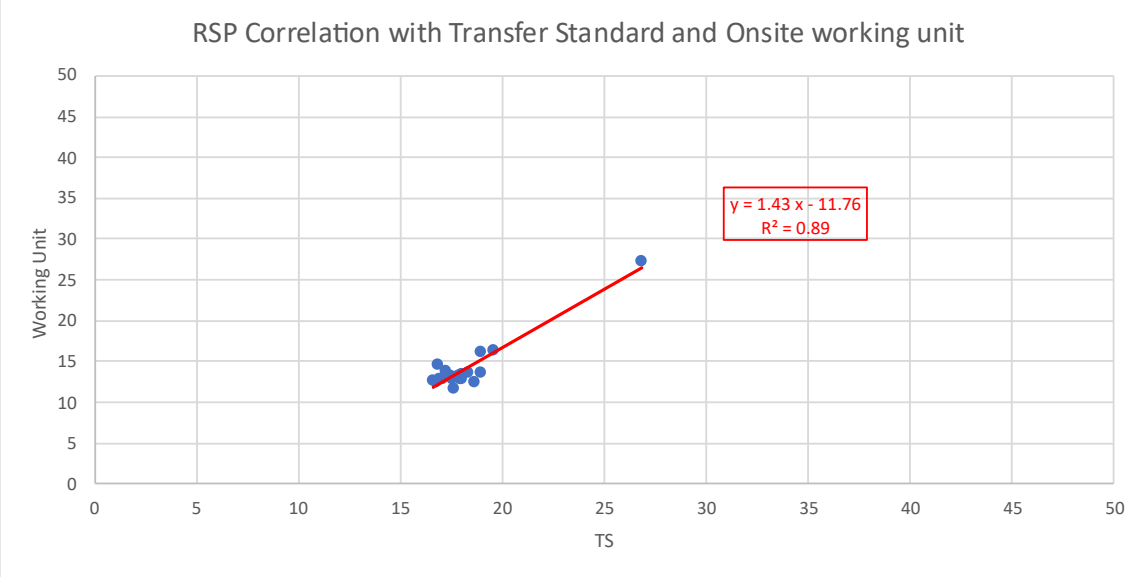
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

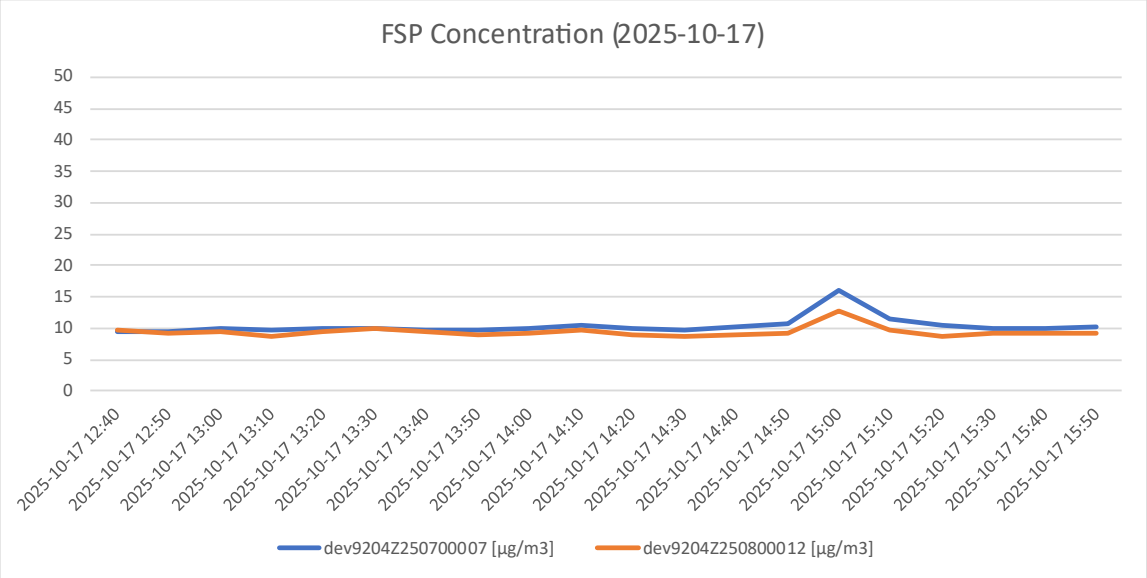
FSP:

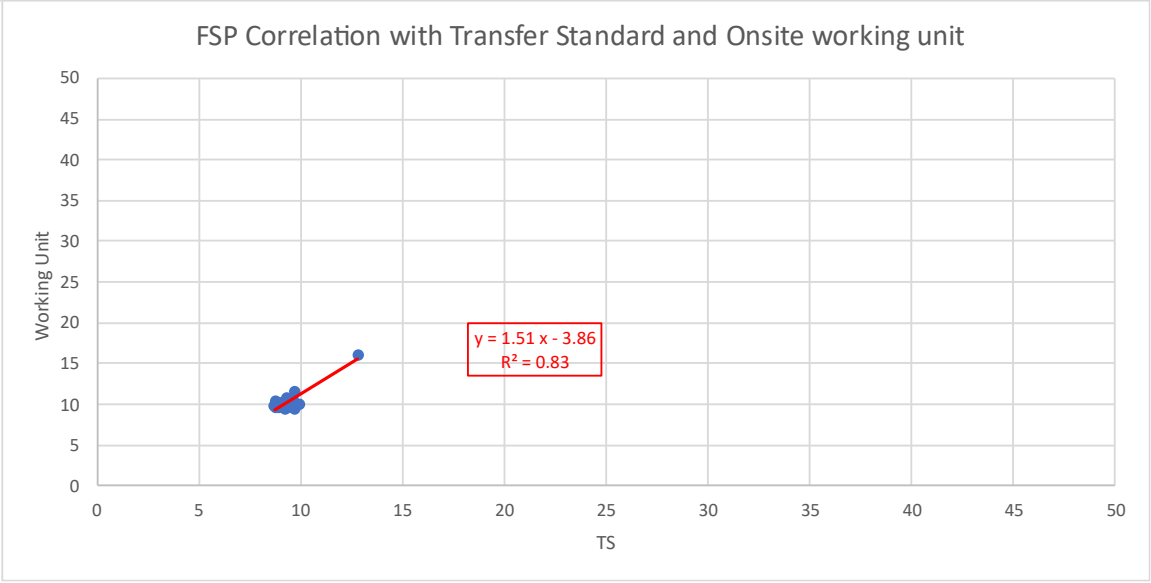
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.51	☒ FAIL
Linearity (R^2)	*> 0.70*	0.83	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	4.1 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	1.2 μg/m³	☑ PASS

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

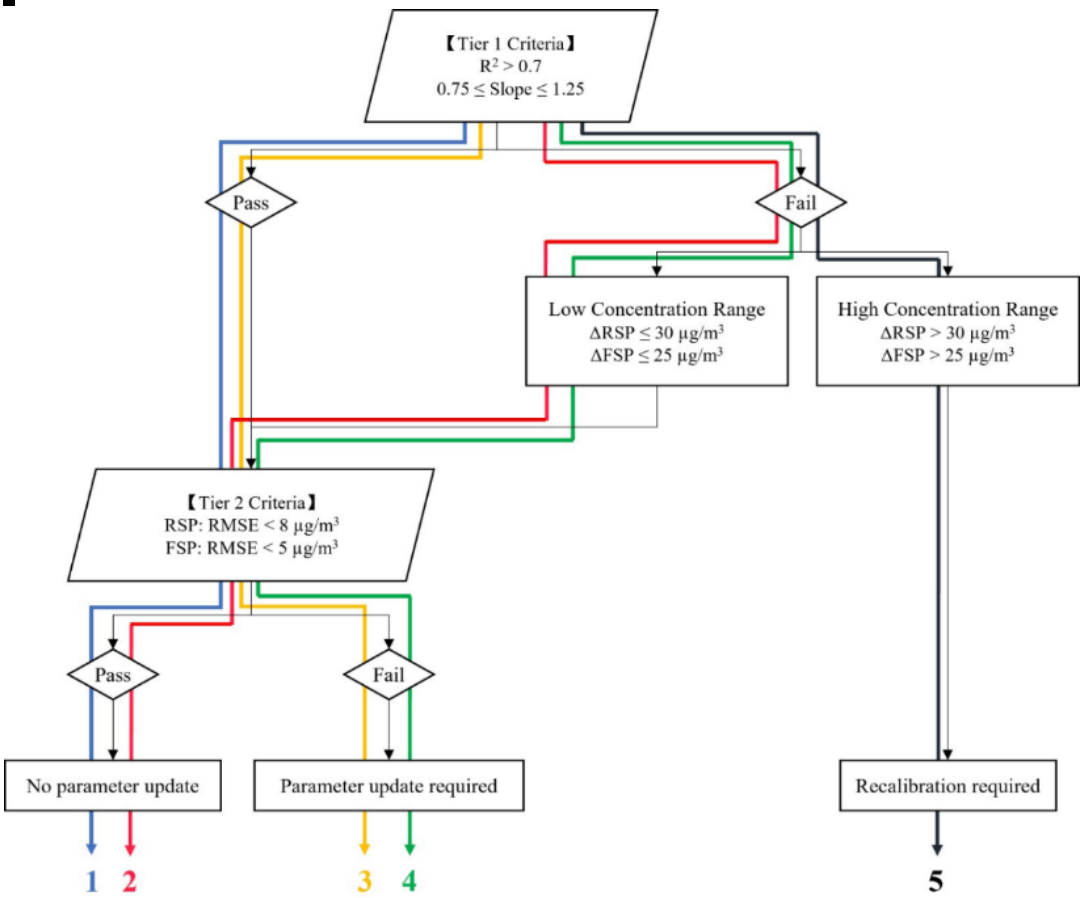

RSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 12:40
2025-10-17 12:50
2025-10-17 13:00
2025-10-17 13:10
2025-10-17 13:20
2025-10-17 13:30
2025-10-17 13:40
2025-10-17 13:50
2025-10-17 14:00
2025-10-17 14:10
2025-10-17 14:20
2025-10-17 14:30
2025-10-17 14:40
2025-10-17 14:50
2025-10-17 15:00
2025-10-17 15:10
2025-10-17 15:20
2025-10-17 15:30
2025-10-17 15:40
2025-10-17 15:50
dev9204Z250700007 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.43 x - 11.76
R² = 0.89
0
5
10
15
20
25
30
35
40
45
50


FSP Concentration (2025-10-17)
50
45
40
35
30
25
20
15
10
5
0
2025-10-17 12:40
2025-10-17 12:50
2025-10-17 13:00
2025-10-17 13:10
2025-10-17 13:20
2025-10-17 13:30
2025-10-17 13:40
2025-10-17 13:50
2025-10-17 14:00
2025-10-17 14:10
2025-10-17 14:20
2025-10-17 14:30
2025-10-17 14:40
2025-10-17 14:50
2025-10-17 15:00
2025-10-17 15:10
2025-10-17 15:20
2025-10-17 15:30
2025-10-17 15:40
2025-10-17 15:50
dev9204Z250700007 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.51 x - 3.86
R² = 0.83
0
5
10
15
20
25
30
35
40
45
50

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

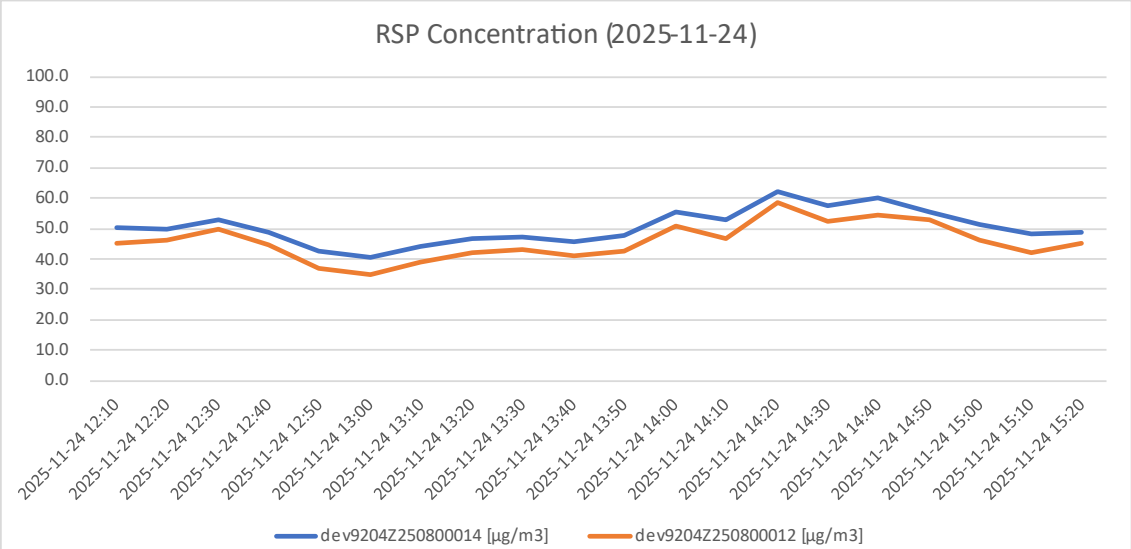
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.93	☑ PASS
Linearity (R^2)	*> 0.70*	0.97	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	23.4 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	4.8 μg/m³	☑ PASS

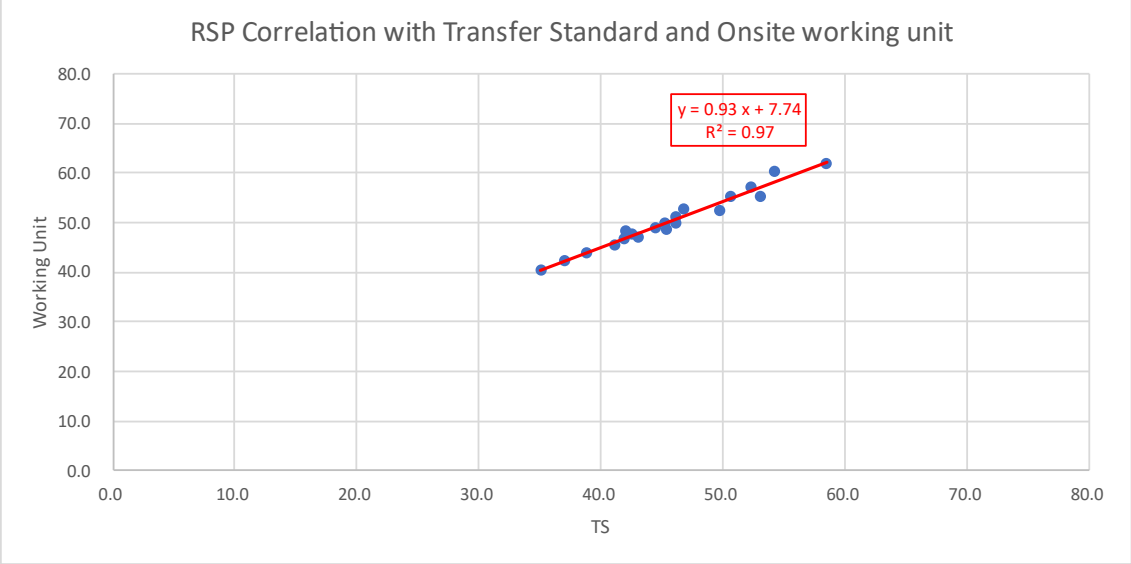
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

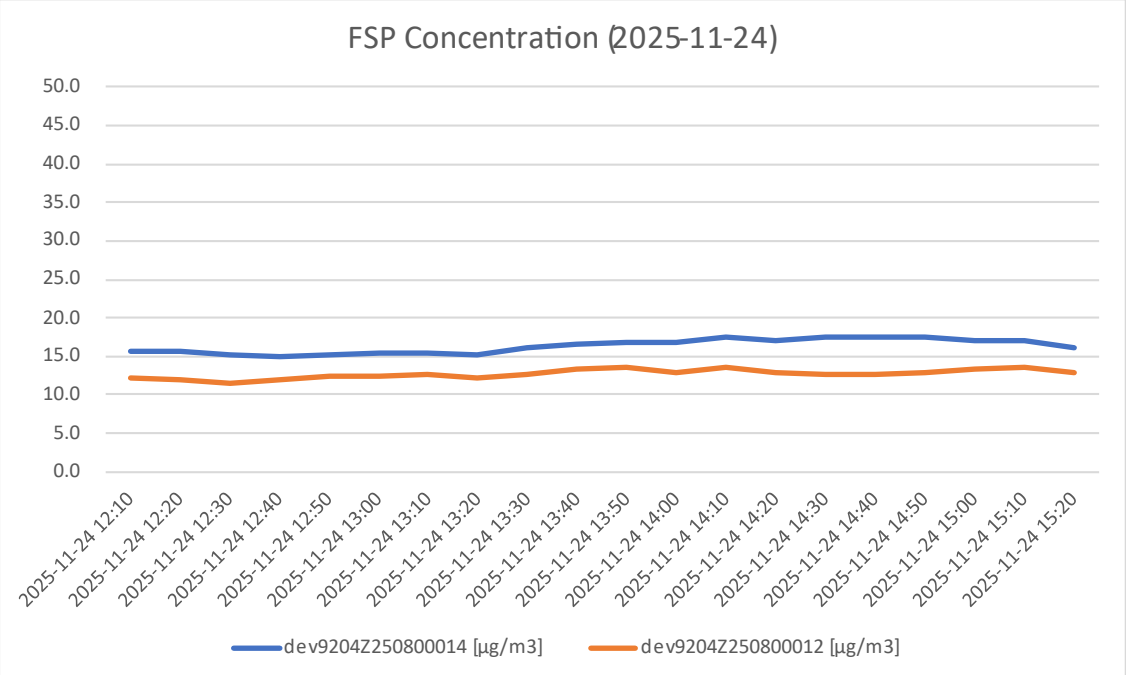
FSP:

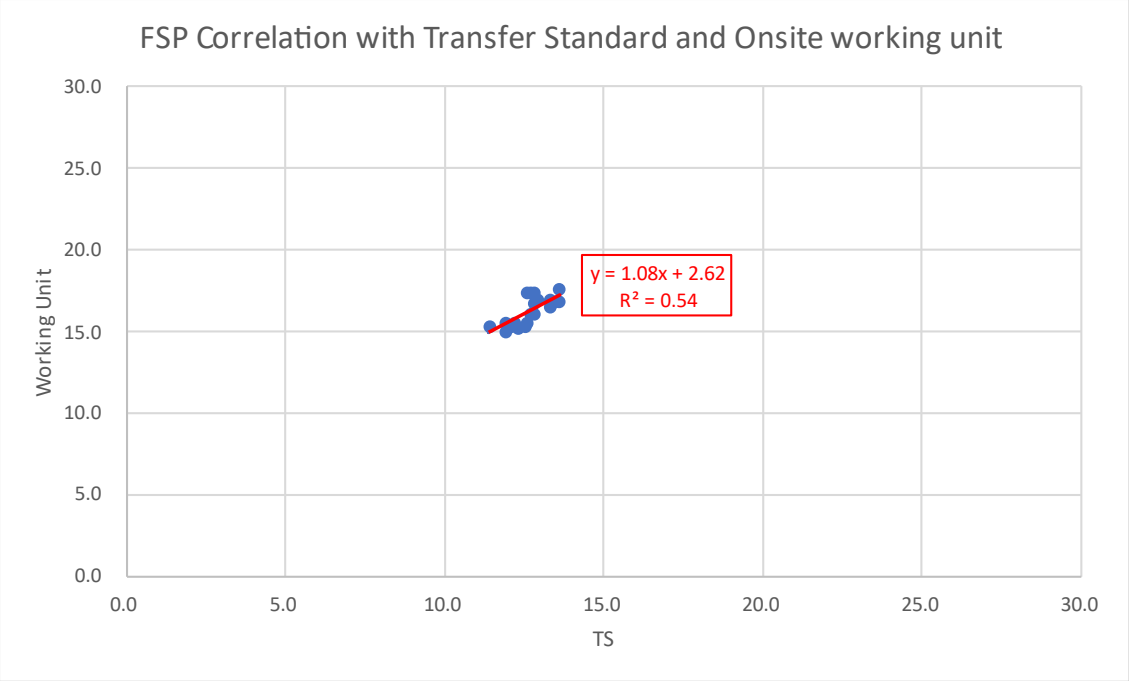
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.08	☑ PASS
Linearity (R^2)	*> 0.70*	0.54	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	2.2 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	3.7 μg/m³	☑ PASS

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

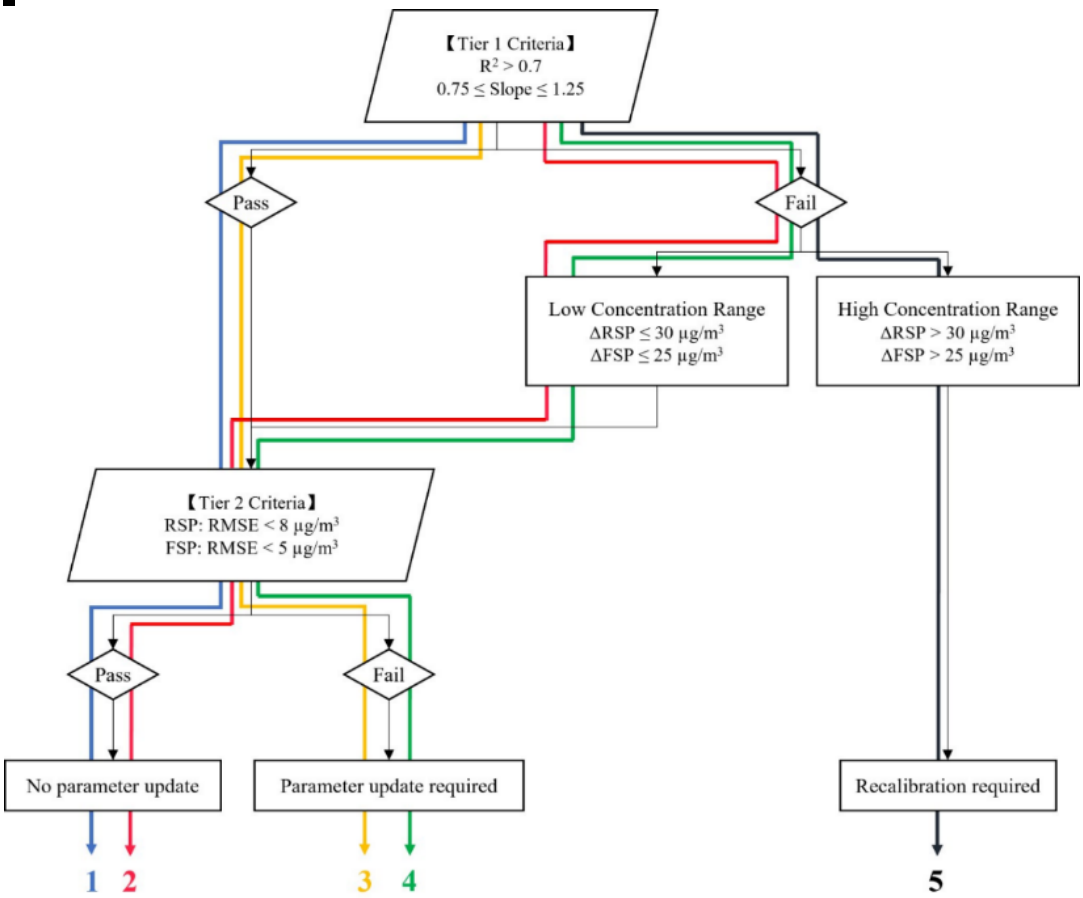

RSP Concentration (2025-11-24)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-11-24 12:10
2025-11-24 12:20
2025-11-24 12:30
2025-11-24 12:40
2025-11-24 12:50
2025-11-24 13:00
2025-11-24 13:10
2025-11-24 13:20
2025-11-24 13:30
2025-11-24 13:40
2025-11-24 13:50
2025-11-24 14:00
2025-11-24 14:10
2025-11-24 14:20
2025-11-24 14:30
2025-11-24 14:40
2025-11-24 14:50
2025-11-24 15:00
2025-11-24 15:10
2025-11-24 15:20
dev9204Z250800014 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 0.93 x + 7.74
R² = 0.97
Working Unit
TS
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0


FSP Concentration (2025-11-24)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-24 12:10
2025-11-24 12:20
2025-11-24 12:30
2025-11-24 12:40
2025-11-24 12:50
2025-11-24 13:00
2025-11-24 13:10
2025-11-24 13:20
2025-11-24 13:30
2025-11-24 13:40
2025-11-24 13:50
2025-11-24 14:00
2025-11-24 14:10
2025-11-24 14:20
2025-11-24 14:30
2025-11-24 14:40
2025-11-24 14:50
2025-11-24 15:00
2025-11-24 15:10
2025-11-24 15:20
dev9204Z250800014 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.08x + 2.62
R² = 0.54
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

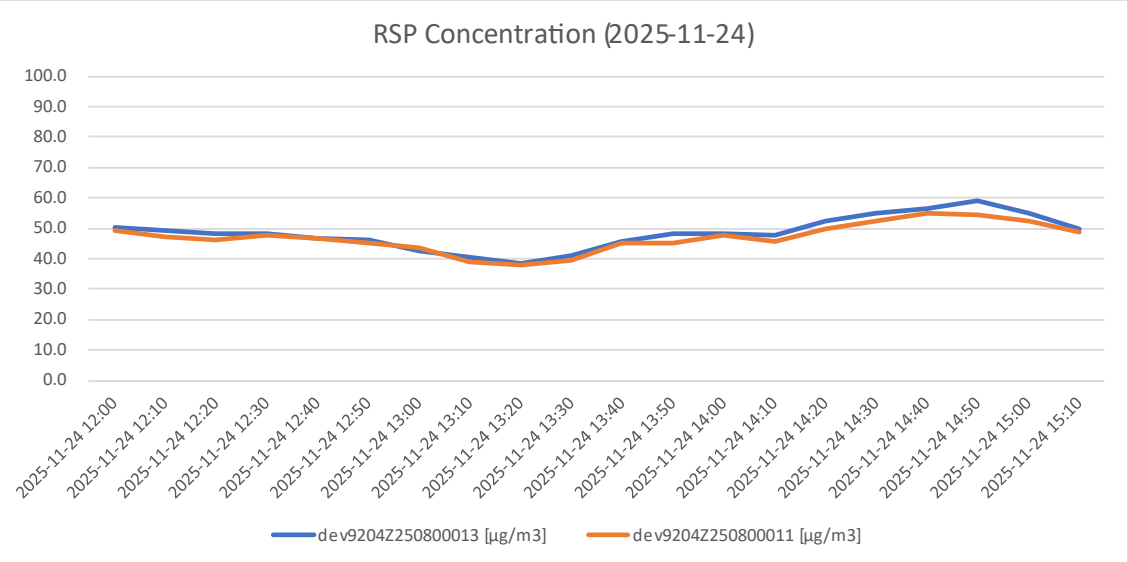
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.12	☑ PASS
Linearity (R^2)	*> 0.70*	0.96	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	16.9 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	1.9 μg/m³	☑ PASS

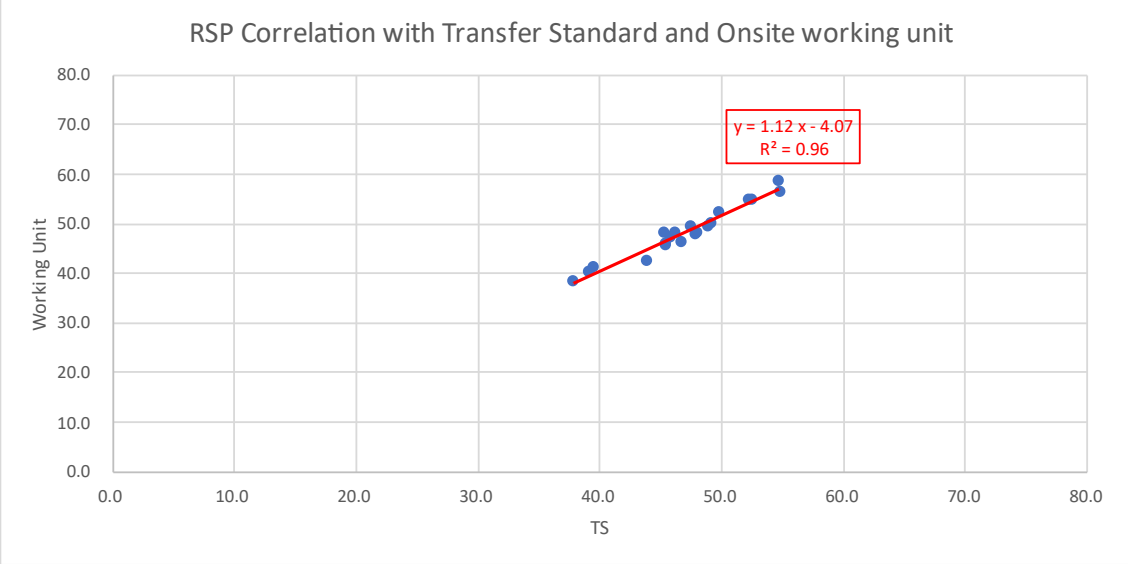
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

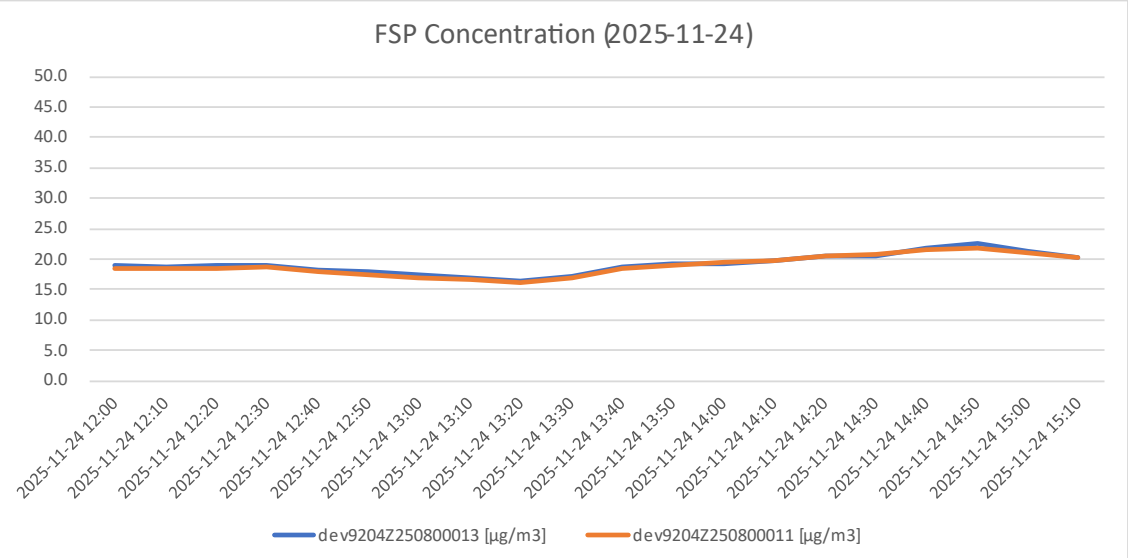
FSP:

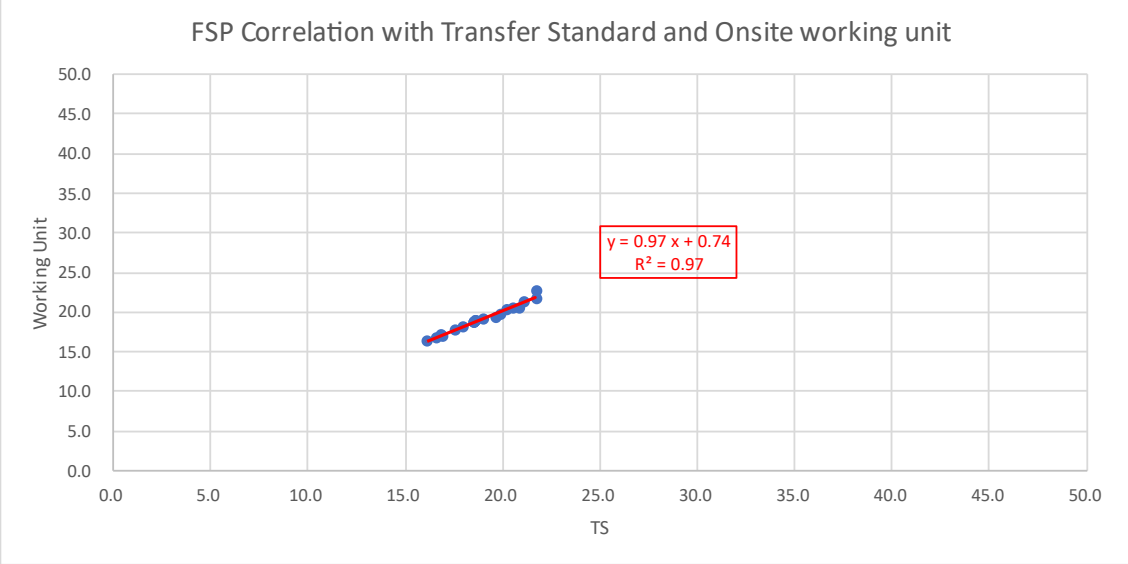
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.97	☑ PASS
Linearity (R^2)	*> 0.70*	0.97	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	5.6 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	0.3 μg/m³	☑ PASS

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

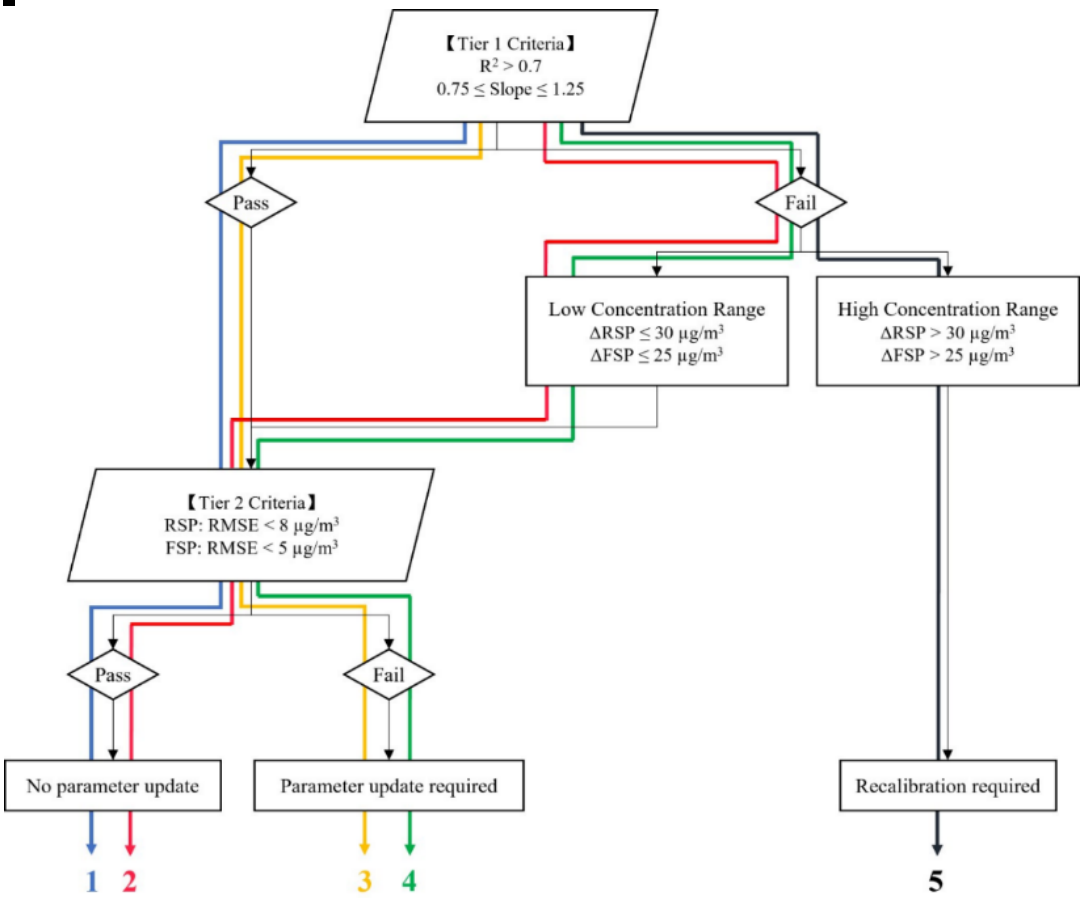

RSP Concentration (2025-11-24)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-11-24 12:00
2025-11-24 12:10
2025-11-24 12:20
2025-11-24 12:30
2025-11-24 12:40
2025-11-24 12:50
2025-11-24 13:00
2025-11-24 13:10
2025-11-24 13:20
2025-11-24 13:30
2025-11-24 13:40
2025-11-24 13:50
2025-11-24 14:00
2025-11-24 14:10
2025-11-24 14:20
2025-11-24 14:30
2025-11-24 14:40
2025-11-24 14:50
2025-11-24 15:00
2025-11-24 15:10
dev9204Z250800013 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 1.12 x - 4.07
R² = 0.96
Working Unit
TS
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0


FSP Concentration (2025-11-24)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-24 12:00
2025-11-24 12:10
2025-11-24 12:20
2025-11-24 12:30
2025-11-24 12:40
2025-11-24 12:50
2025-11-24 13:00
2025-11-24 13:10
2025-11-24 13:20
2025-11-24 13:30
2025-11-24 13:40
2025-11-24 13:50
2025-11-24 14:00
2025-11-24 14:10
2025-11-24 14:20
2025-11-24 14:30
2025-11-24 14:40
2025-11-24 14:50
2025-11-24 15:00
2025-11-24 15:10
dev9204Z250800013 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.97 x + 0.74
R² = 0.97
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

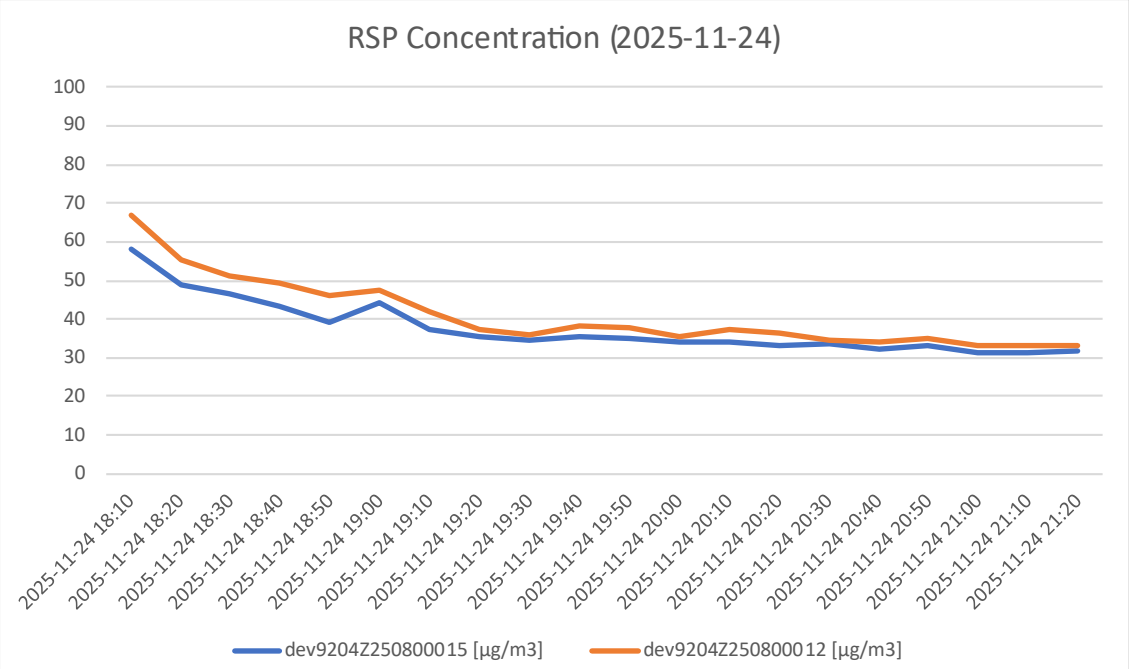
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.79	☑ PASS
Linearity (R^2)	*> 0.70*	0.98	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	33.8 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	4.0 μg/m³	☑ PASS

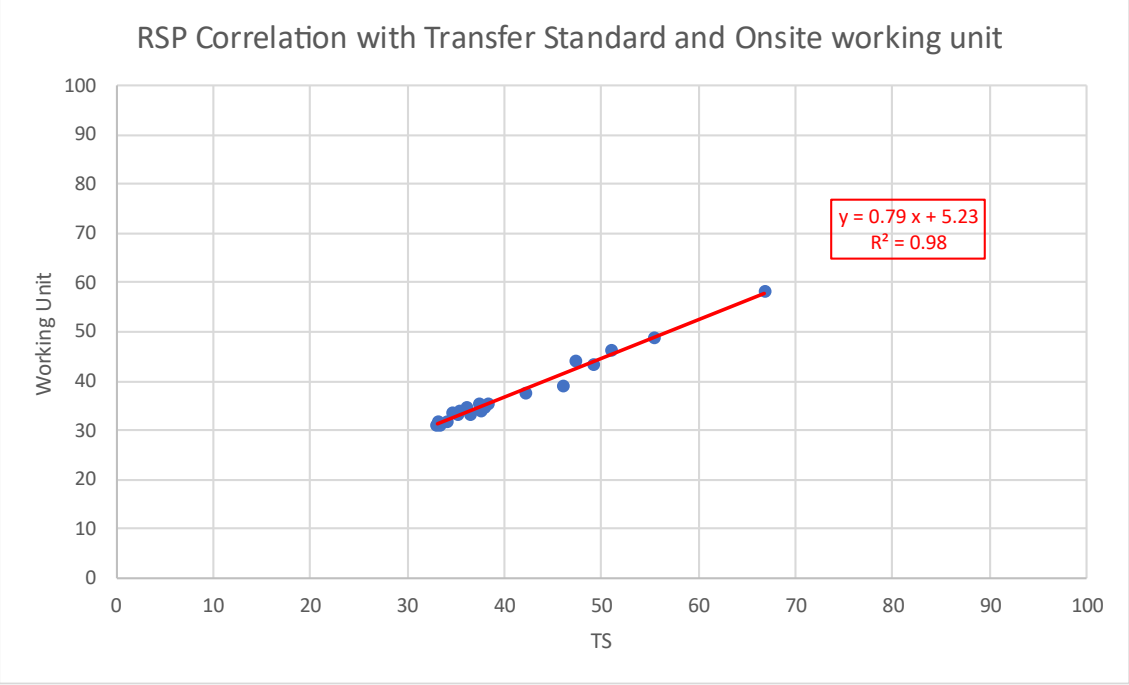
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

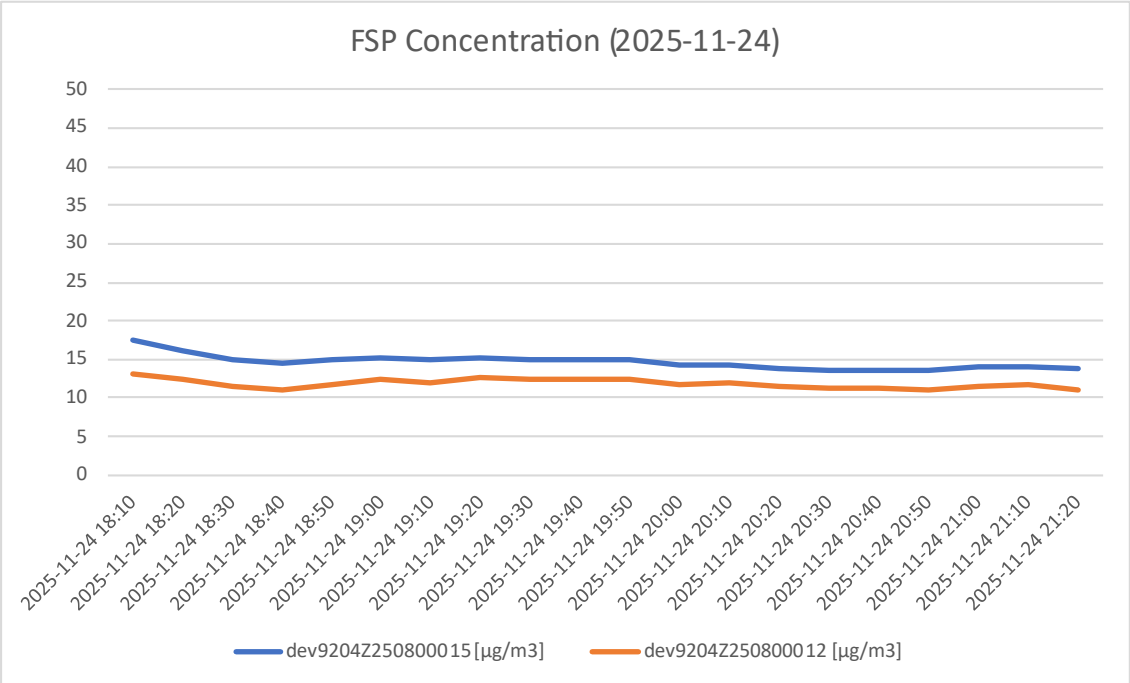
FSP:

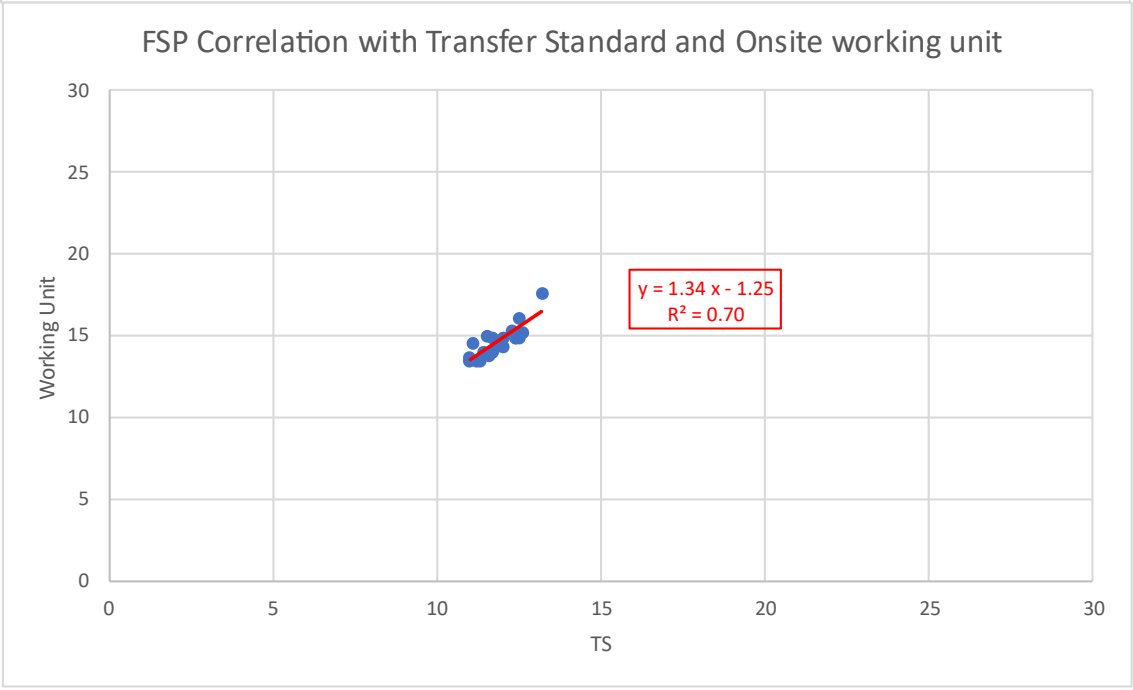
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.34	☒ FAIL
Linearity (R^2)	*> 0.70*	0.70	☒ FAIL
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	2.2 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	2.8 μg/m³	☑ PASS

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

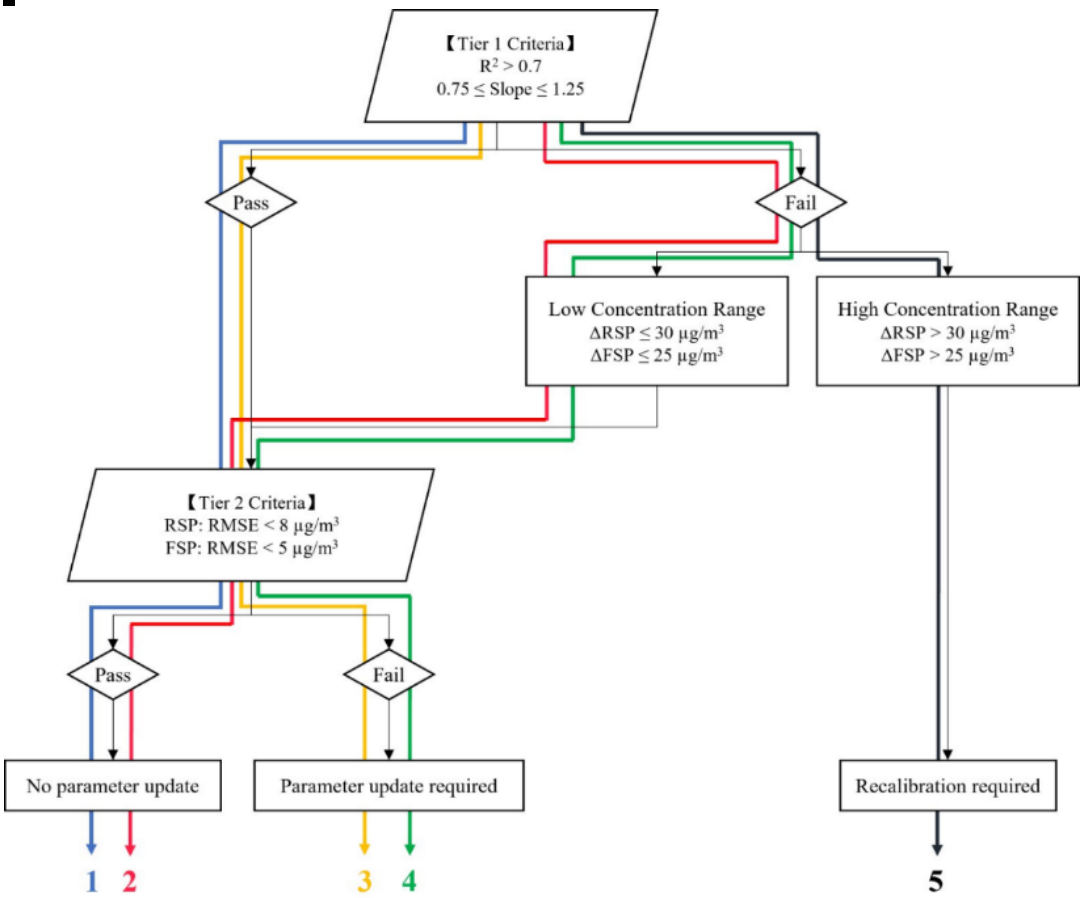

RSP Concentration (2025-11-24)
100
90
80
70
60
50
40
30
20
10
0
2025-11-24 18:10
2025-11-24 18:20
2025-11-24 18:30
2025-11-24 18:40
2025-11-24 18:50
2025-11-24 19:00
2025-11-24 19:10
2025-11-24 19:20
2025-11-24 19:30
2025-11-24 19:40
2025-11-24 19:50
2025-11-24 20:00
2025-11-24 20:10
2025-11-24 20:20
2025-11-24 20:30
2025-11-24 20:40
2025-11-24 20:50
2025-11-24 21:00
2025-11-24 21:10
2025-11-24 21:20
dev9204Z250800015 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.79 x + 5.23
R² = 0.98
0
10
20
30
40
50
60
70
80
90
100


FSP Concentration (2025-11-24)
50
45
40
35
30
25
20
15
10
5
0
2025-11-24 18:10
2025-11-24 18:20
2025-11-24 18:30
2025-11-24 18:40
2025-11-24 18:50
2025-11-24 19:00
2025-11-24 19:10
2025-11-24 19:20
2025-11-24 19:30
2025-11-24 19:40
2025-11-24 19:50
2025-11-24 20:00
2025-11-24 20:10
2025-11-24 20:20
2025-11-24 20:30
2025-11-24 20:40
2025-11-24 20:50
2025-11-24 21:00
2025-11-24 21:10
2025-11-24 21:20
dev9204Z250800015 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.34 x - 1.25
R² = 0.70
30
25
20
15
10
5
0
0
5
10
15
20
25
30

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

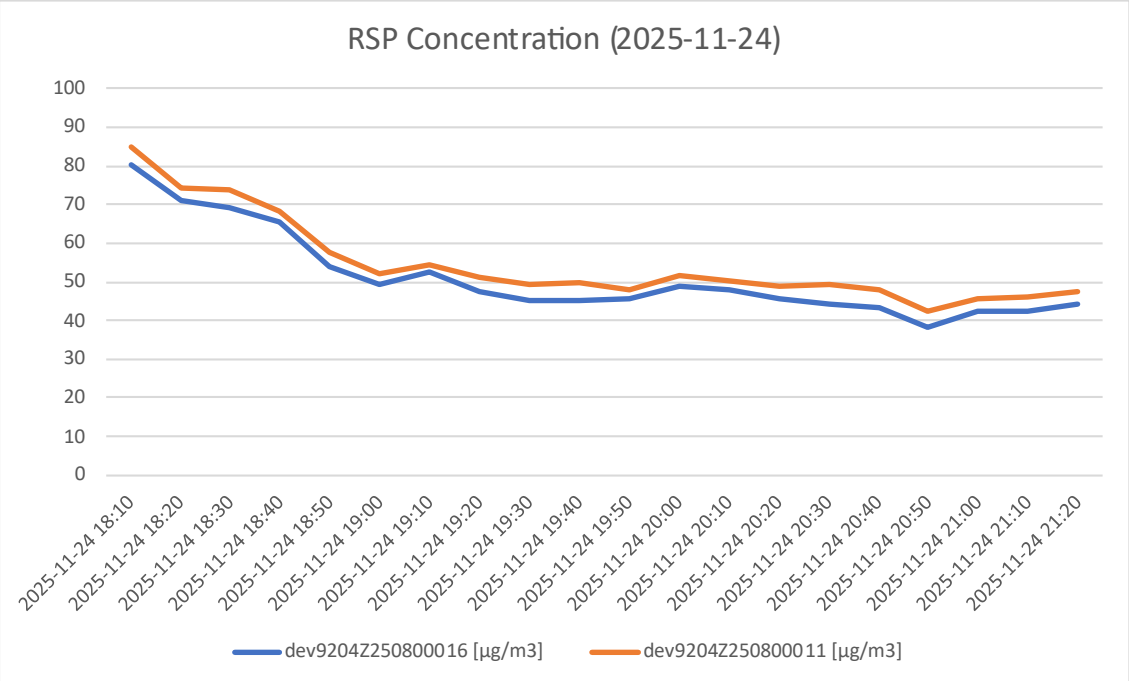
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.00	☑ PASS
Linearity (R^2)	*> 0.70*	0.99	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	42.3 μg/m³	Not applicable.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	3.7 μg/m³	☑ PASS

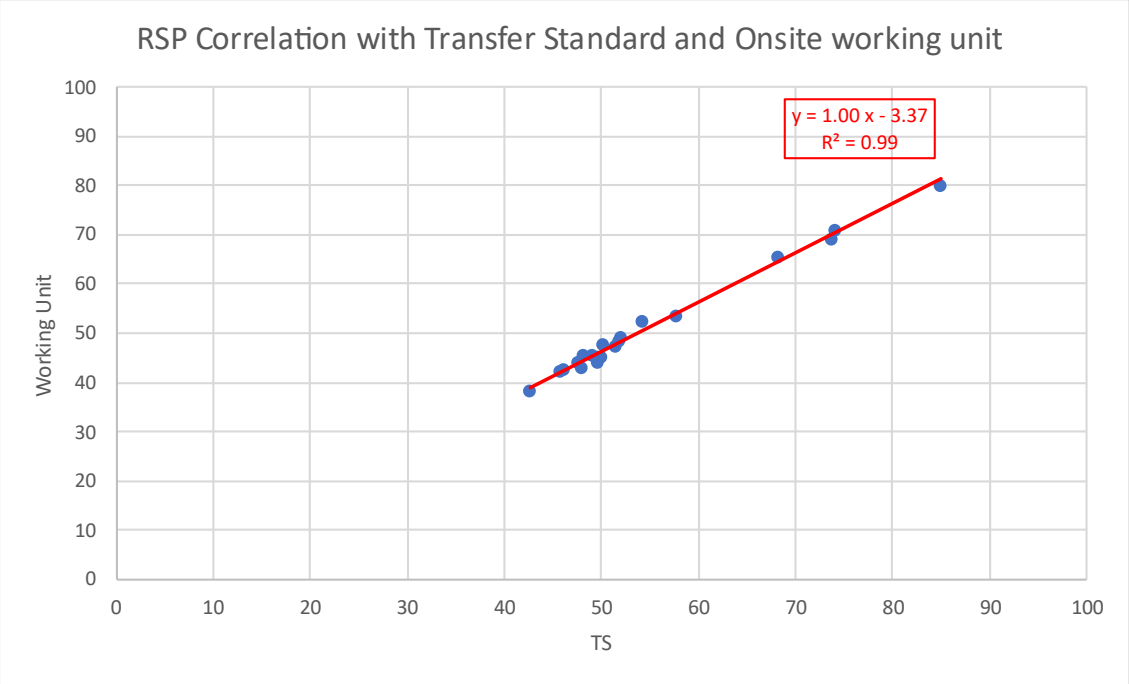
Remark: Follow QAQC Protocol Path 1 which is Criteria Tier 1 and Tier 2 passed.

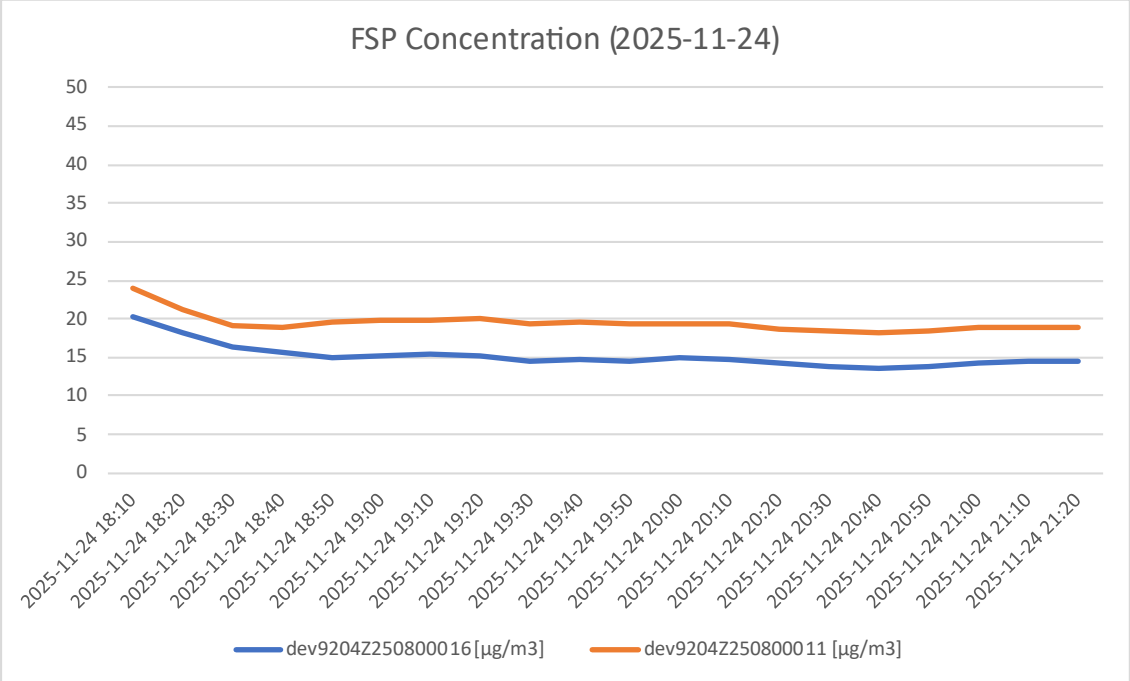
FSP:

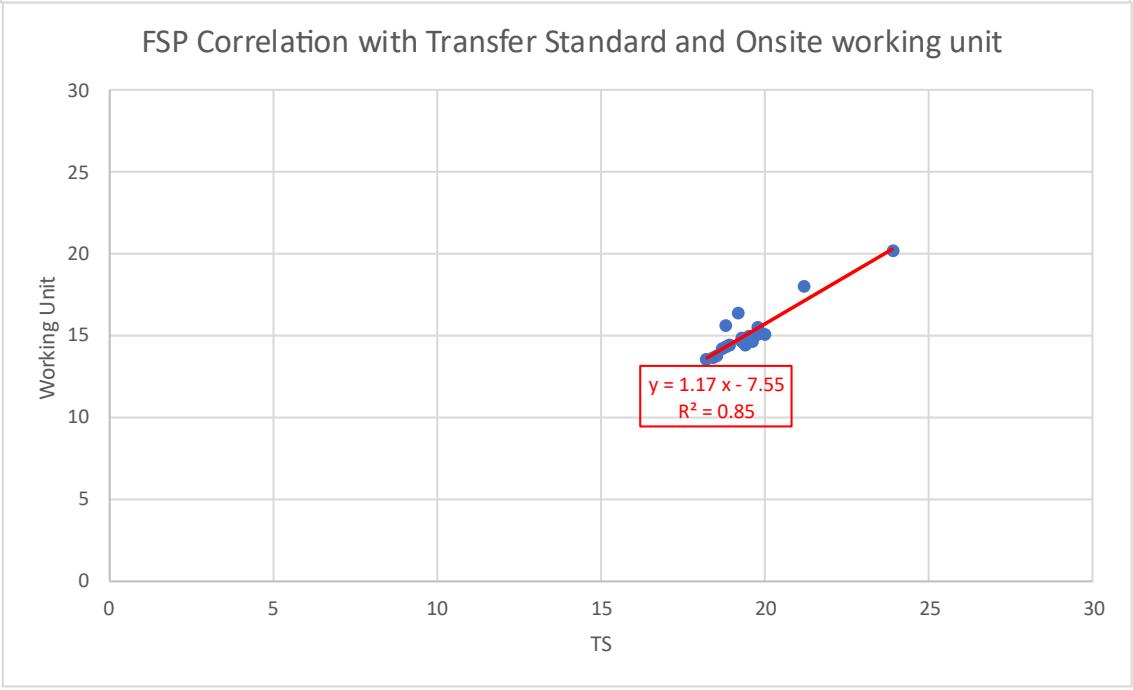
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.17	☑ PASS
Linearity (R^2)	*> 0.70*	0.85	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	5.7 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	4.4 μg/m³	☑ PASS

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

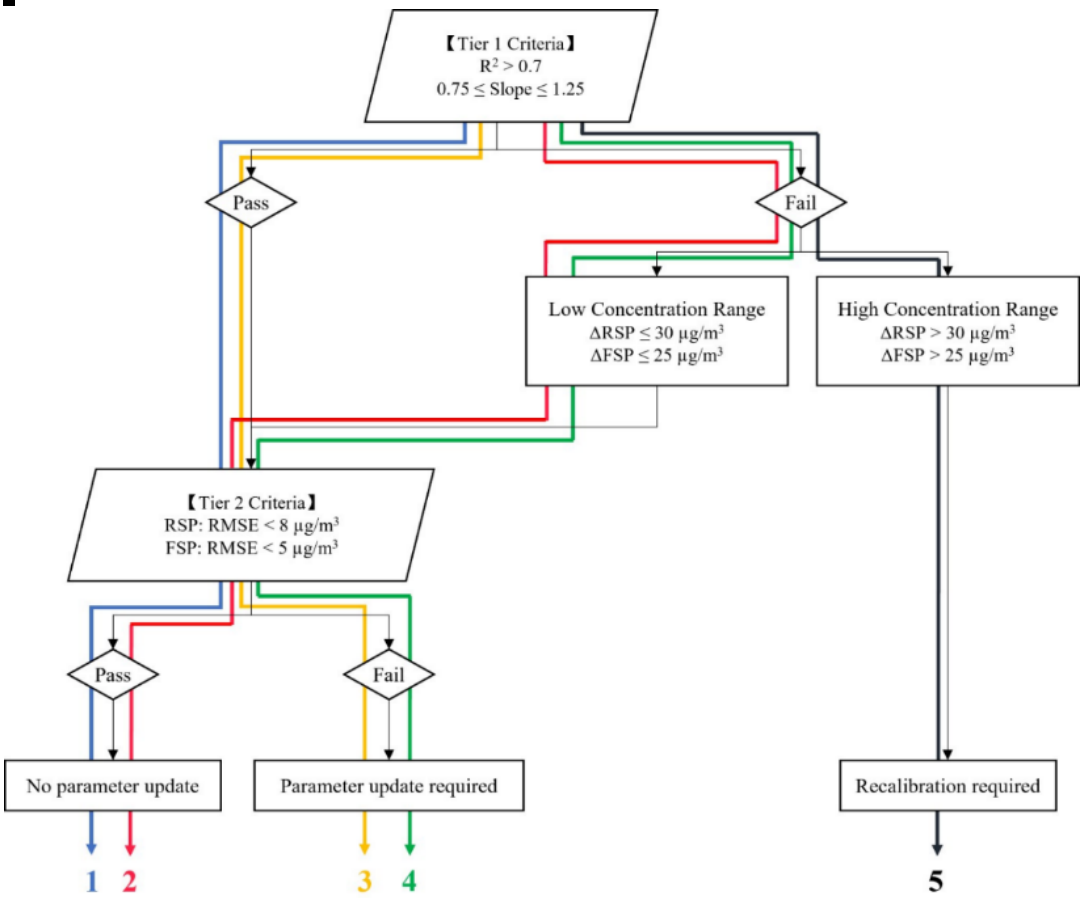

RSP Concentration (2025-11-24)
100
90
80
70
60
50
40
30
20
10
0
2025-11-24 18:10
2025-11-24 18:20
2025-11-24 18:30
2025-11-24 18:40
2025-11-24 18:50
2025-11-24 19:00
2025-11-24 19:10
2025-11-24 19:20
2025-11-24 19:30
2025-11-24 19:40
2025-11-24 19:50
2025-11-24 20:00
2025-11-24 20:10
2025-11-24 20:20
2025-11-24 20:30
2025-11-24 20:40
2025-11-24 20:50
2025-11-24 21:00
2025-11-24 21:10
2025-11-24 21:20
dev9204Z250800016 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 1.00 x - 3.37
R² = 0.99
Working Unit
TS
0
10
20
30
40
50
60
70
80
90
100


FSP Concentration (2025-11-24)
50
45
40
35
30
25
20
15
10
5
0
2025-11-24 18:10
2025-11-24 18:20
2025-11-24 18:30
2025-11-24 18:40
2025-11-24 18:50
2025-11-24 19:00
2025-11-24 19:10
2025-11-24 19:20
2025-11-24 19:30
2025-11-24 19:40
2025-11-24 19:50
2025-11-24 20:00
2025-11-24 20:10
2025-11-24 20:20
2025-11-24 20:30
2025-11-24 20:40
2025-11-24 20:50
2025-11-24 21:00
2025-11-24 21:10
2025-11-24 21:20
dev9204Z250800016 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
30
25
20
15
10
5
0
0
5
10
15
20
25
30
y = 1.17 x - 7.55
R² = 0.85

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

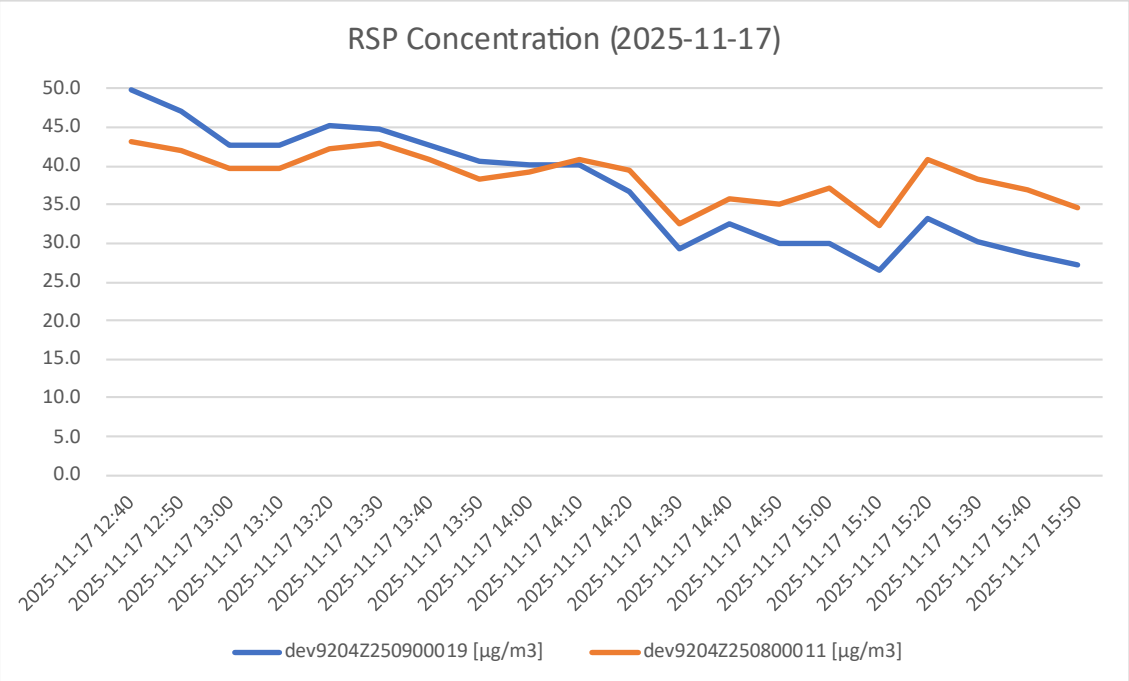
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.97	☒ FAIL
Linearity (R^2)	*> 0.70*	0.76	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	10.9 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	5.0 μg/m³	☑ PASS

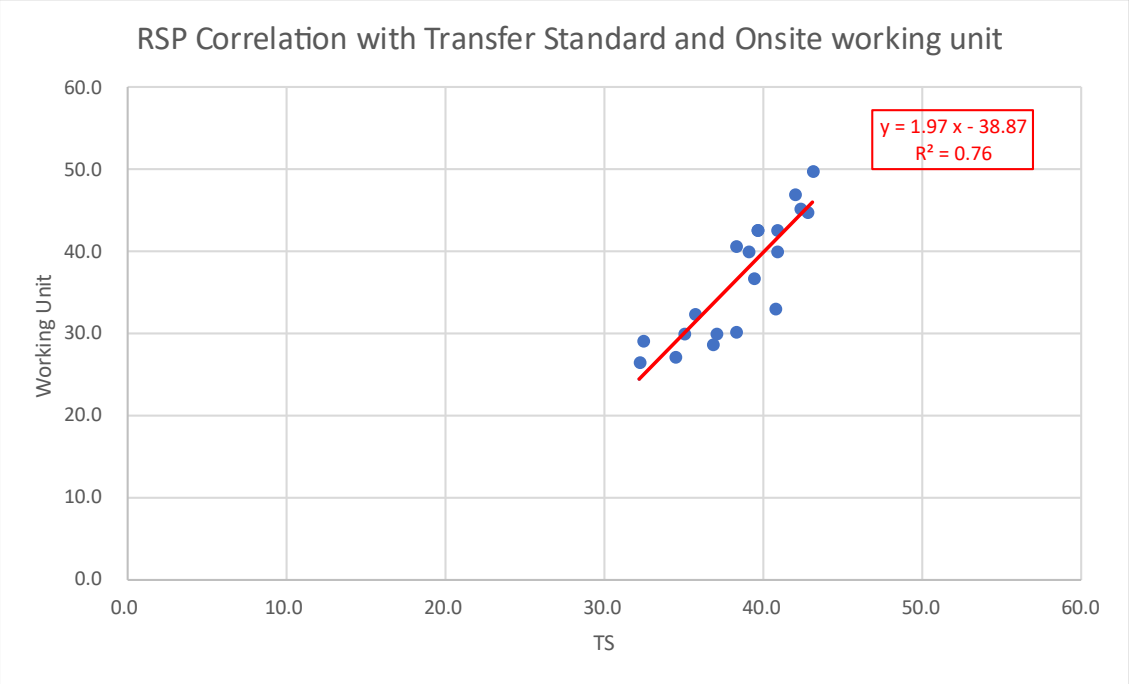
Remark: Follow QAQC Protocol Path 2 which is Criteria Tier 1 failed while Tier 2 passed.

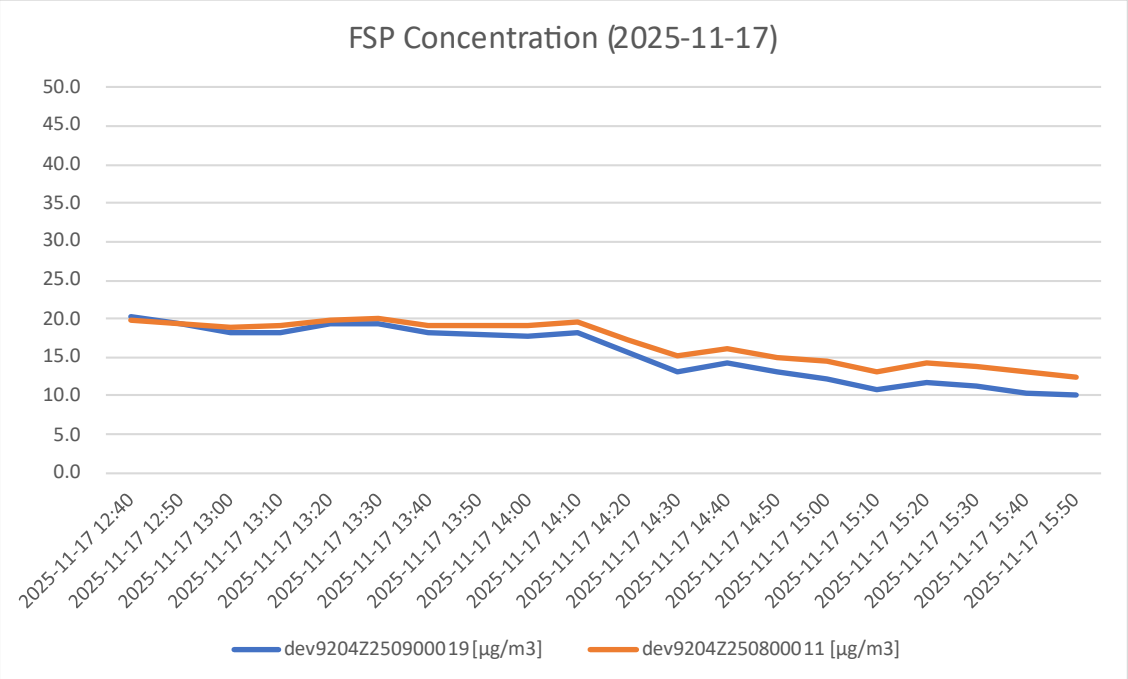
FSP:

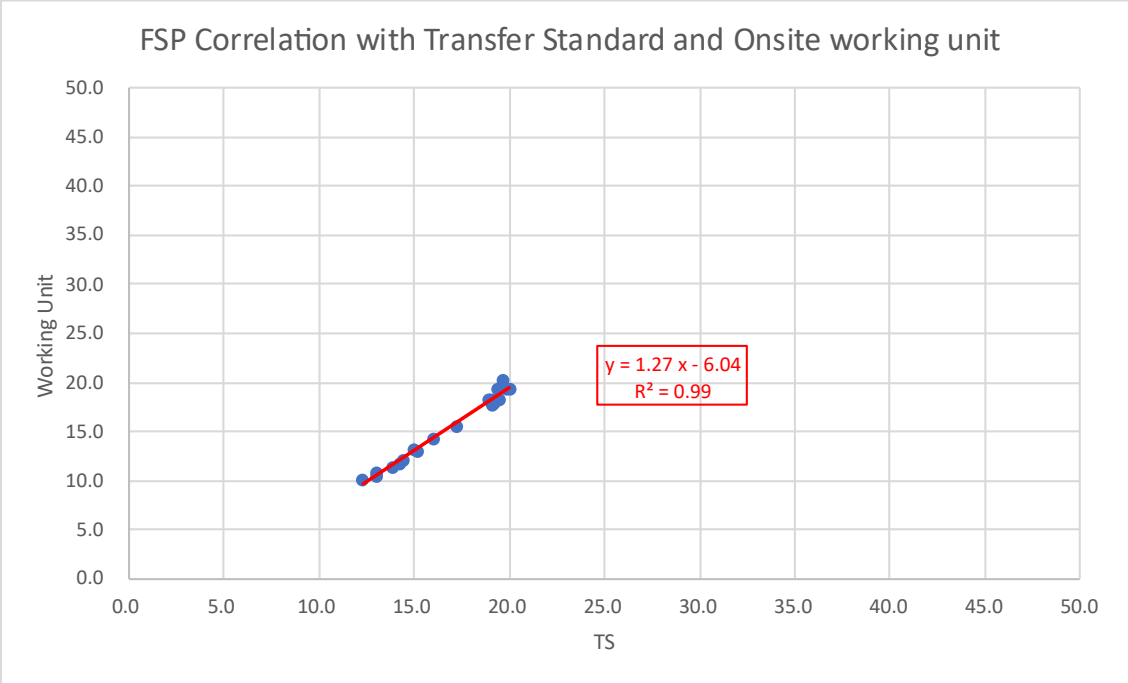
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.27	☒ FAIL
Linearity (R^2)	*> 0.70*	0.99	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	7.7 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	1.7 μg/m³	☑ PASS

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

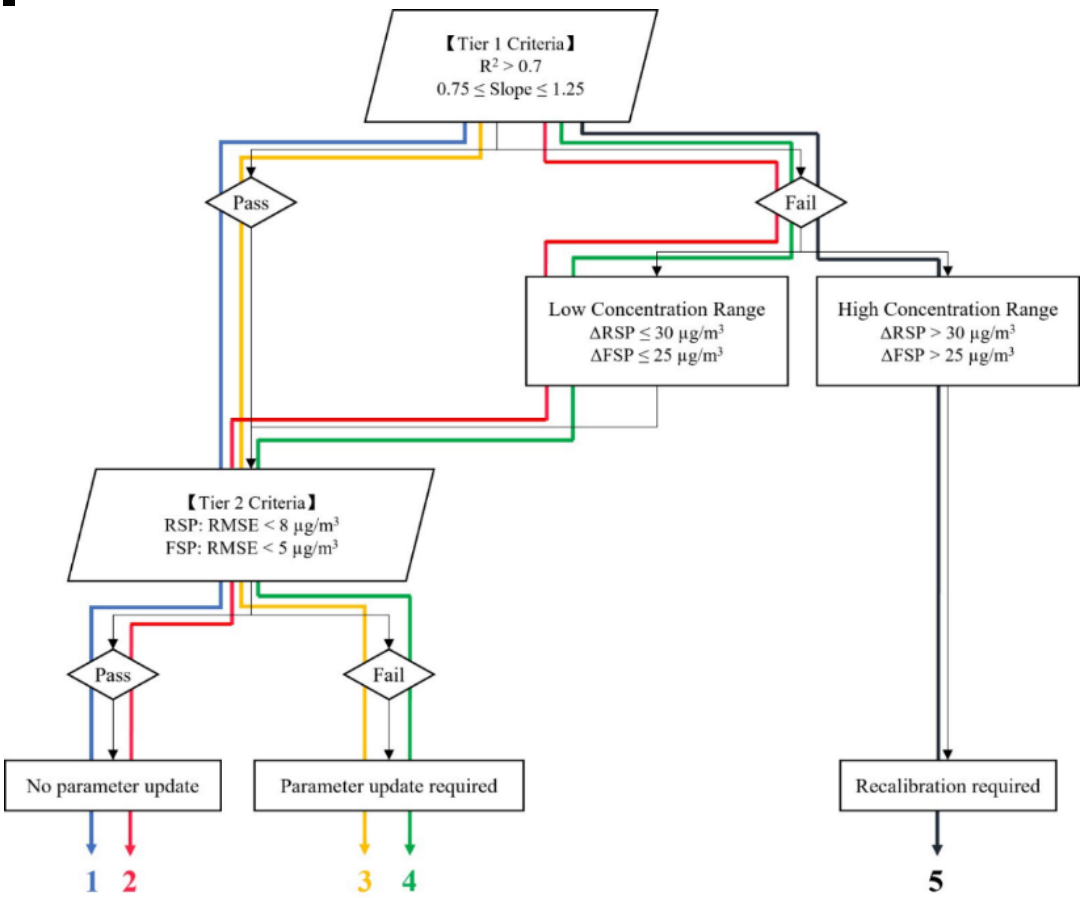

RSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 12:40
2025-11-17 12:50
2025-11-17 13:00
2025-11-17 13:10
2025-11-17 13:20
2025-11-17 13:30
2025-11-17 13:40
2025-11-17 13:50
2025-11-17 14:00
2025-11-17 14:10
2025-11-17 14:20
2025-11-17 14:30
2025-11-17 14:40
2025-11-17 14:50
2025-11-17 15:00
2025-11-17 15:10
2025-11-17 15:20
2025-11-17 15:30
2025-11-17 15:40
2025-11-17 15:50
dev9204Z250900019 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 1.97 x - 38.87
R² = 0.76
Working Unit
TS
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0


FSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 12:40
2025-11-17 12:50
2025-11-17 13:00
2025-11-17 13:10
2025-11-17 13:20
2025-11-17 13:30
2025-11-17 13:40
2025-11-17 13:50
2025-11-17 14:00
2025-11-17 14:10
2025-11-17 14:20
2025-11-17 14:30
2025-11-17 14:40
2025-11-17 14:50
2025-11-17 15:00
2025-11-17 15:10
2025-11-17 15:20
2025-11-17 15:30
2025-11-17 15:40
2025-11-17 15:50
dev9204Z250900019 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.27 x - 6.04
R² = 0.99
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

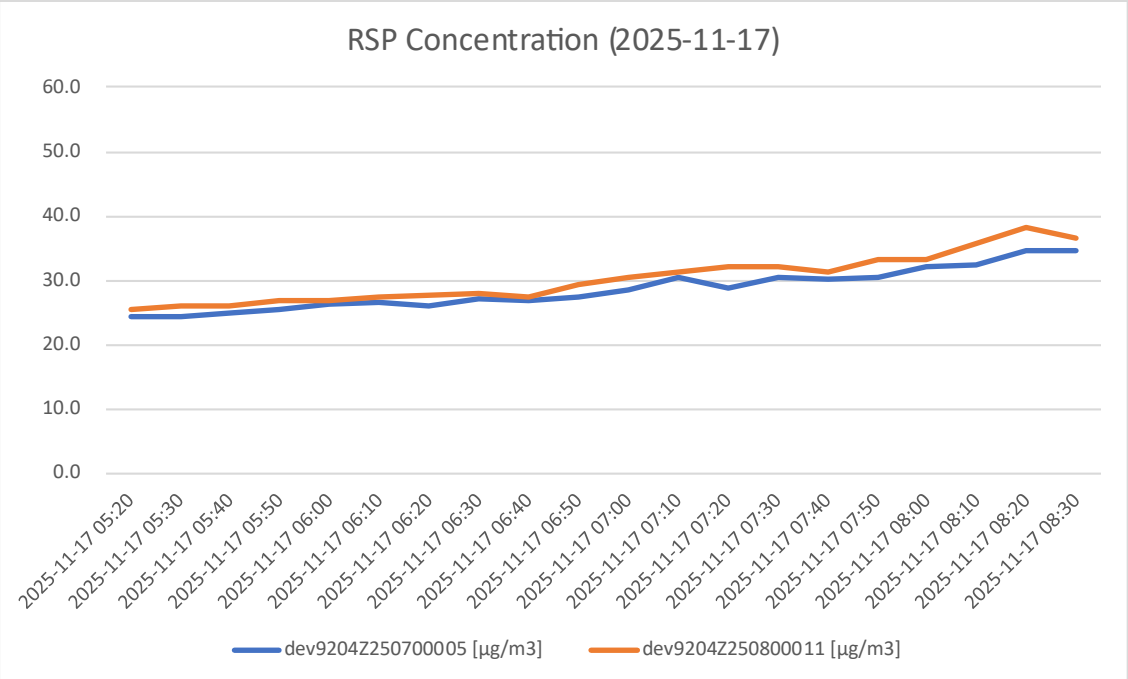
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.82	☑ PASS
Linearity (R^2)	*> 0.70*	0.95	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	12.6 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	1.9 μg/m³	☑ PASS

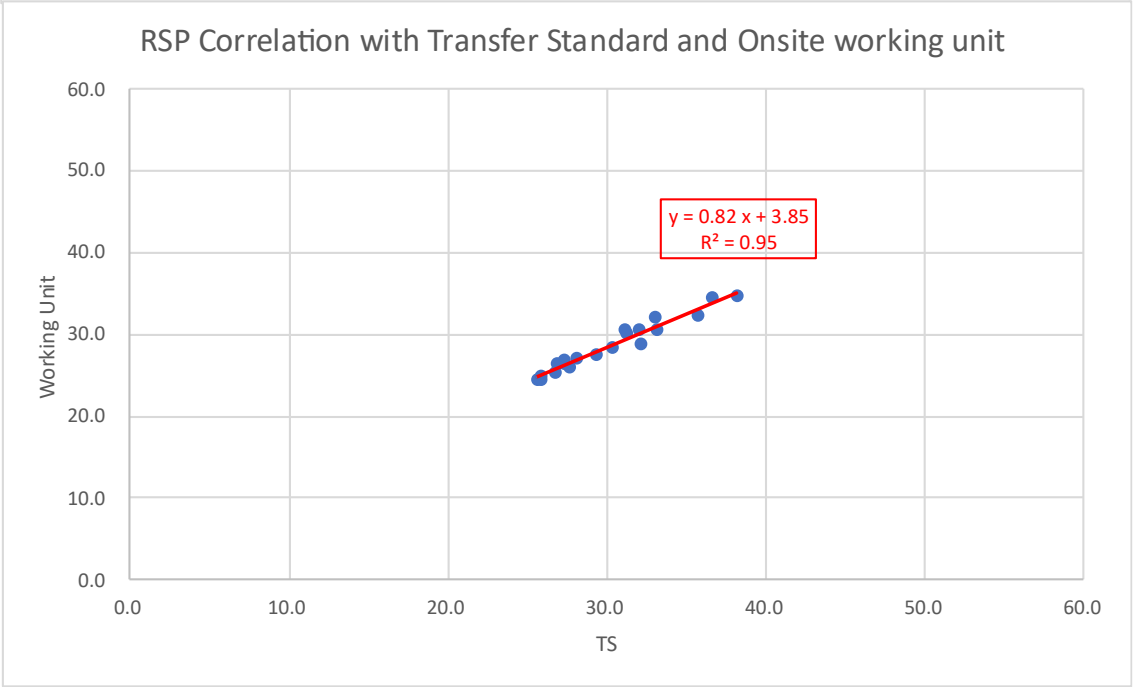
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

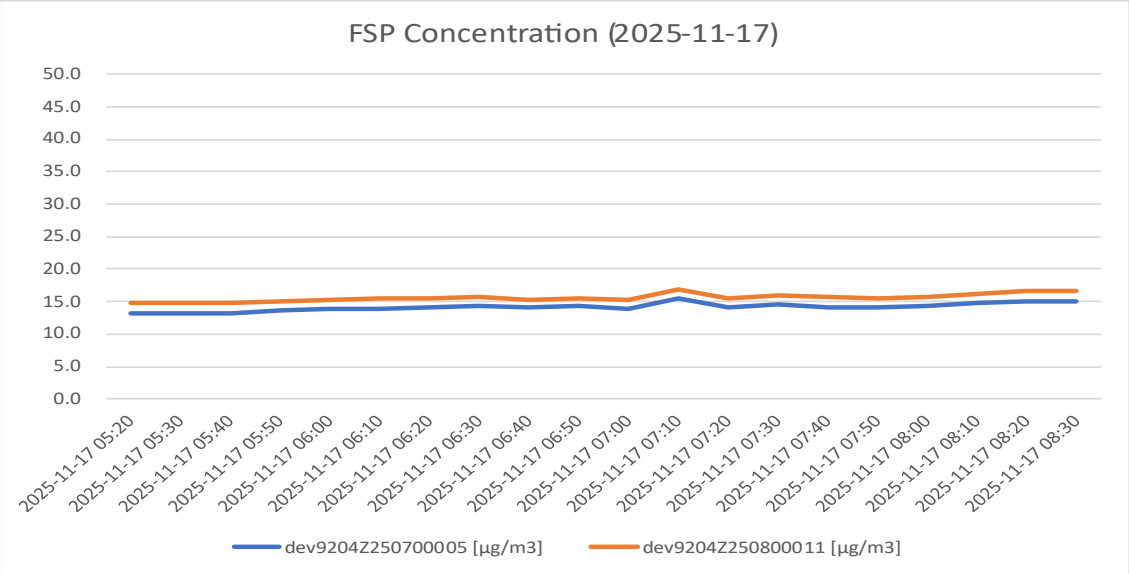
FSP:

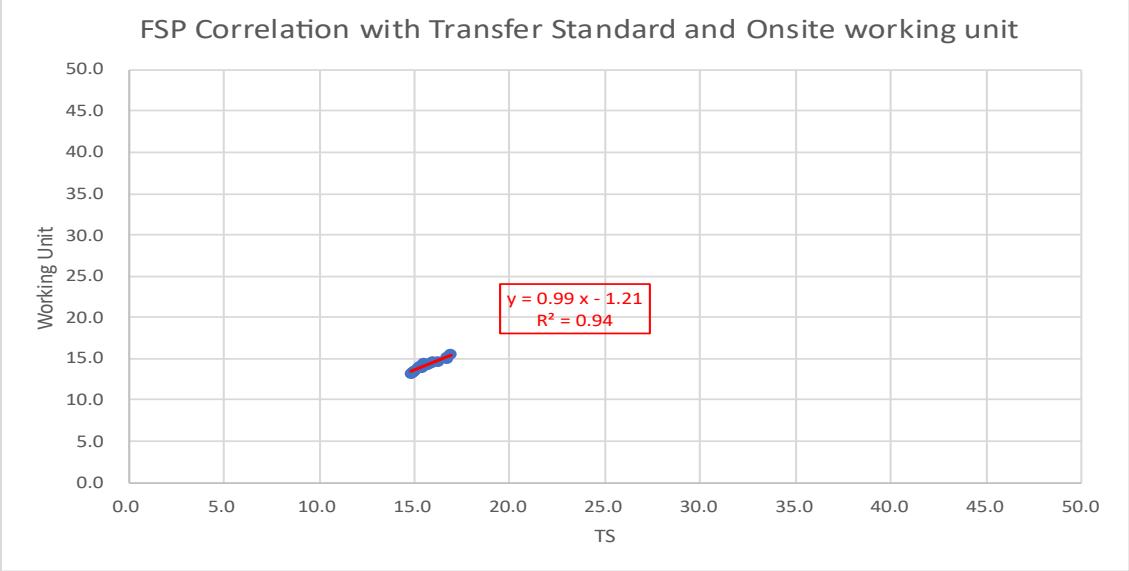
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.99	☑ PASS
Linearity (R^2)	*> 0.70*	0.94	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	2.1 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	1.4 μg/m³	☑ PASS

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

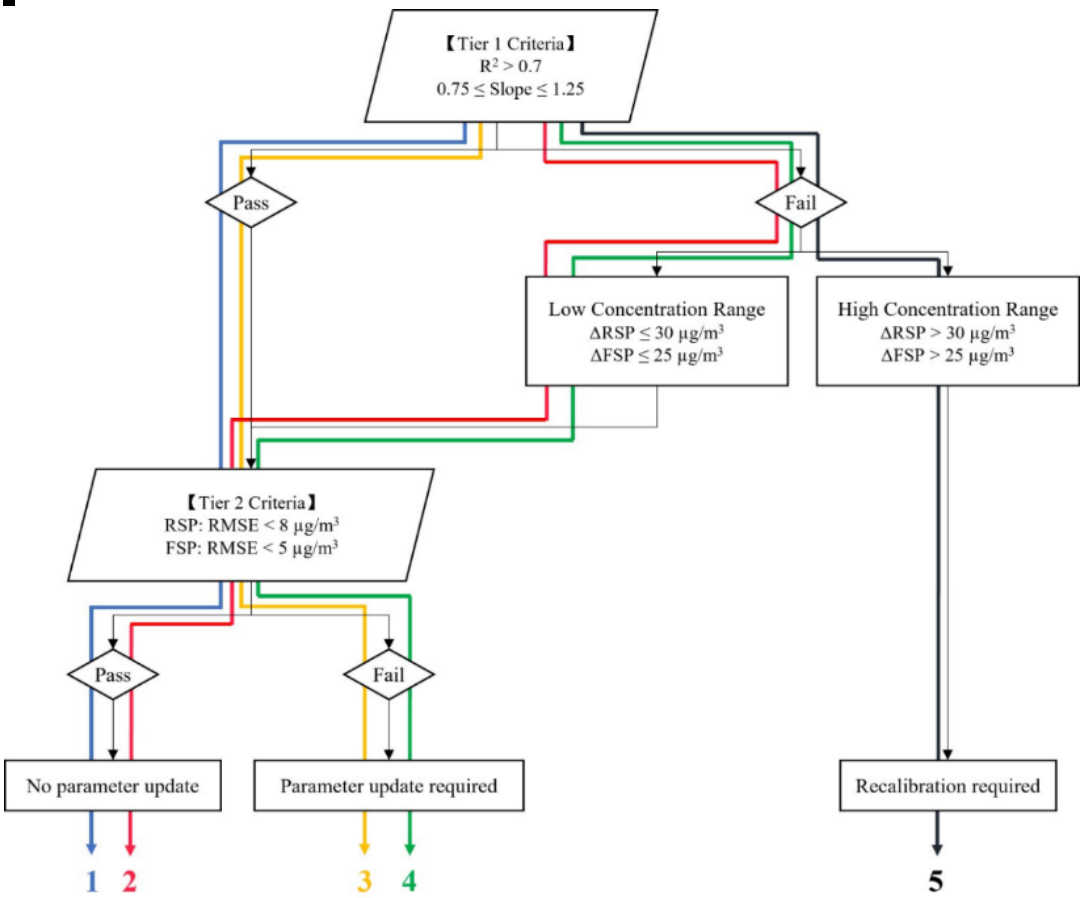

RSP Concentration (2025-11-17)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-11-17 05:20
2025-11-17 05:30
2025-11-17 05:40
2025-11-17 05:50
2025-11-17 06:00
2025-11-17 06:10
2025-11-17 06:20
2025-11-17 06:30
2025-11-17 06:40
2025-11-17 06:50
2025-11-17 07:00
2025-11-17 07:10
2025-11-17 07:20
2025-11-17 07:30
2025-11-17 07:40
2025-11-17 07:50
2025-11-17 08:00
2025-11-17 08:10
2025-11-17 08:20
2025-11-17 08:30
dev9204Z250700005 [µg/m3]
dev9204Z250800011 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 0.82 x + 3.85
R² = 0.95
Working Unit
TS
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0


FSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 05:20
2025-11-17 05:30
2025-11-17 05:40
2025-11-17 05:50
2025-11-17 06:00
2025-11-17 06:10
2025-11-17 06:20
2025-11-17 06:30
2025-11-17 06:40
2025-11-17 06:50
2025-11-17 07:00
2025-11-17 07:10
2025-11-17 07:20
2025-11-17 07:30
2025-11-17 07:40
2025-11-17 07:50
2025-11-17 08:00
2025-11-17 08:10
2025-11-17 08:20
2025-11-17 08:30
dev9204Z250700005 [µg/m3]
dev9204Z250800011 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.99 x - 1.21
R² = 0.94
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

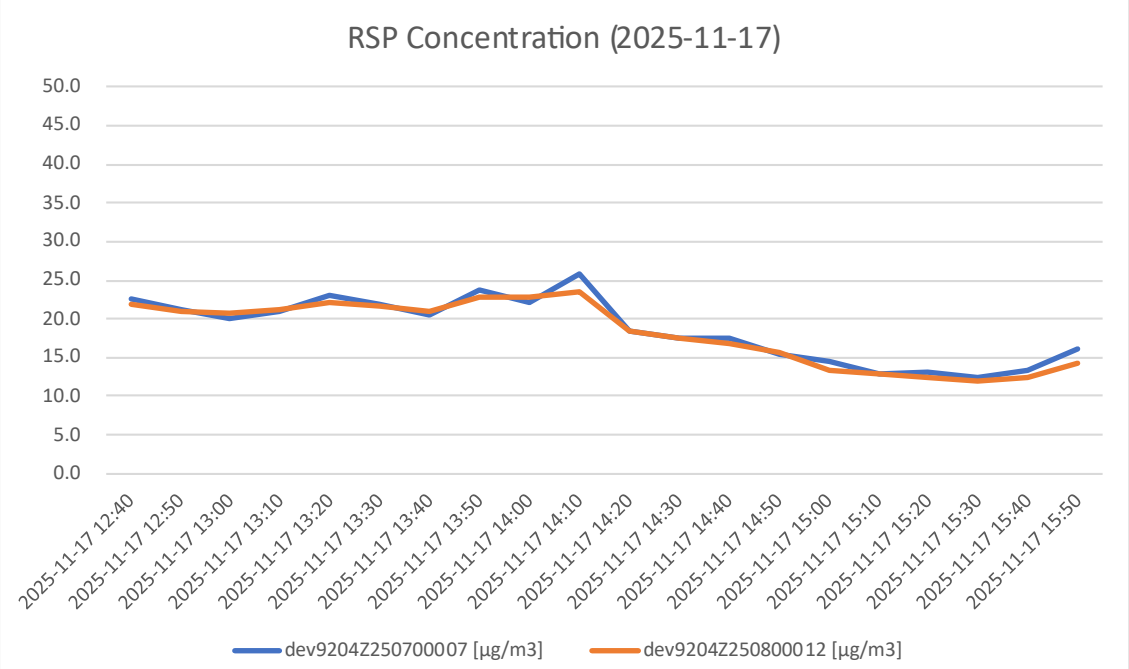
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.98	☑ PASS
Linearity (R^2)	*> 0.70*	0.97	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	11.5 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	0.9 μg/m³	☑ PASS

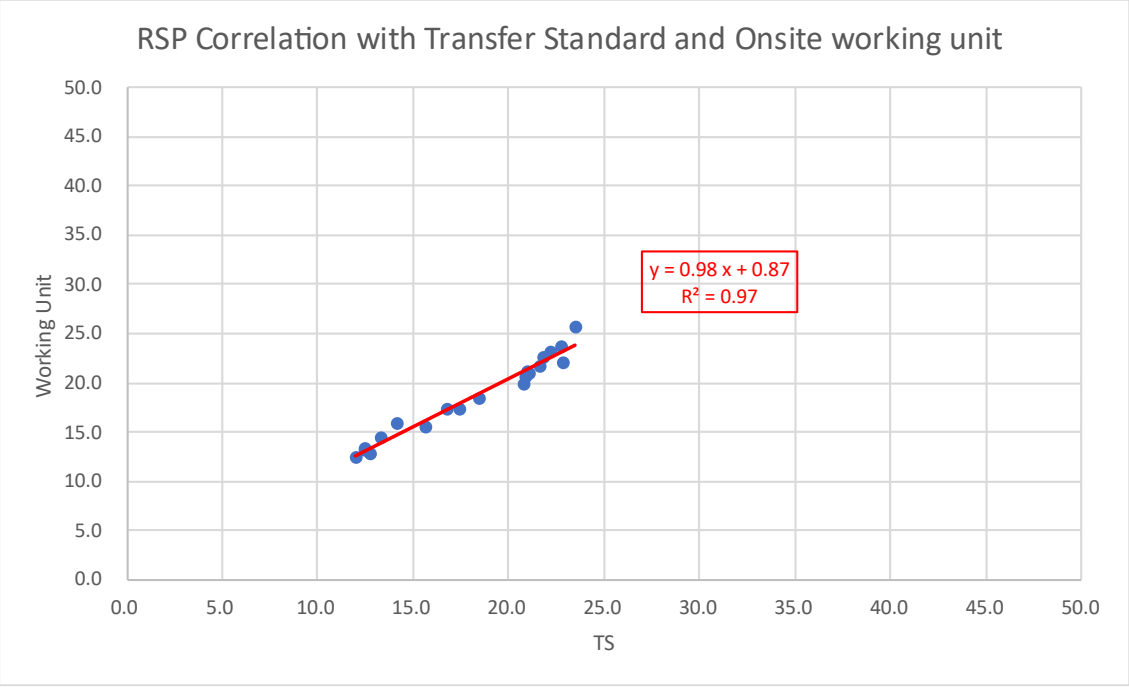
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

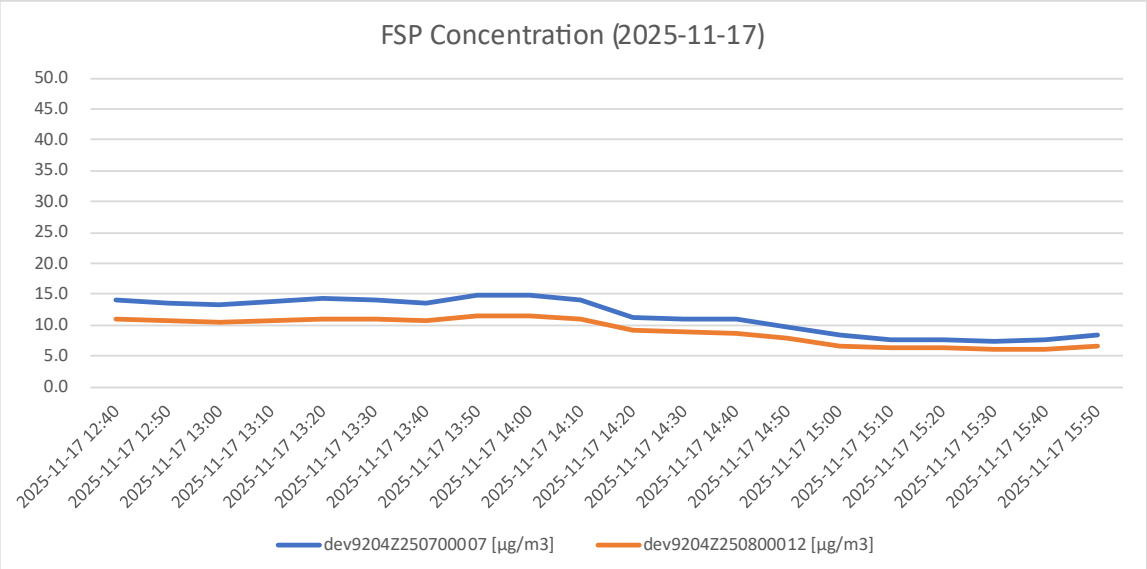
FSP:

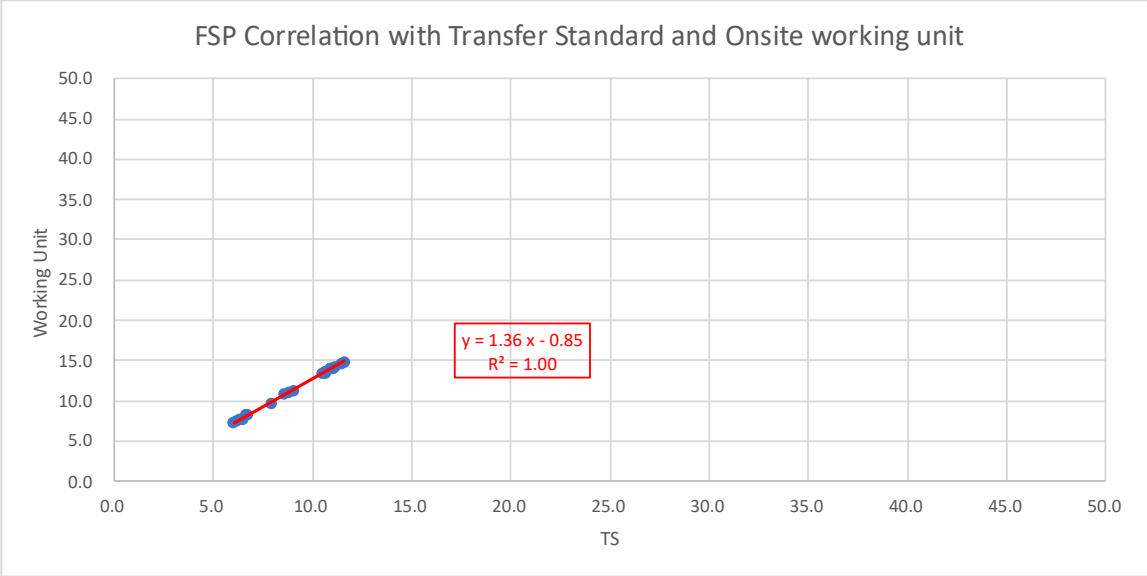
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	1.36	☒ FAIL
Linearity (R^2)	*> 0.70*	1.00	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	5.6 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	2.5 μg/m³	☑ PASS

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

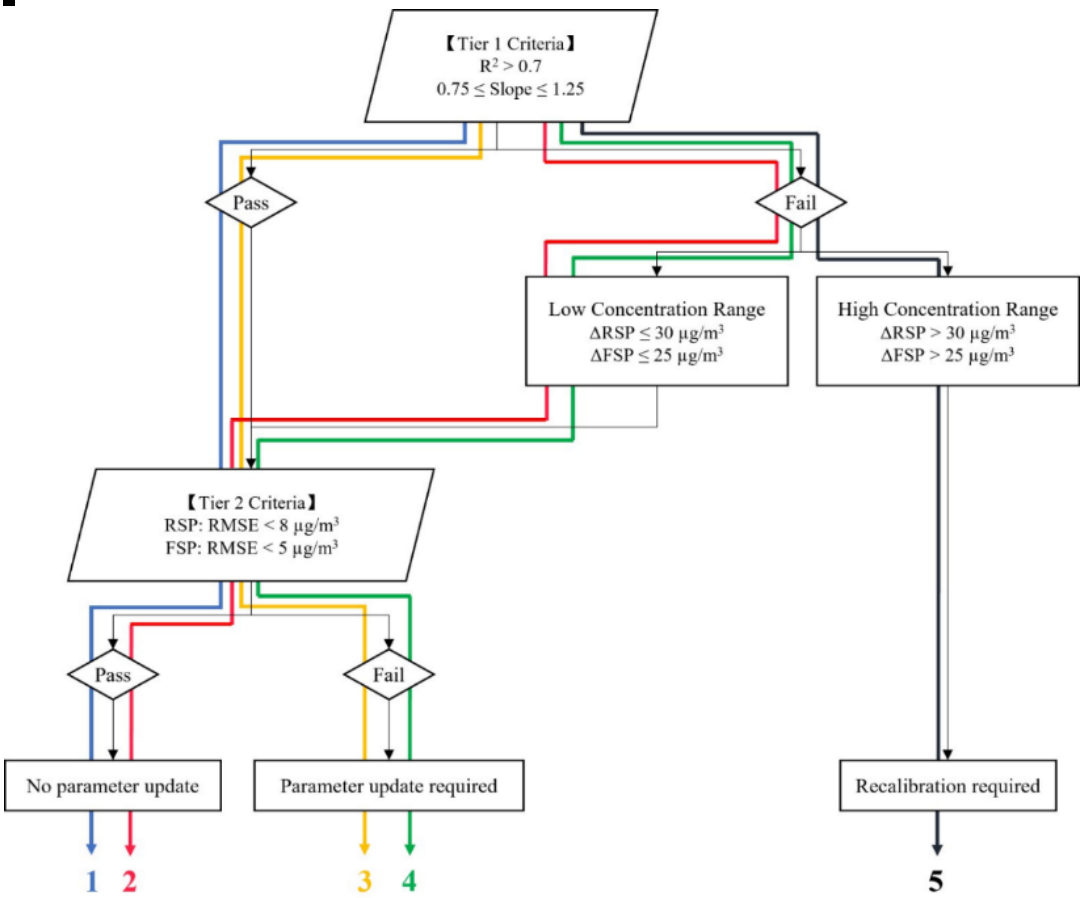

RSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 12:40
2025-11-17 12:50
2025-11-17 13:00
2025-11-17 13:10
2025-11-17 13:20
2025-11-17 13:30
2025-11-17 13:40
2025-11-17 13:50
2025-11-17 14:00
2025-11-17 14:10
2025-11-17 14:20
2025-11-17 14:30
2025-11-17 14:40
2025-11-17 14:50
2025-11-17 15:00
2025-11-17 15:10
2025-11-17 15:20
2025-11-17 15:30
2025-11-17 15:40
2025-11-17 15:50
dev9204Z250700007 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 0.98 x + 0.87
R² = 0.97
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0


FSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 12:40
2025-11-17 12:50
2025-11-17 13:00
2025-11-17 13:10
2025-11-17 13:20
2025-11-17 13:30
2025-11-17 13:40
2025-11-17 13:50
2025-11-17 14:00
2025-11-17 14:10
2025-11-17 14:20
2025-11-17 14:30
2025-11-17 14:40
2025-11-17 14:50
2025-11-17 15:00
2025-11-17 15:10
2025-11-17 15:20
2025-11-17 15:30
2025-11-17 15:40
2025-11-17 15:50
dev9204Z250700007 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
y = 1.36 x - 0.85
R² = 1.00
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0

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

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
$PM_{2.5}$ (FSP) PM_{10} (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:

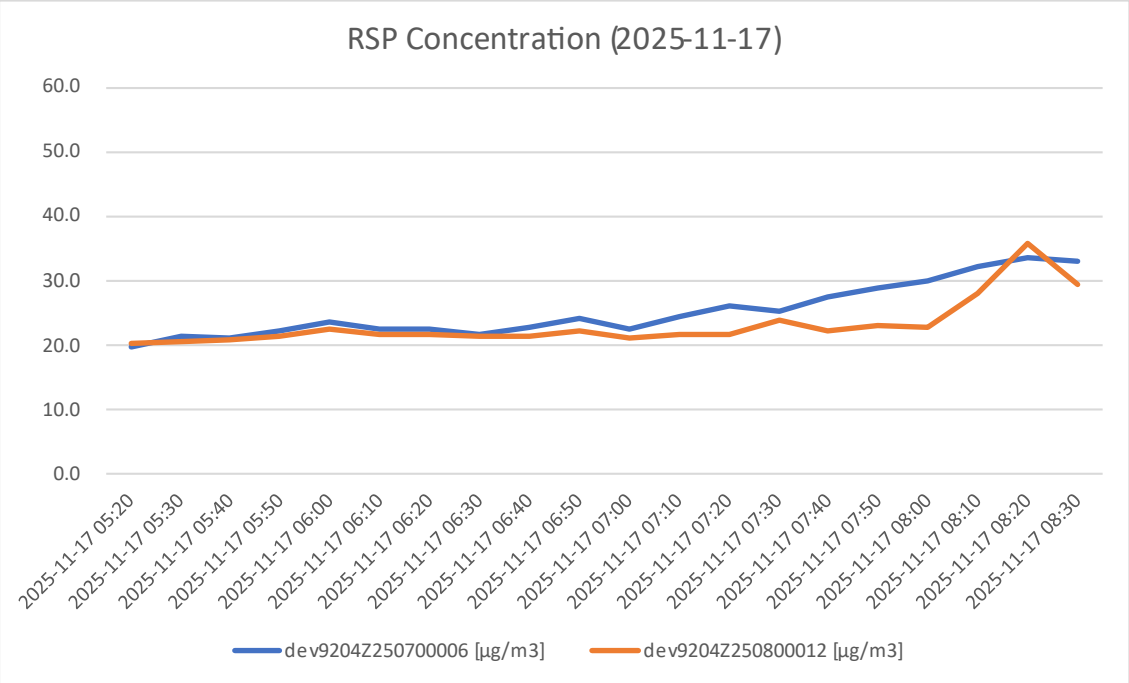
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	0.94	☑ PASS
Linearity (R^2)	*> 0.70*	0.70	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*RSP ⩽30 μg/m³ is low conc. range*	15.6 μg/m³	Not applicable
Tier 2			
Error (RMSE)	*< 8 μg/m³ for RSP*	3.1 μg/m³	☑ PASS

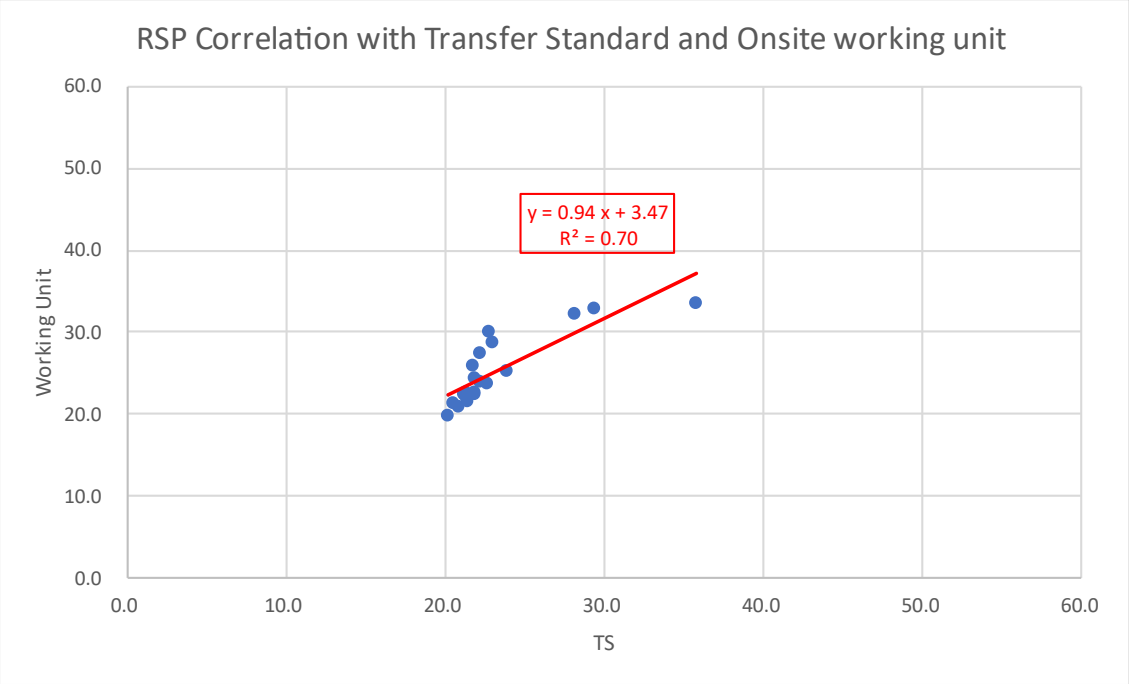
Remark: Follow QAQC Protocol Path 1 which both Criteria Tier 1 and Tier 2 passed.

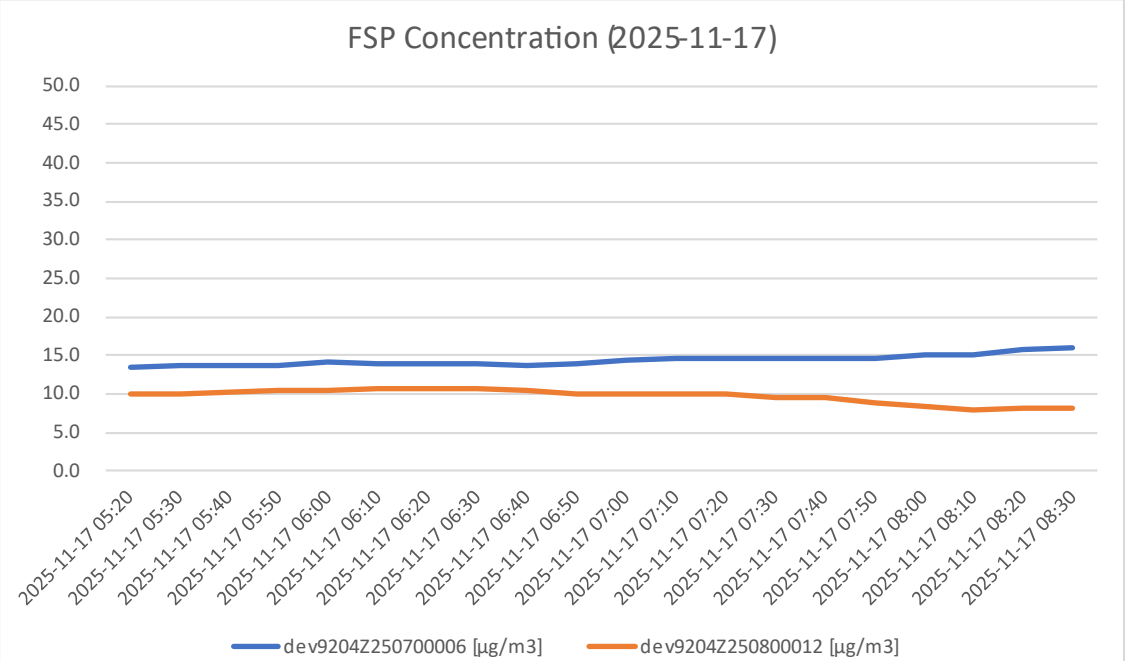
FSP:

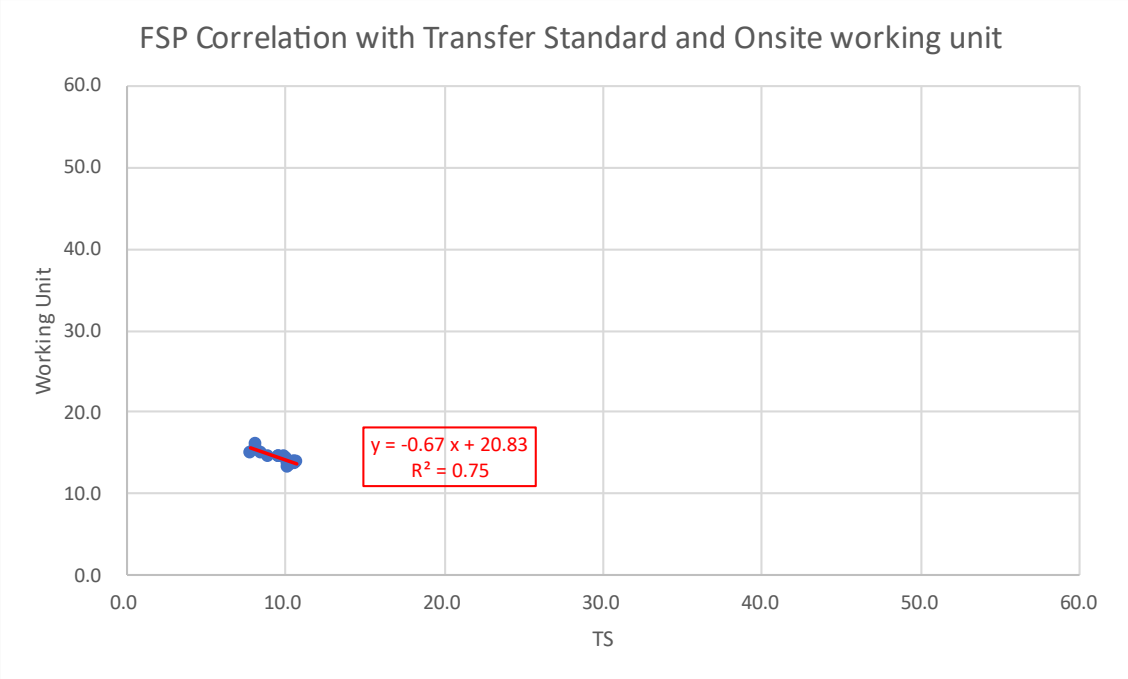
Performance Metric	Target Value	Actual Value	Result
Tier 1			
Bias (Slope)	*1.00±0.25*	-0.67	☒ FAIL
Linearity (R^2)	*> 0.70*	0.75	☑ PASS
If Tier 1 fails, Conc. Range will be checked	*FSP ⩽25 μg/m³ is low conc. range*	2.9 μg/m³	If Tier 1 criteria are not met due to narrow range of PM concentration, during the collocation period, Tier 2 will apply.
Tier 2			
Error (RMSE)	*< 5 μg/m³ for FSP*	4.9 μg/m³	☑ PASS

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

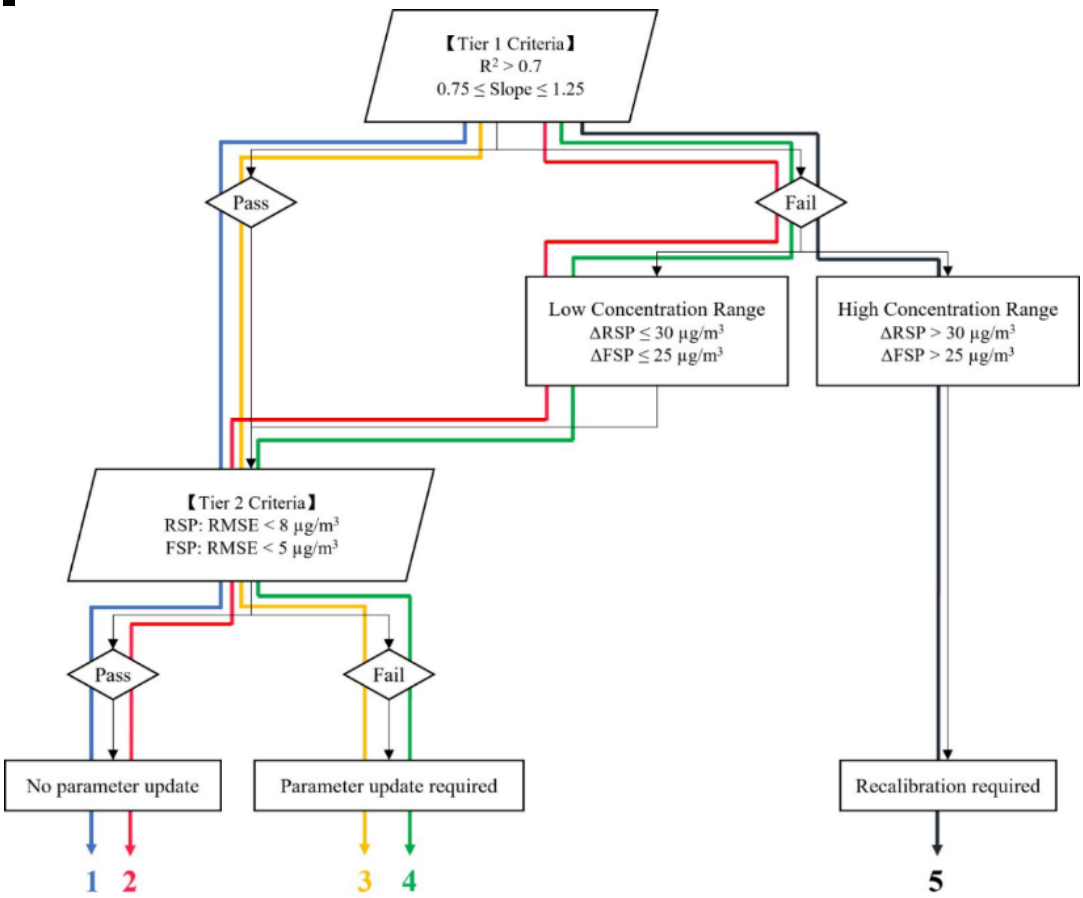

RSP Concentration (2025-11-17)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2025-11-17 05:20
2025-11-17 05:30
2025-11-17 05:40
2025-11-17 05:50
2025-11-17 06:00
2025-11-17 06:10
2025-11-17 06:20
2025-11-17 06:30
2025-11-17 06:40
2025-11-17 06:50
2025-11-17 07:00
2025-11-17 07:10
2025-11-17 07:20
2025-11-17 07:30
2025-11-17 07:40
2025-11-17 07:50
2025-11-17 08:00
2025-11-17 08:10
2025-11-17 08:20
2025-11-17 08:30
dev9204Z250700006 [µg/m3]
dev9204Z250800012 [µg/m3]


RSP Correlation with Transfer Standard and Onsite working unit
y = 0.94 x + 3.47
R² = 0.70
Working Unit
TS
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0


FSP Concentration (2025-11-17)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2025-11-17 05:20
2025-11-17 05:30
2025-11-17 05:40
2025-11-17 05:50
2025-11-17 06:00
2025-11-17 06:10
2025-11-17 06:20
2025-11-17 06:30
2025-11-17 06:40
2025-11-17 06:50
2025-11-17 07:00
2025-11-17 07:10
2025-11-17 07:20
2025-11-17 07:30
2025-11-17 07:40
2025-11-17 07:50
2025-11-17 08:00
2025-11-17 08:10
2025-11-17 08:20
2025-11-17 08:30
dev9204Z250700006 [µg/m3]
dev9204Z250800012 [µg/m3]


FSP Correlation with Transfer Standard and Onsite working unit
Working Unit
TS
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
y = -0.67 x + 20.83
R² = 0.75

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