Picarro Certificate of Compliance

APPLICATION: CO2, CH4, CO and H2O
DAS SN: 3664-CFKADS2372

PARAMETER	SPECIFICATION	VALUE	UNITS	Pass/Fail	NOTES
CO2 PRECISION	< = 50	17	ppb	Pass	Calculate 300 second interval standard deviation of raw data over 24 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CO2 PRECISION - 5 MIN AVG	< 20	7	ppb	Pass	Calculate standard deviation of 5 minute averaged data over 2 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CO2 DRIFT	< 100	23	ppb	Pass	Calculate 50 minute interval mean of raw data over 30 hrs, (peak to peak); with one hour stabilization at beginning of run
CO2 ACCURACY	+ /- 1.00	-0.08	ppm	Pass	Mean value of raw data over 30 minutes (average); with one hour stabilization at beginning of run (relative to Picarro standard)
CO2 REPRODUCIBILITY	< 50	10	ppb	Pass	Cycle between two gases and ambient air at 20 minute intervals for 72 hrs, average 8 minutes 50 seconds to 9 minutes 50 seconds of each interval and calculate the standard deviation of averaged results for each gas, (1-sigma) ; with one hour stabilization at beginning of run
CH4 PRECISION	< = 1	0.15	ppb	Pass	Calculate 300 second interval standard deviation of raw data over 24 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CH4 PRECISION - 5 MIN AVG	< 0.5	0.10	ppb	Pass	Calculate standard deviation of 5 minute averaged data over 2 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CH4 DRIFT	< 1.0	0.22	ppb	Pass	Calculate 50 minute interval mean of raw data over 30 hrs, (peak to peak); with one hour stabilization at beginning of run
CH4 ACCURACY	+ /- 4.5	-1.1	ppb	Pass	Mean value of raw data over 30 minutes (average); with one hour stabilization at beginning of run (relative to Picarro standard)
CH4 REPRODUCIBILITY	< 0.5	0.2	ppb	Pass	Cycle between two gases and ambient air at 20 minute intervals for 72 hrs, average 8 minutes 50 seconds to 9 minutes 50 seconds of each interval and calculate the standard deviation of averaged results for each gas, (1-sigma) ; with one hour stabilization at beginning of run
CO PRECISION	< = 15.0	2.8	ppb	Pass	Calculate 300 second interval standard deviation of raw data over 24 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CO PRECISION (5minute average)	< 1.5	0.3	ppb	Pass	Calculate 50 minute interval standard deviation of 5 minute average data over 24 hrs, (1-sigma) ; with one hour stabilization at beginning of run
CO DRIFT	< 10.0	1.9	ppb	Pass	Peak to peak measurement variation with a five minute average over 24 hrs
CO 72 HR DRIFT	< = 2	0.4	ppb	Pass	2 x 1 Hr interval standard deviation collected with referance gas (5 minute reference/ 15 minute analyie)
CO ACCURACY	+ /- 1.00	-0.04	%	Pass	Mean value of raw data over 30 minutes (average); with one hour stabilization at beginning of run (relative to Picarro standard)
CO REPRODUCIBILITY	< 1	0.5	ppb	Pass	Cycle between two gases and ambient air at 20 minute intervals for 72 hrs, average 8 minutes 50 seconds to 9 minutes 50 seconds of each interval and calculate the standard deviation of averaged results for each gas, (1-sigma) ; with one hour stabilization at beginning of run
H2O PRECISION	< 30	8	ppm	Pass	Calculate 300 second interval standard deviation of raw data over 30 hrs, (1-sigma) ; with one hour stabilization at beginning of run
H2O PRECISION - 5 MIN AVG	< 5	1	ppm	Pass	Calculate standard deviation of 5 minute averaged data over 2 hrs, (1-sigma) ; with one hour stabilization at beginning of run
MEASUREMENT INTERVAL	<= 5	2.4	seconds	Pass	Measurements for all three gas species made over this time interval and corresponding concentration levels assigned
RISE TIME	< = 5.0	2.4	seconds	Pass	10 to 90%; Configure the analyzer to measure CO2 only (1 second measurement interval typical), average of five transitions: Cycle between two gases at 5 minute intervals for 30 minutes; minimum delta between gas bottles is 20 ppm
FALL TIME	<= 5.0	2.3	seconds	Pass	90 to 10 %; Configure the analyzer to measure CO2 only (1 second measurement interval typical), average of five transitions; Cycle between two gases at 5 minute intervals for 30 minutes: minimum delta between gas bottles is 20 ppm
GAS FLOW RATE	< = 280	229	sccm	Pass	
CO2 STORAGE TEST	<= 150	40	ppb	Pass	Absolute value of change in accuracy of gas species after 5-40C ambient temperature cycles 1.25 hr after restart of analyzer; measure accuracy for 15 minutes
CH4 STORAGE TEST	<= 1.0	0.7	ppb	Pass	Absolute change in accuracy of gas species after 5-40C ambient temperature cycles 1.25 hr after restart of analyzer; measure accuracy for 15 minutes
CO STORAGE TEST	< x.x	0.3	ppb	Pass	Absolute change in accuracy of both gas species after 5-40C ambient temperature cycles1 hr after restart of analyzer; measure accuracy for 15 minutes

GENERAL COMMENTS: * CO accuracy is measured relative to Picarro CO cylinder at 1000 ppm

Approvals	Initials	Date
Manufacturing	SMD	5/12/2020
Engineering	EW	5/12/2020
Marketing	GL	5/12/2020