Mercedes-Benz MY2023 GLC300 4MATIC PEMS Report

1. Background

Mercedes-Benz Group AG (Mercedes-Benz), with headquarters in Stuttgart, Germany, is a large automotive company that sells vehicles and services in nearly every country in the world. Mercedes-Benz has production facilities in Europe, North and South America, Asia, and Africa. The current brand portfolio includes Mercedes-Benz as well as Mercedes-AMG, Mercedes-Maybach, smart, and EQ.

As part of fulfilling obligations under the Consent Decree entered on March 9, 2021 ("Consent Decree") with the United States and California, Mercedes-Benz conducts off-cycle testing, encompassing Portable Emissions Measurement System (PEMS) testing, to demonstrate off-cycle tailpipe emissions and to screen for undisclosed auxiliary emission control devices (AECDs) and defeat devices in U.S. light- and medium-duty vehicles. The testing was conducted as described in Section VII of the Consent Decree. Pursuant to the Consent Decree, Mercedes-Benz will conduct PEMS testing for any new diesel vehicles issued Certificates of Conformity or Executive Orders through and including MY2023 as light- or medium-duty diesel models, and for three vehicles certified as light- or medium-duty gasoline Test Groups per Model Year from MY2021 through and including MY2024. This PEMS report relates to MY2023 GLC300 4MATIC from Test Group PMBXJ02.0HY1, which is the highest volume Test Group applicable for MY2023 based on the projected 50 states' sales volumes prepared for NMOG + NOx fleet averages under Tier 3.

2. Approach

To demonstrate off-cycle tailpipe emissions, tests were performed on public roads in the Los Angeles area on city, highway, and mountain routes. These test routes have been approved by CARB. Emissions measured and/or calculated and reported include oxides of nitrogen (NO_x), carbon monoxide (CO), carbon dioxide (CO_2), total hydrocarbons (THC), and non-methane organic gases (NMOG). All tests were executed by a team in Long Beach, CA. This team is independent of Mercedes-Benz's product development departments. All vehicles were configured and tested by MBRDNA Long Beach Compliance staff. Test results were then analyzed to ensure quality control processes took place before and after each test sequence, including instrument calibration and calibration with reference gasses.

3. Emissions Results

MY2023 vehicle with the specifications listed in Table 1 was tested in October 2022. Tables 2 through 4 provide the vehicle test results of the combined route segments performed in the default transmission mode (Comfort Mode).

Table 1: Vehicle Specification

Model	Tier	Drive type	HP	Torque (ft.lb)	Transmission	Exh Treatment	Fuel	Start Mileage
GLC300 4M	SULEV30	AWD	255	295	9 Automatic	TWC	Gasoline	133

Table 2: Highway Results

	A1 Highway East (g/mi)					B2 Highway West (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4M	284.42	0.77791	0.00566	0.00398	0.00539	223.61	0.53800	0.00013	0.00151	0.00012

Table 3: Mountain Results

	A2 Mountain Uphill (g/mi)					B1 Mountain Downhill (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4M	532.92	1.13056	0.00762	0.00465	0.00726	165.51	0.31246	0.00126	0.00335	0.00119

Table 4: Cold Start and Urban Driving Result

	A0 Long Beach → CARB (g/mi)					LA City (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4M	292.01	0.82183	0.01140	0.00541	0.01159	425.33	1.97323	0.00051	0.01122	0.00048

4. Trip Statistics

Tables 5 to 10 summarize the vehicle test statistics and environmental conditions during each test cycle.

Table 5: Highway East (A1)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.29.41	27.88	16.988	56.67	4.57	1.53	48.39	45.51	415.8	82.55

Table 6: Highway West (B2)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.32.23	28.56	14.807	53.13	4.91	1.96	49.36	43.77	198.1	85.98

Table 7: Mountain Uphill (A2)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.31.48	17.23	16.189	32.64	12.53	0.58	45.10	41.79	1012.2	81.69

Table 8: Mountain Downhill (B1)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.31.38	18.00	15.029	34.38	15.77	0.74	46.51	36.98	76.8	81.86

Table 9: Long Beach to CARB (A0)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.31.25	24.25	15.852	46.51	4.32	0.00	52.90	42.78	233.5	80.64

Table 10: LA City

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.55.56	16.02	17.554	17.23	28.14	0.24	36.49	35.13	220.8	87.09

‡V*Apos results are the 95th percentile values displayed in m^2/s^3

5. Routes

The routes for on-road emissions testing are approved by CARB and intended to include various road and traffic conditions. These routes include mountain driving at high elevation, urban driving, and highway driving. These routes are separated into six test sections with no key-off cycles between A0 and B2. For the Combined Test Route, the test vehicle was cold-started at the Mercedes-Benz Los Angeles Technology Center (MB LATC) and data was collected for Segment A0 between MB LATC and the official start of the route at CARB El Monte. The Urban/Downtown L.A. test route, consistent with past Off-Cycle tests was driven on a different day, and was started with a running engine after a transfer drive from MB LATC to the start of the route with no key-off cycles.

Table 11: Description of Test Routes and Calculated Trip Statistics

Route	Distance (mi)	Segment Duration	Max – Min Elevation (m)	Average Speed (mph)	Fraction Hwy	Fraction Urban/Rural
A0	24	31 min	133	47	65	35
A1	28	29 min	281	57	90	10
A2	17	32 min	976	33	0	100
B1	18	32 min	986	34	21	79
B2	29	32 min	292	53	78	22
LA City	16	56 min	73	17	12	88

5.1 Highway Sections (A1 & B2)

These routes are representative of highway driving in California. Each route segment is approximately 28 miles and is composed of 95% highway and 5% surface roads. These segments travel between Vineyard Ave, Ontario CA and California Air Resource Board office at 9528 Telstar Ave, El Monte CA via Hwy 10. The average speed is 50mph and the net elevation change is approximately 938ft (286m).

A1 – Highway East

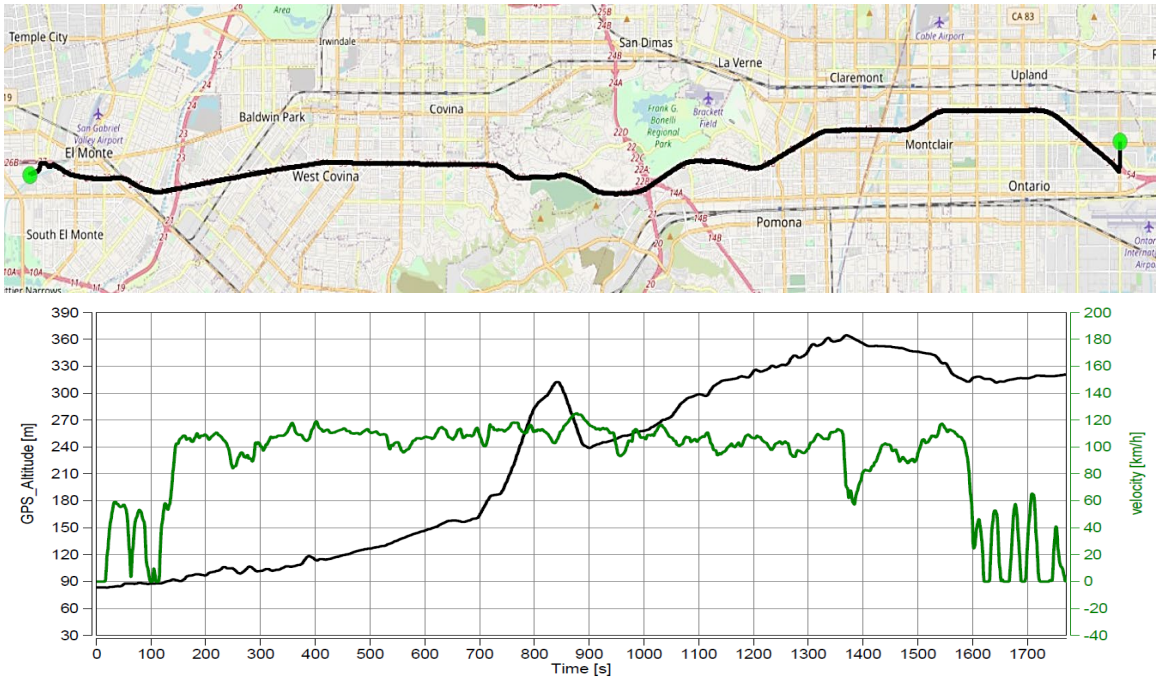


Figure 1. Map of Route A1 – Highway East. Including speed and elevation

B2 – Highway West

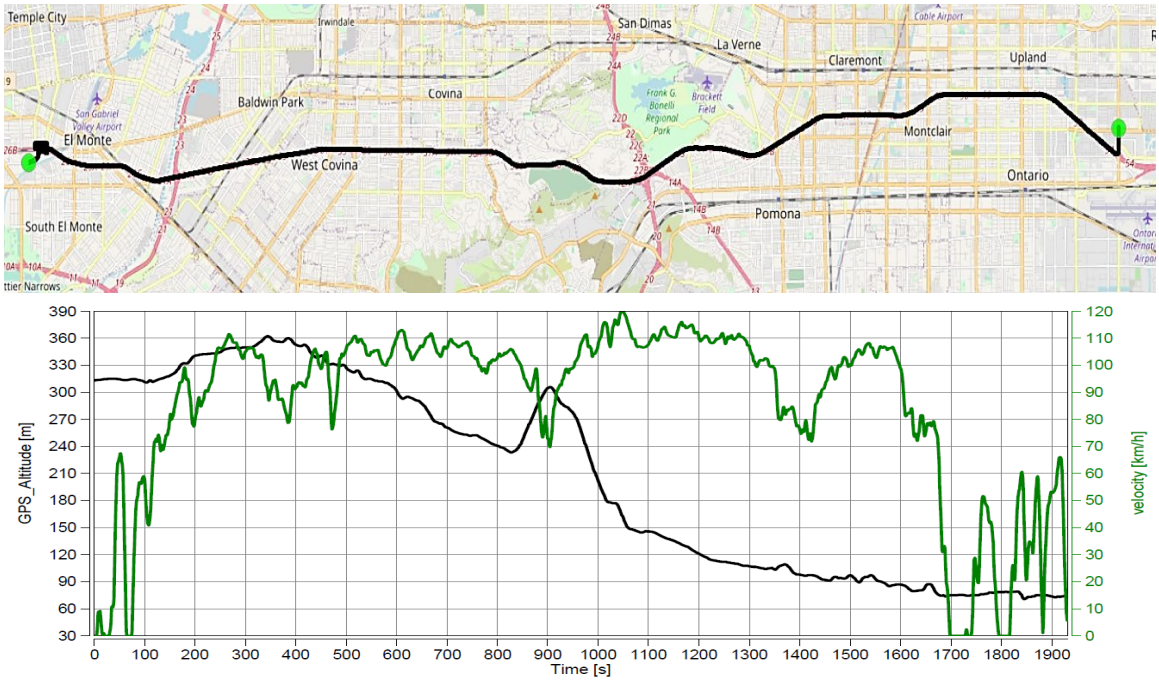


Figure 2. Map of Route B2 – Highway West. Including speed and elevation

5.2 Mountain Sections (A2 & B1)

This route is representative of rural uphill and downhill driving. Each route segment is approximately 17.5 miles and is composed of 90% surface roads and 10% highway, starting from Vineyard Ave in Ontario and traveling to Mt. Baldy, then returning to Vineyard Ave. The average speed is 30mph. The net elevation change is 3242ft (988m).

A2 – Mountain Uphill

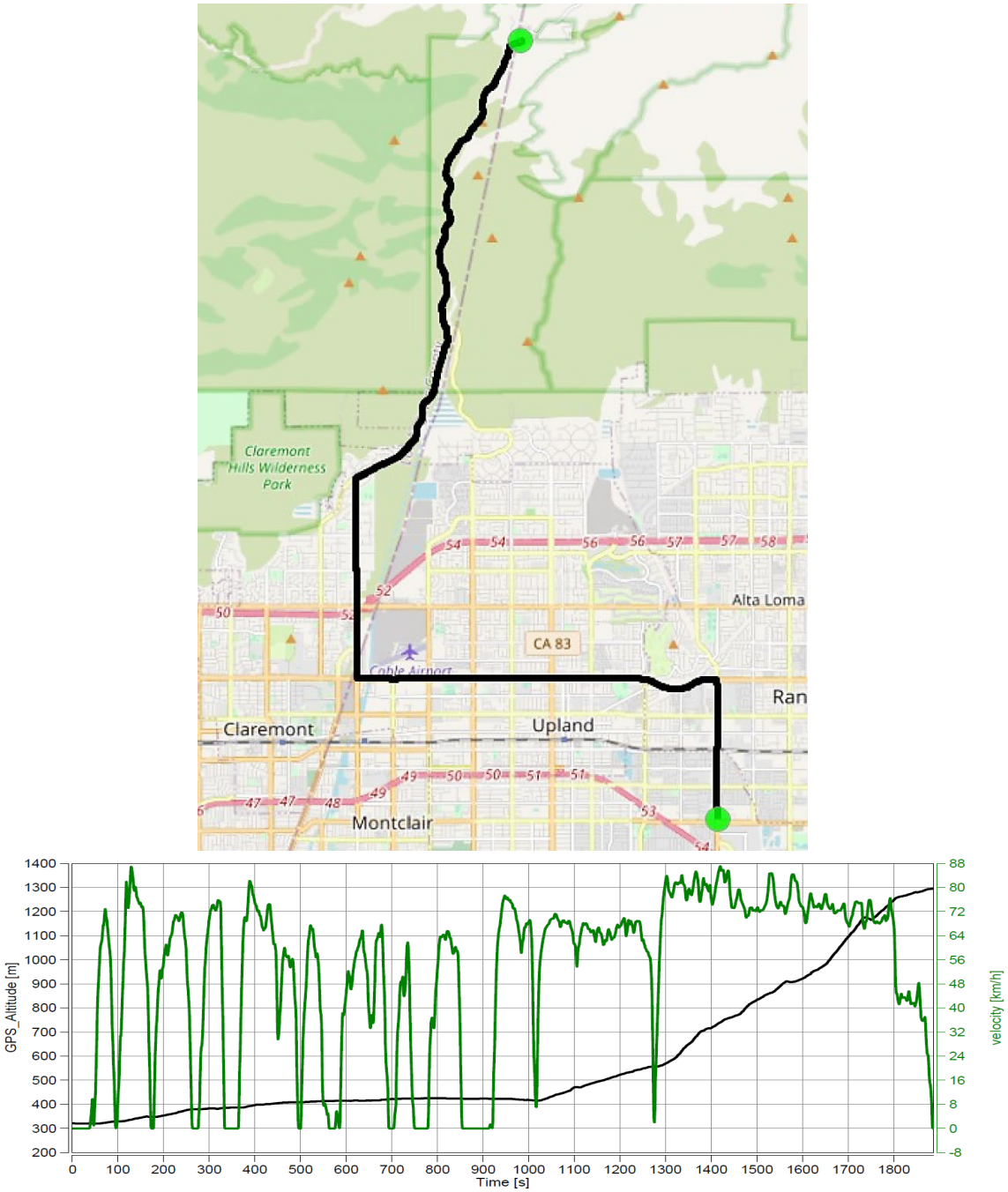


Figure 3. Map of Route A2 – Mountain Uphill. Including speed and elevation

B1 – Mountain Downhill.

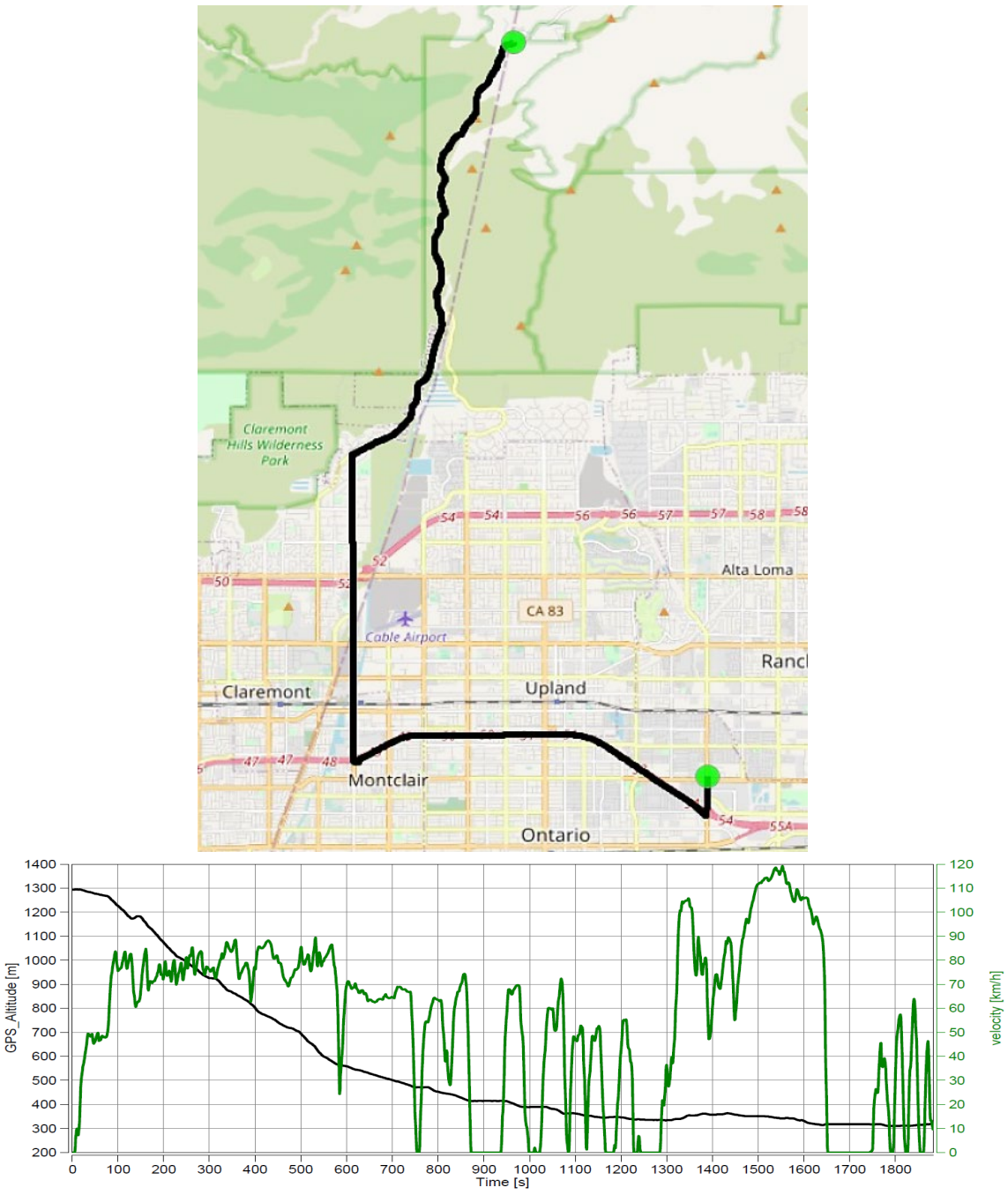


Figure 4. Map of Route B1 – Mountain Downhill. Including speed and elevation

5.3 Long Beach to CARB Section (A0)

This route travels between 4035 Via Oro Ave, Long Beach CA and 9528 Telstar Ave, El Monte CA. This route contains a cold start event with the test vehicle normalized to ambient conditions, beginning from Long Beach.

A0 – Long Beach to CARB

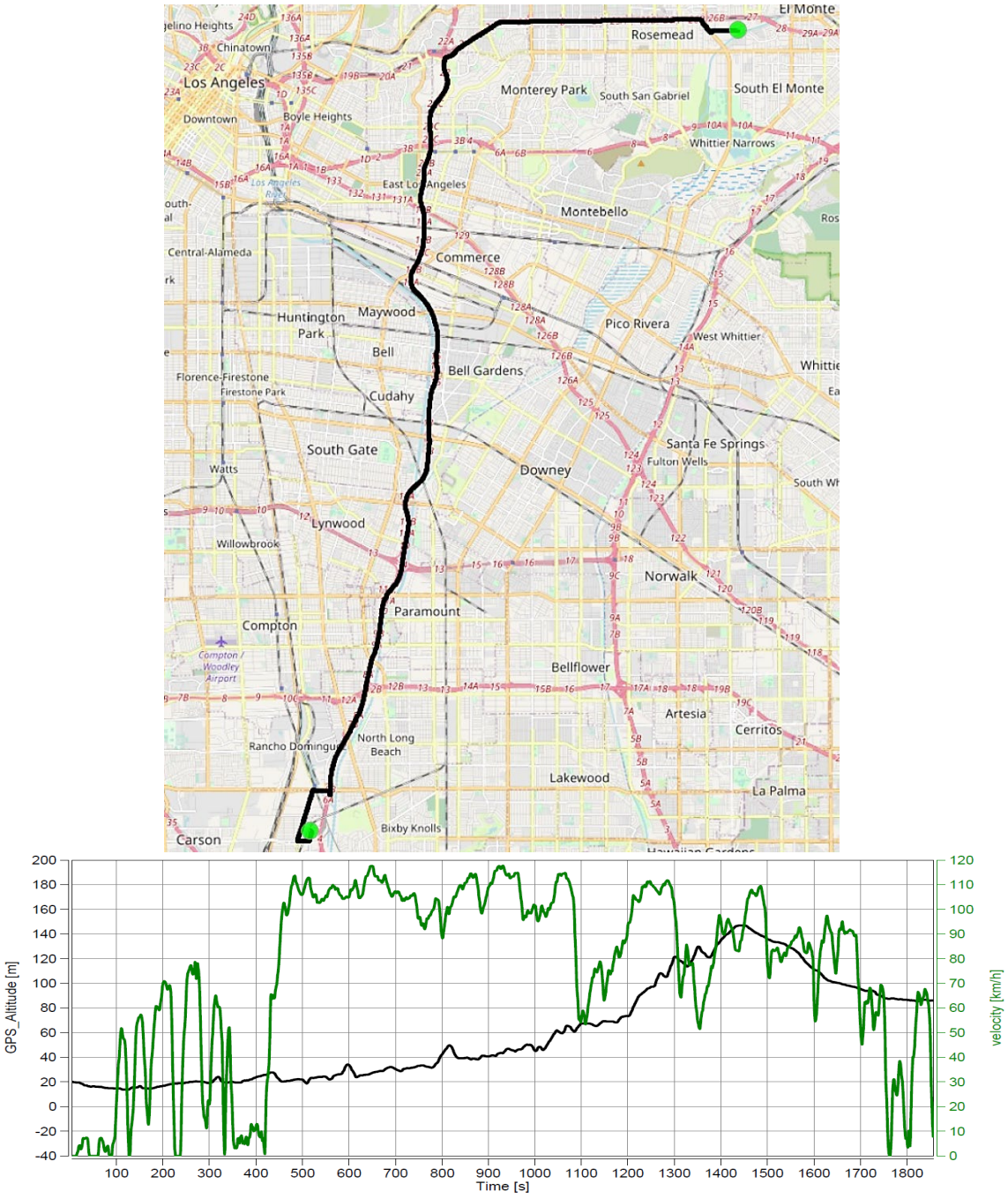


Figure 5. Map of Route A0 – Long Beach to CARB, El Monte. Including speed and elevation

5.4 LA City Driving Section

This route is intended to represent city driving and is a modernized reflection of the LA4. There are minor modifications to account for traffic patterns and roads which have changed since 1972 but this route represents a similar pattern to the original route. The route is approximately 16 miles and is 20% highway, 80% surface road with an average speed of 16mph.

LA City Route

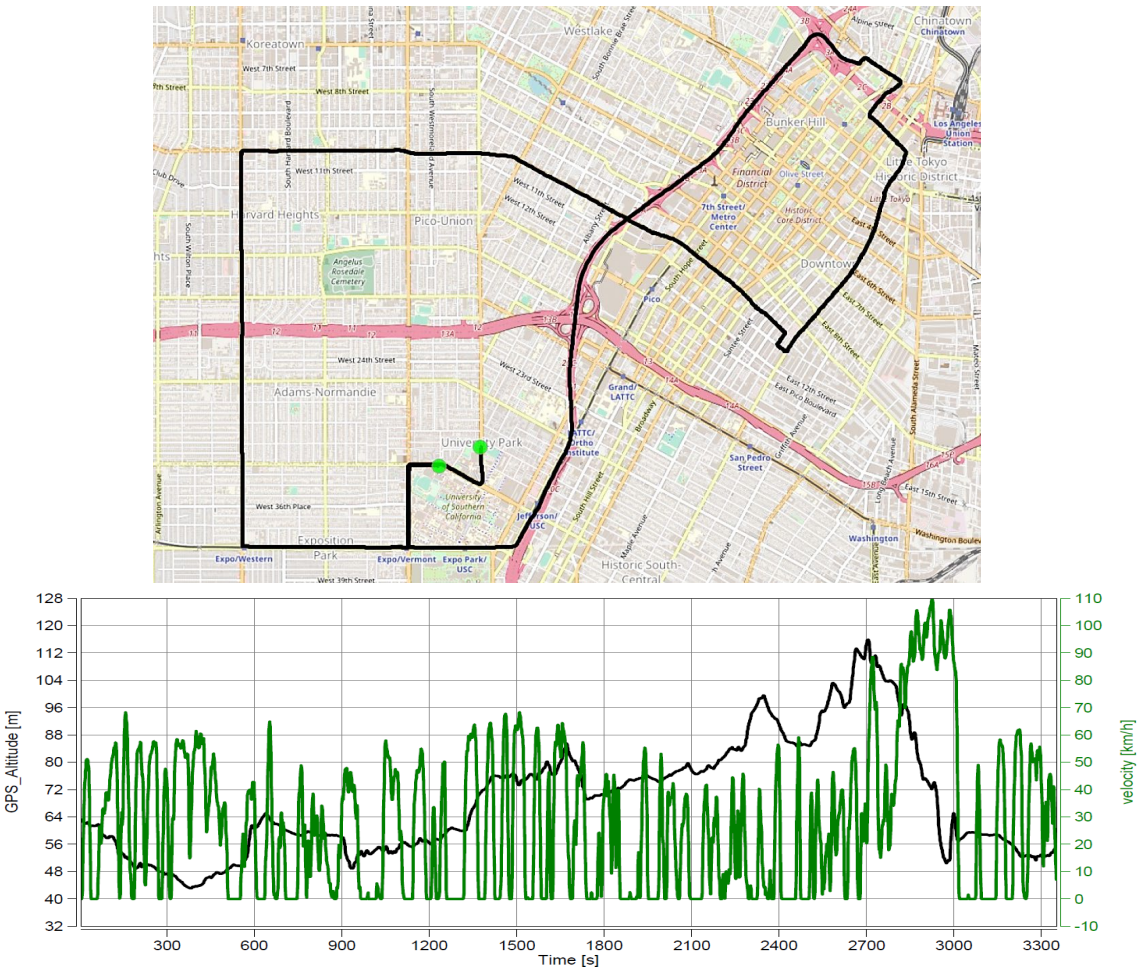


Figure 6. Map of LA City Route. Including speed and elevation

6. Log Sheets

A comprehensive list with information regarding each PEMS test conducted is provided separately as an addendum to this report. In addition to the information concerning PEMS test results, all test records will also be provided in the same file.

The information is provided in the file: Flat File Log Sheet MY2023 GLC300.pdf

The file contains log sheet information on PEMS testing conducted with the MY2023 Mercedes-Benz GLC300 4MATIC test vehicle X254-708. The table also includes information and explanations on valid, aborted, and invalid tests.

7. Appendix

The following pages include emission report summaries for each valid test performed using the PEMS system and AVL post processing.

Case: X254-708
Page: Trip Summary

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1779.00	s
Trip Duration (a)	1779.00	s
Trip Distance	27.88	mi
Trip Distance (a)	27.88	mi
Trip Fuel Cons. (b)	2.57	kg
Trip Fuel Cons. (ab)	2.57	kg
Trip Fuel Cons. EU (ac)	2.64	kg
Trip Fuel Cons. US (ac)	2.62	kg
Trip Fuel Economy (b)	30.65	mpg_US
Trip Fuel Economy (ab)	30.65	mpg_US
Trip Fuel Economy EU (ac)	29.83	mpg_US
Trip Fuel Economy US (ac)	30.15	mpg_US
Trip Fuel Economy GGE (b)	30.65	mpg_US
Trip Fuel Economy GGE (ab)	30.65	mpg_US
Trip Fuel Economy EU GGE (ac)	29.83	mpg_US
Trip Fuel Economy US GGE (ac)	30.15	mpg_US
Trip Av. Eng. Speed	1524.18	rpm
Trip Av. Torque	90.29	lbft
Trip Av. Power	28.40	hp
Trip Work		
Trip Work (a)	13.97	hphr
Trip Exhaust Mass	40.58	kg
Trip Exhaust Mass EU (ac)	39.50	kg
Trip Exhaust Mass US (ac)	39.94	kg
Trip Av. Amb. Temperature	82.55	deg_F
Trip Av. Humidity	43.28	%
Trip Av. GPS Altitude	228.86	m
Fuel Type	Petrol (E10)	

ave THC	5.29907	ppm
ave NMHC	5.19309	ppm
ave CH4	0.10598	ppm
ave CO	606.60276	ppm
ave CO2	12.28156	%
ave NOx	2.74310	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.15752	g
tot NMHC	0.14571	g
tot CH4	0.00349	g
tot CO	21.70821	g
tot CO2	7929.48028	g
tot NO (d)	0.08759	g
tot NO2	0.01894	g
tot NOx	0.10596	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	56.67147	mi/hr
Trip Distance Share Urban	4.79103	% distance
Trip Distance Share Rural	5.29454	% distance
Trip Distance Share Motorway	89.91443	% distance

BS CO2	567.47368	g/hphr
BS CO	1.55355	g/hphr
BS THC	0.01127	g/hphr
BS NMHC	0.01043	g/hphr
BS CH4	0.00025	g/hphr
BS NO (d)	0.00627	g/hphr
BS NO2	0.00136	g/hphr
BS NOx	0.00758	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	284.42264	g/mi
DS CO	0.77865	g/mi
DS THC	0.00565	g/mi
DS NMHC	0.00523	g/mi
DS CH4	0.00013	g/mi
DS NO (d)	0.00314	g/mi
DS NO2	0.00068	g/mi
DS NOx	0.00380	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3080.54913	g/kg
FS CO	8.43349	g/kg
FS THC	0.06119	g/kg
FS NMHC	0.05661	g/kg
FS CH4	0.00136	g/kg
FS NO (d)	0.03403	g/kg
FS NO2	0.00736	g/kg
FS NOx	0.04116	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1779.00	s
Trip Duration (a)	1779.00	s
Trip Distance	27.88	mi
Trip Distance (a)	27.88	mi
Trip Fuel Cons. (b)	2.57	kg
Trip Fuel Cons. (ab)	2.57	kg
Trip Fuel Cons. EU (ac)	2.64	kg
Trip Fuel Cons. US (ac)	2.62	kg
Trip Fuel Economy (b)	30.65	mpg_US
Trip Fuel Economy (ab)	30.65	mpg_US
Trip Fuel Economy EU (ac)	29.83	mpg_US
Trip Fuel Economy US (ac)	30.15	mpg_US
Trip Fuel Economy GGE (b)	30.65	mpg_US
Trip Fuel Economy GGE (ab)	30.65	mpg_US
Trip Fuel Economy EU GGE (ac)	29.83	mpg_US
Trip Fuel Economy US GGE (ac)	30.15	mpg_US
Trip Av. Eng. Speed	1524.18	rpm
Trip Av. Torque	90.29	lbft
Trip Av. Power	28.40	hp
Trip Work		
Trip Work (a)	13.97	hphr
Trip Exhaust Mass	40.58	kg
Trip Exhaust Mass EU (ac)	39.50	kg
Trip Exhaust Mass US (ac)	39.94	kg
Trip Av. Amb. Temperature	82.55	deg_F
Trip Av. Humidity	43.28	%
Trip Av. GPS Altitude	228.86	m
Fuel Type	Petrol (E10)	

ave THC DC	5.30600	ppm
ave NMHC DC	5.19988	ppm
ave CH4 DC	0.10612	ppm
ave CO DC	606.28267	ppm
ave CO2 DC	12.28156	%
ave NOx DC	2.82256	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.15772	g
tot NMHC DC	0.14590	g
tot CH4 DC	0.00350	g
tot CO DC	21.68746	g
tot CO2 DC	7929.48028	g
tot NO DC (d)	0.08354	g
tot NO2 DC	0.02809	g
tot NOx DC	0.11097	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	56.67147	mi/hr
Trip Distance Share Urban	4.79103	% distance
Trip Distance Share Rural	5.29454	% distance
Trip Distance Share Motorway	89.91443	% distance

BS CO2 DC	567.47368	g/hphr
BS CO DC	1.55206	g/hphr
BS THC DC	0.01129	g/hphr
BS NMHC DC	0.01044	g/hphr
BS CH4 DC	0.00025	g/hphr
BS NO DC (d)	0.00598	g/hphr
BS NO2 DC	0.00201	g/hphr
BS NOx DC	0.00794	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	284.42264	g/mi
DS CO DC	0.77791	g/mi
DS THC DC	0.00566	g/mi
DS NMHC DC	0.00523	g/mi
DS CH4 DC	0.00013	g/mi
DS NO DC (d)	0.00300	g/mi
DS NO2 DC	0.00101	g/mi
DS NOx DC	0.00398	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3080.54913	g/kg
FS CO DC	8.42543	g/kg
FS THC DC	0.06127	g/kg
FS NMHC DC	0.05668	g/kg
FS CH4 DC	0.00136	g/kg
FS NO DC (d)	0.03245	g/kg
FS NO2 DC	0.01091	g/kg
FS NOx DC	0.04311	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

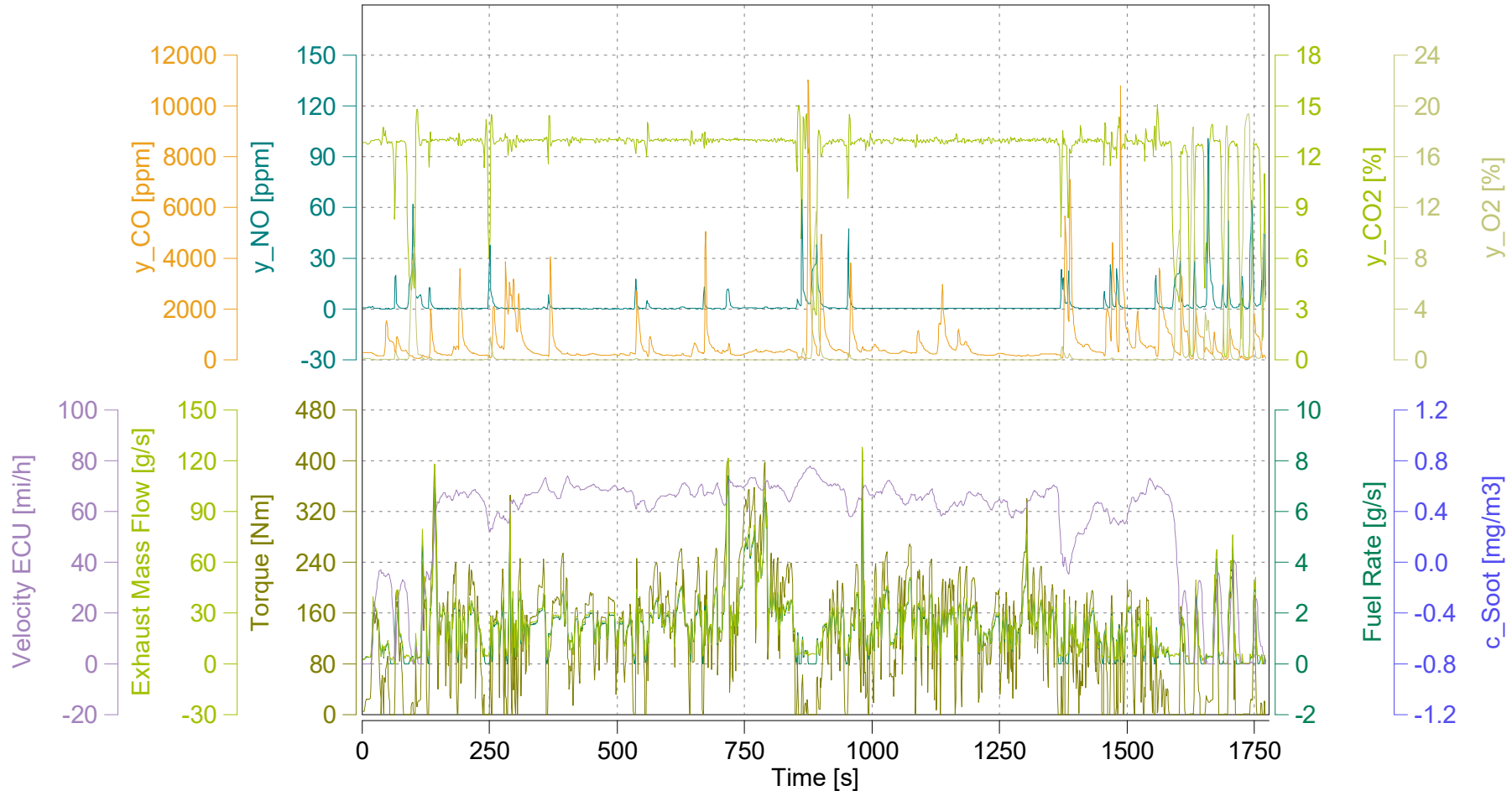
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NO
CO/CO
O2
Appl

Alignme
Reset
Re
Appl

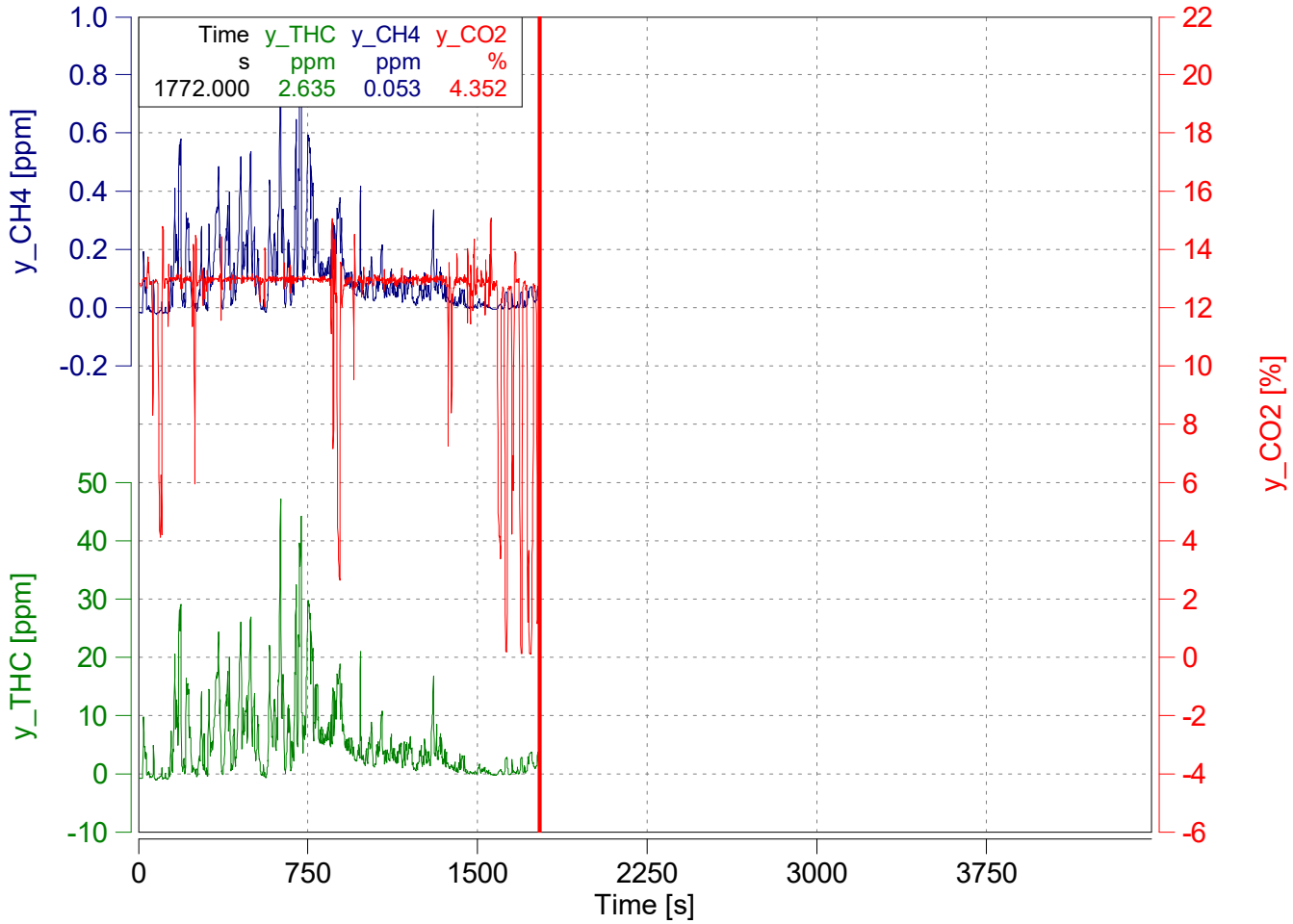
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

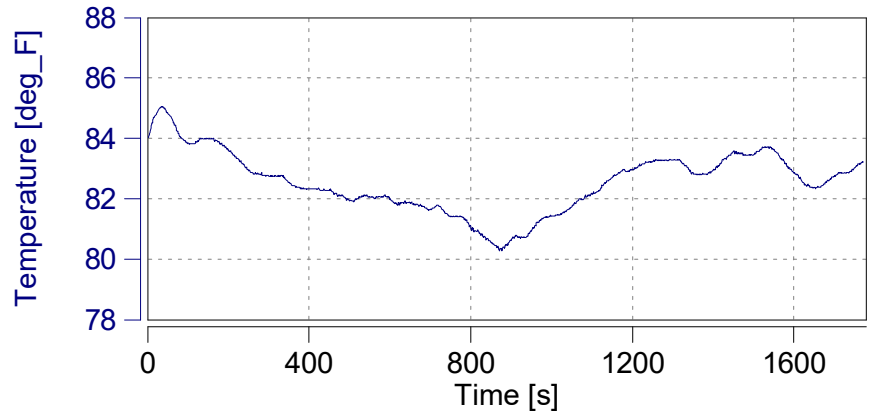
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

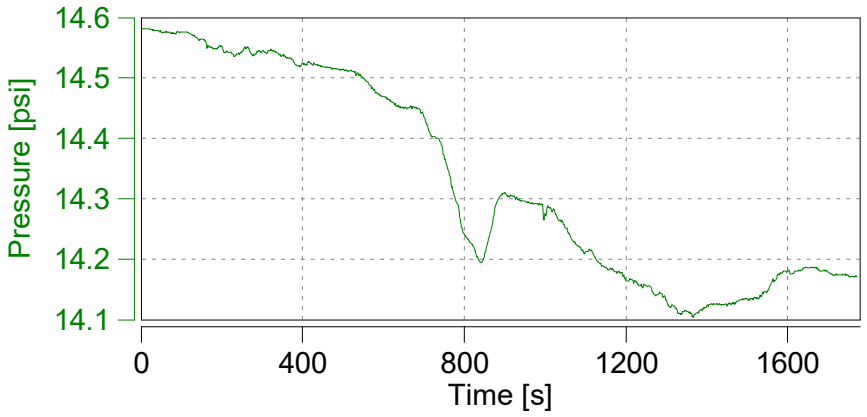
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

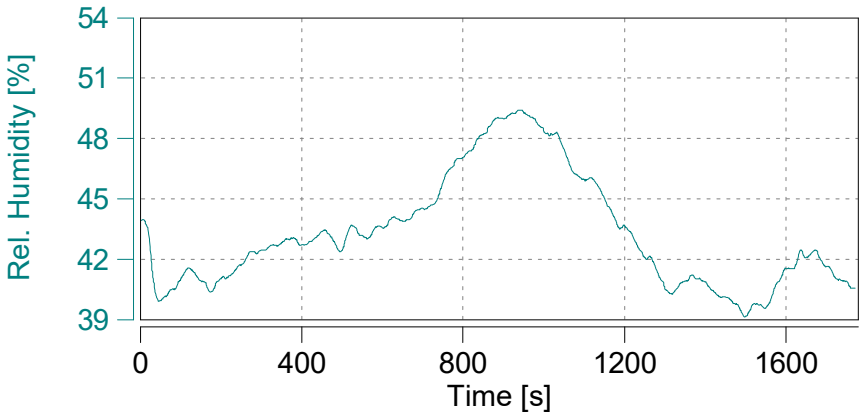
Case: X254-708
Page: Ambient Conditions

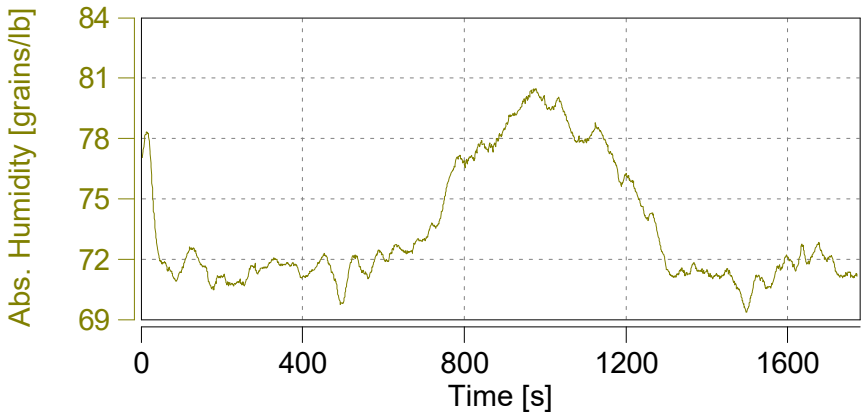
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









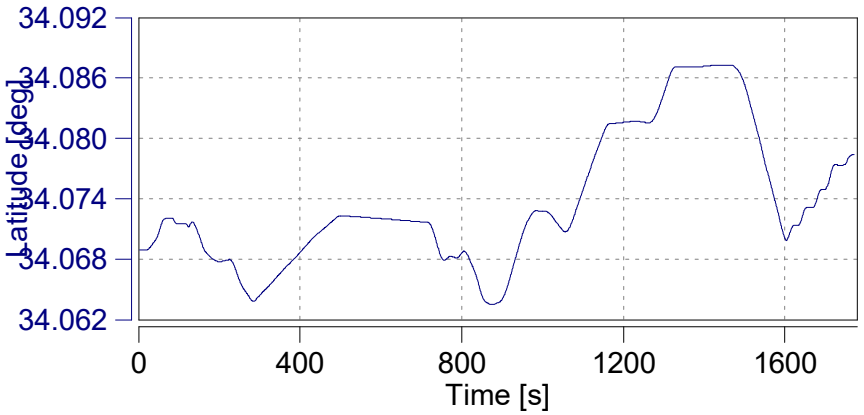
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

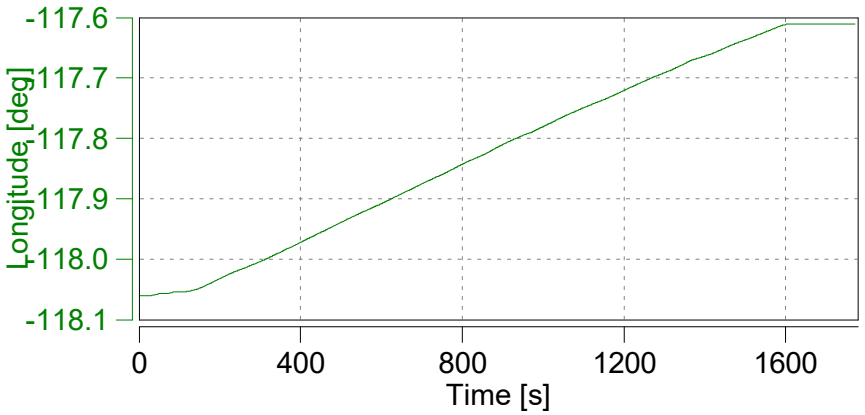
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

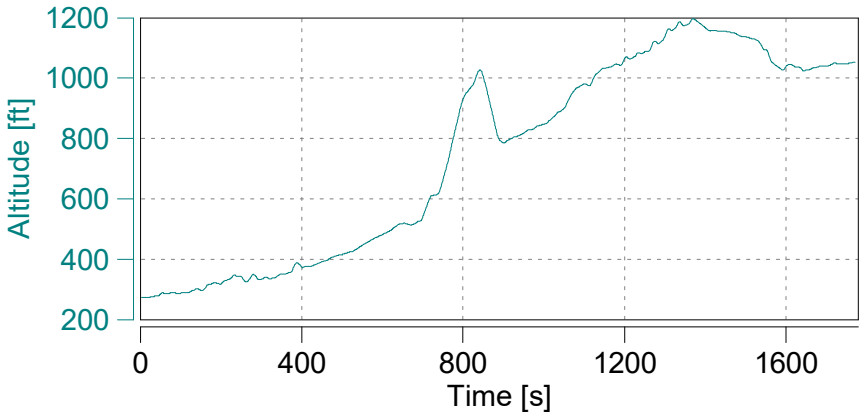
Case: X254-708
Page: GPS

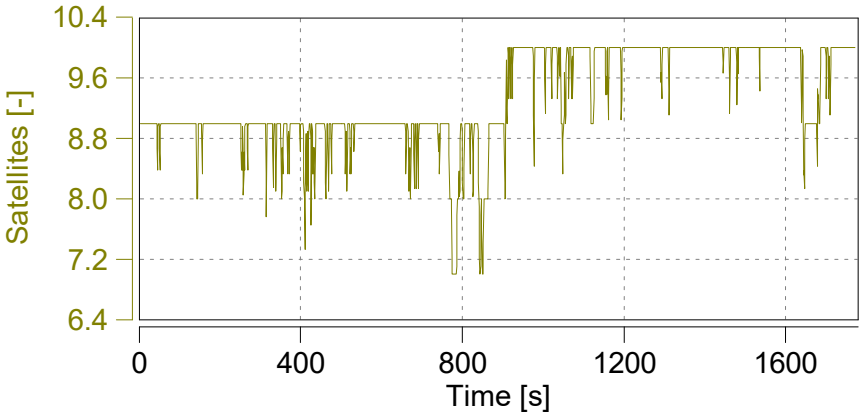
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

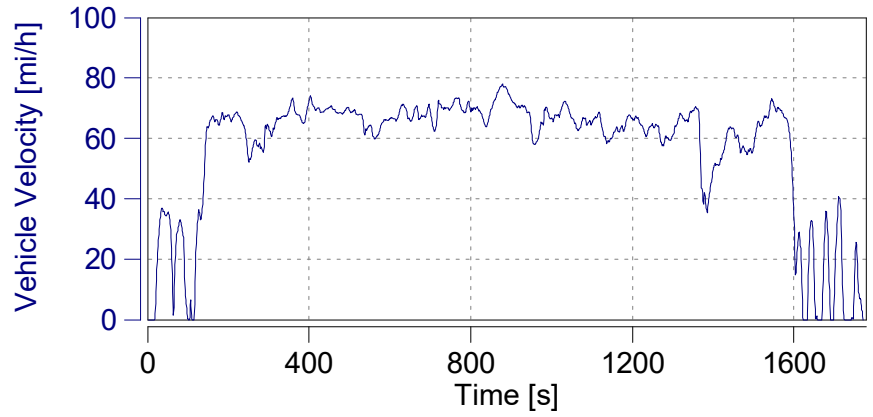
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

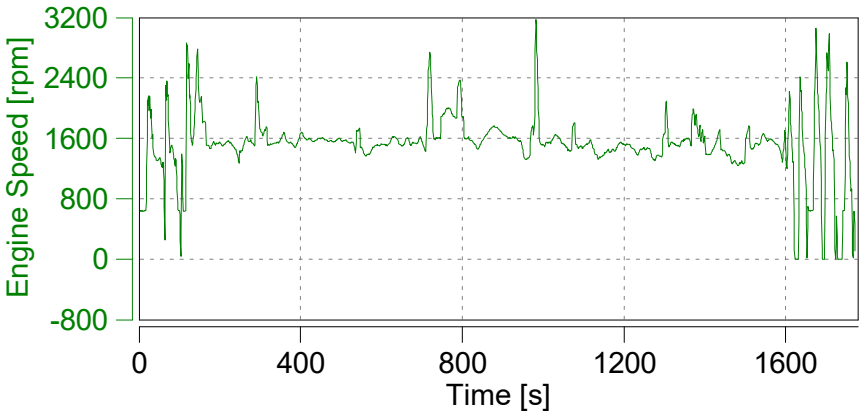
Case: X254-708
Page: Engine (1)

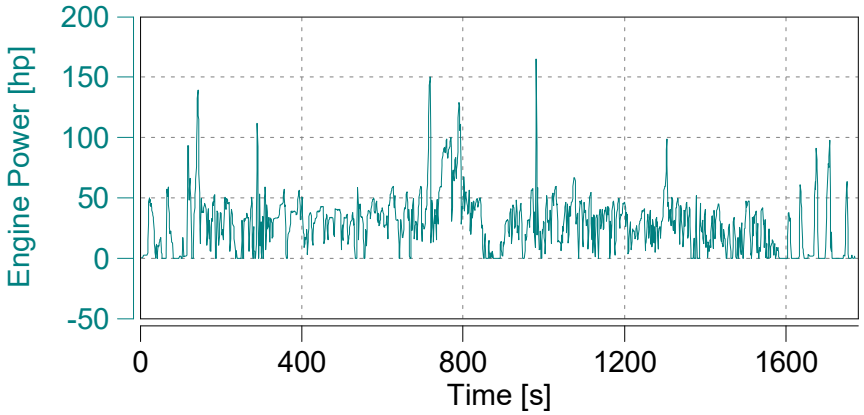
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

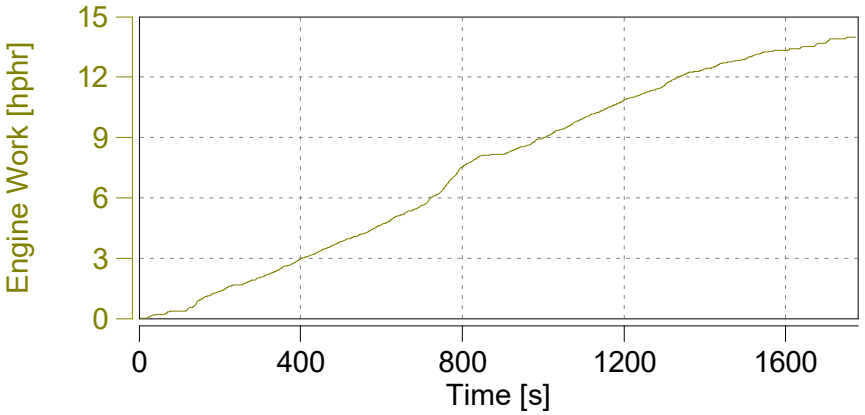
AVL

Concerto M.O.V.E, 2019









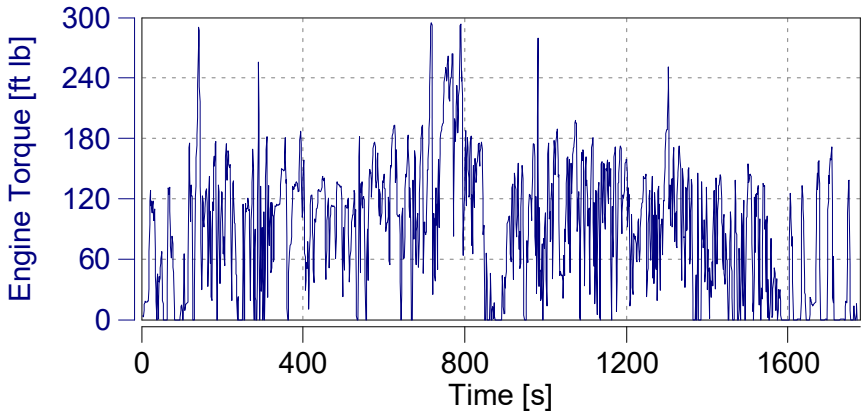
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

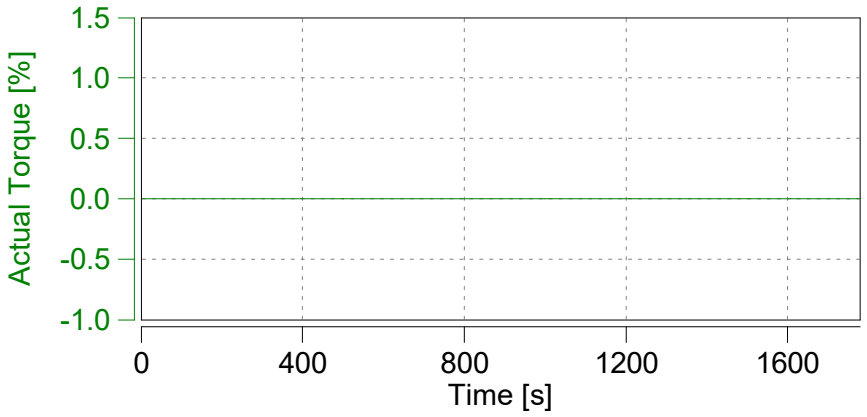
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

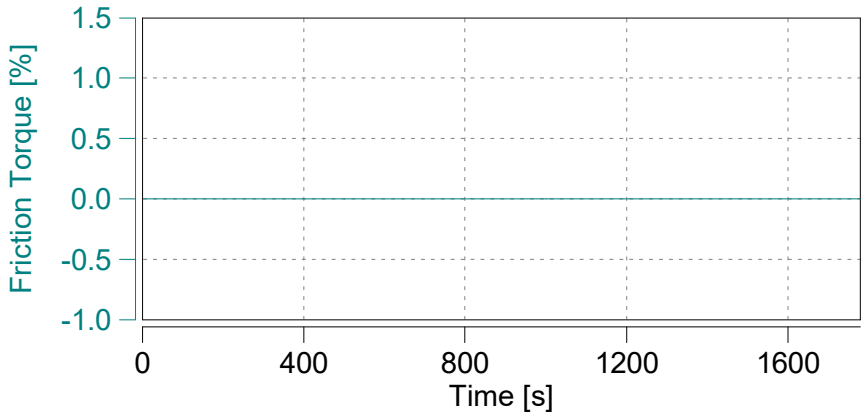
Case: X254-708
Page: Engine (2)

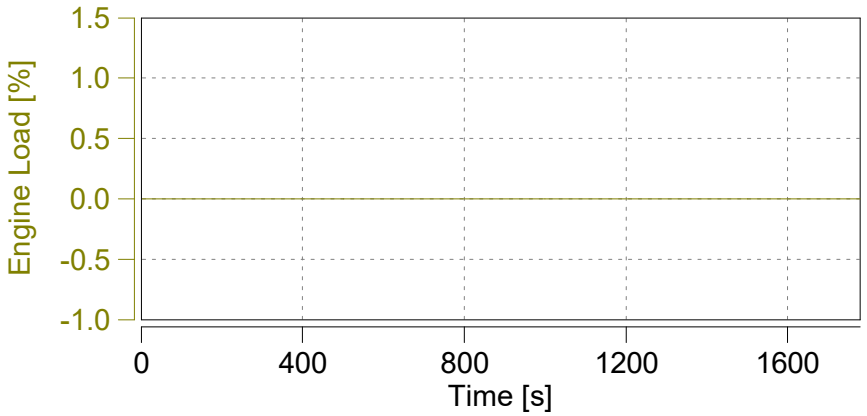
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

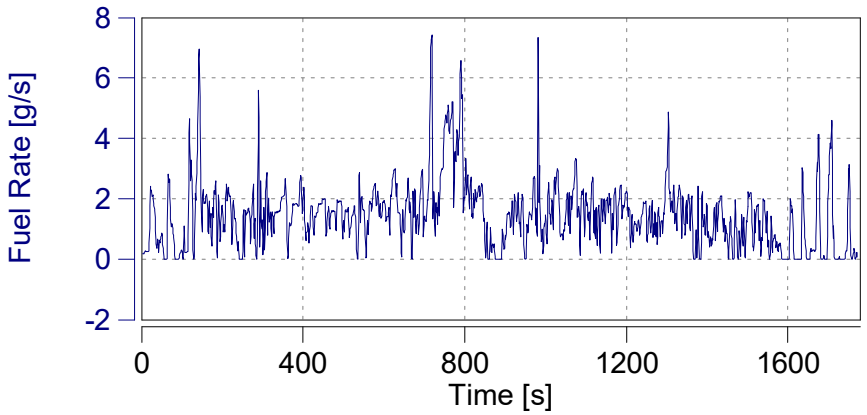
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

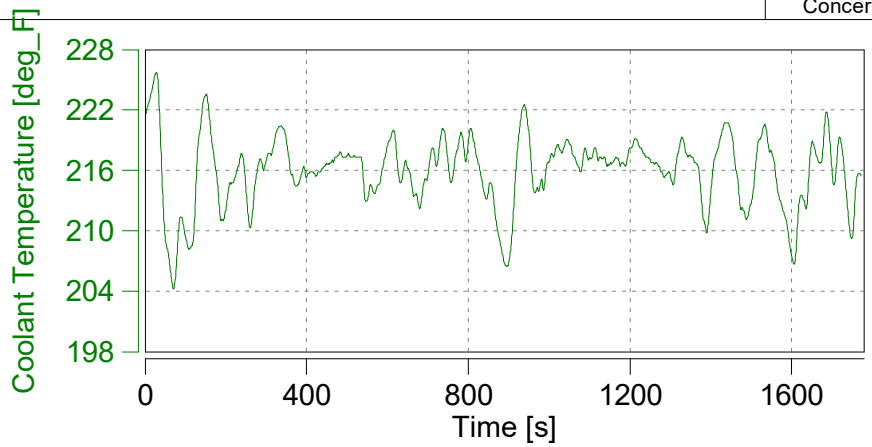
Case: X254-708
Page: Engine (3)

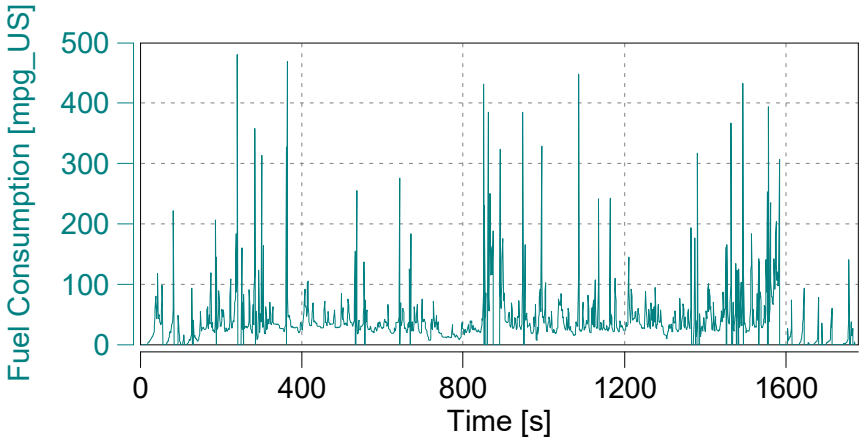
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

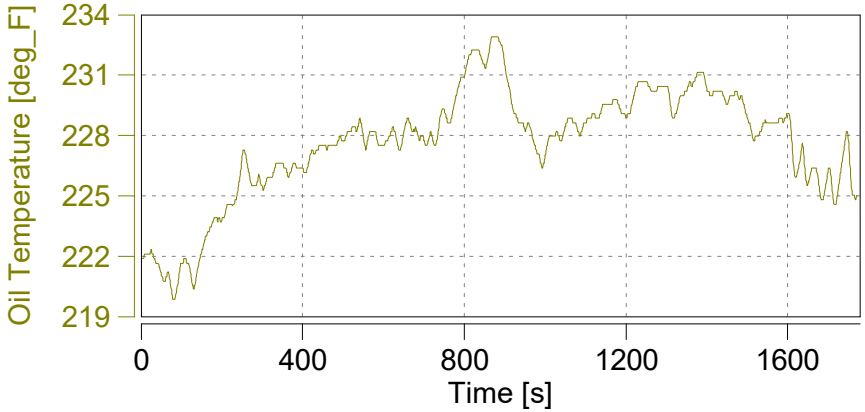
AVL

Concerto M.O.V.E, 2019









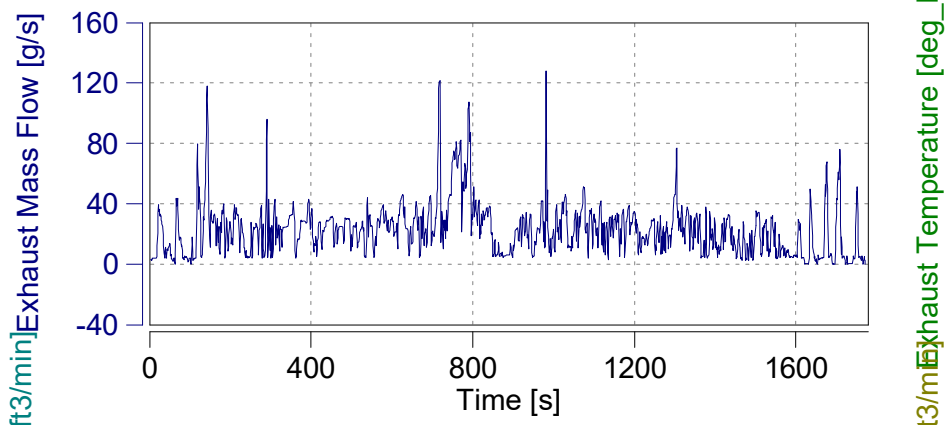
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

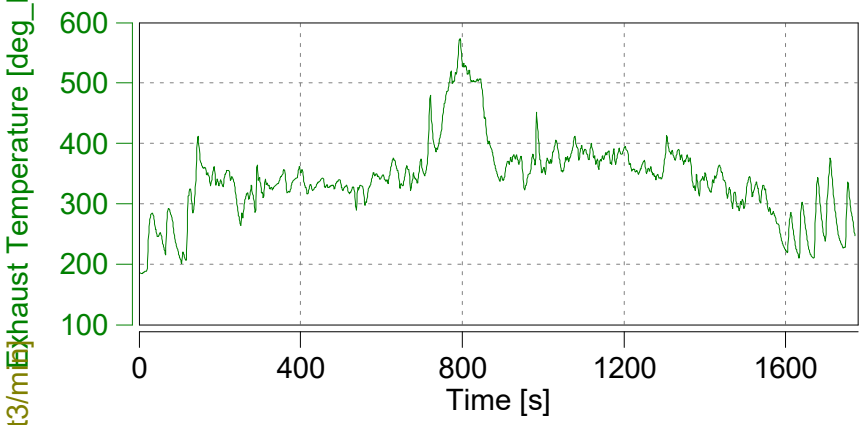
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

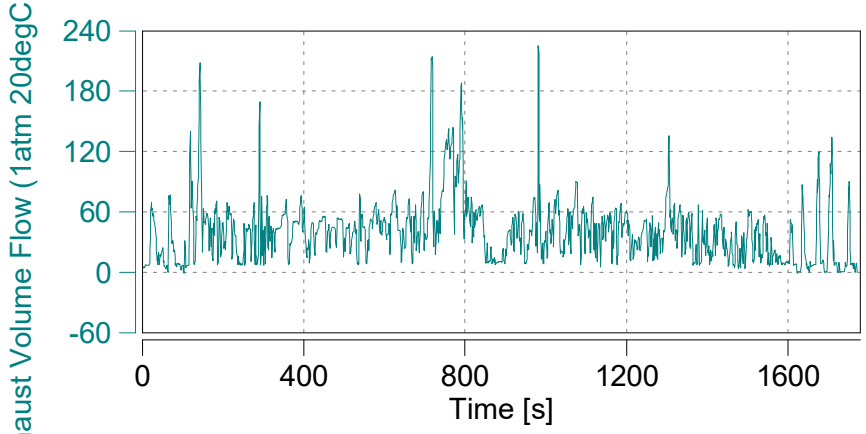
Case: X254-708
Page: Exhaust Flow (1)

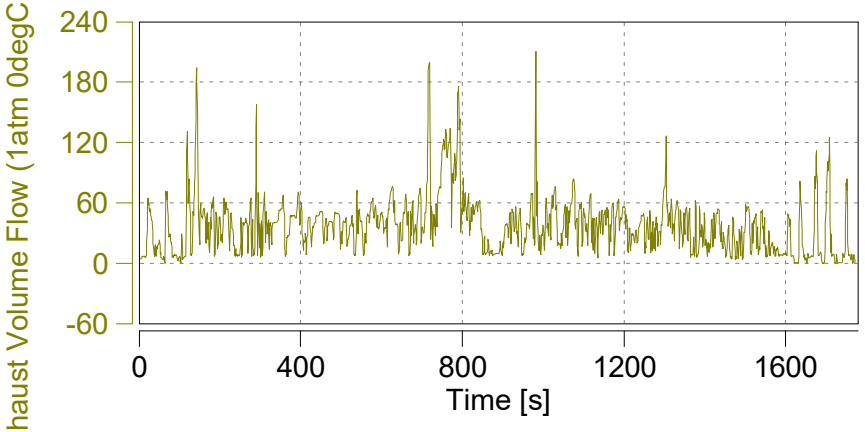
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

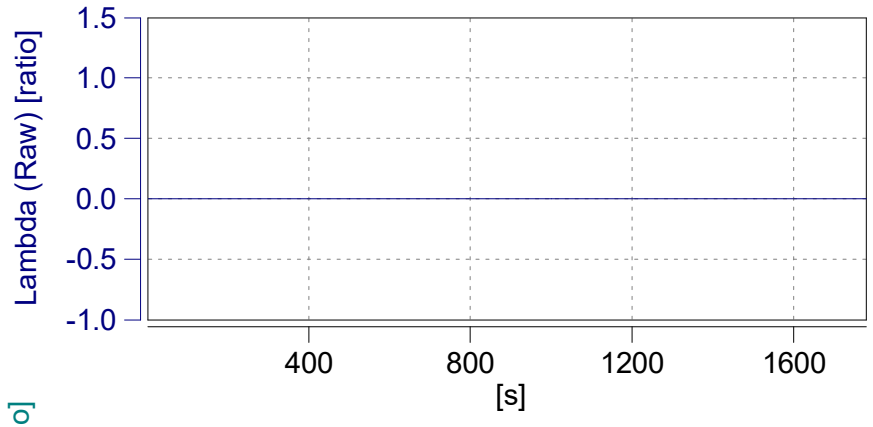
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

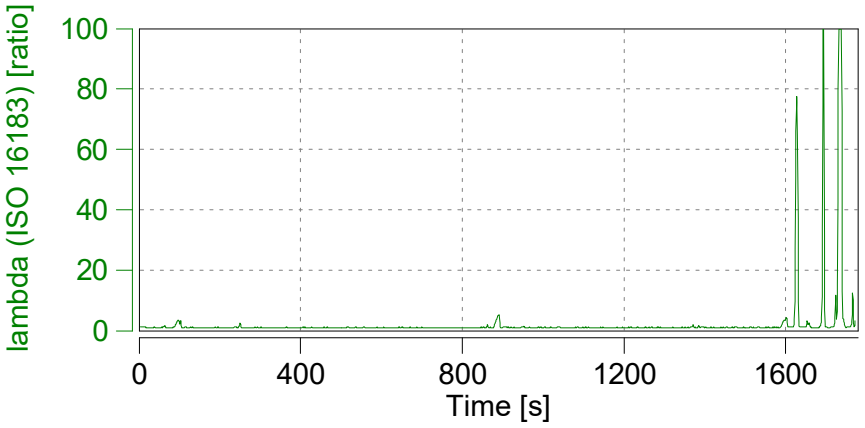
Case: X254-708
Page: Exhaust Flow (2)

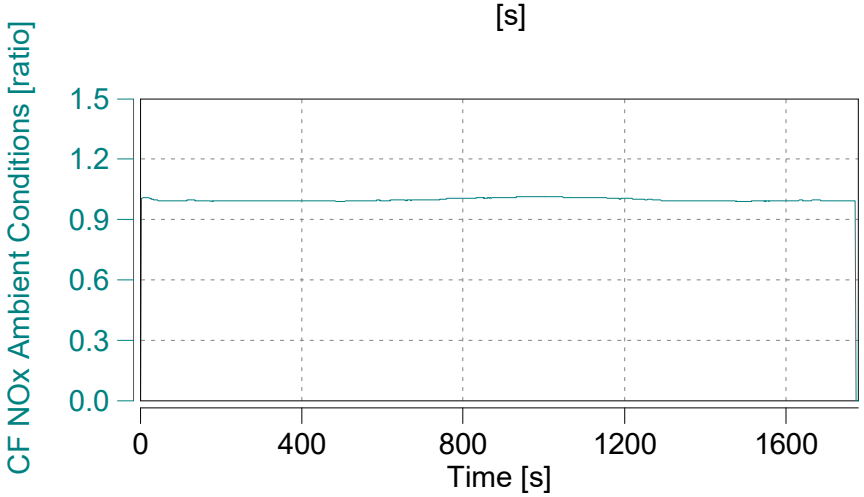
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

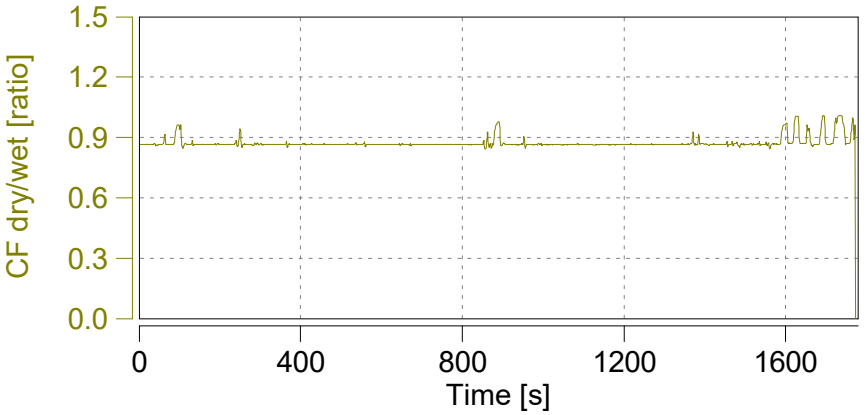
AVL

Concerto M.O.V.E, 2019









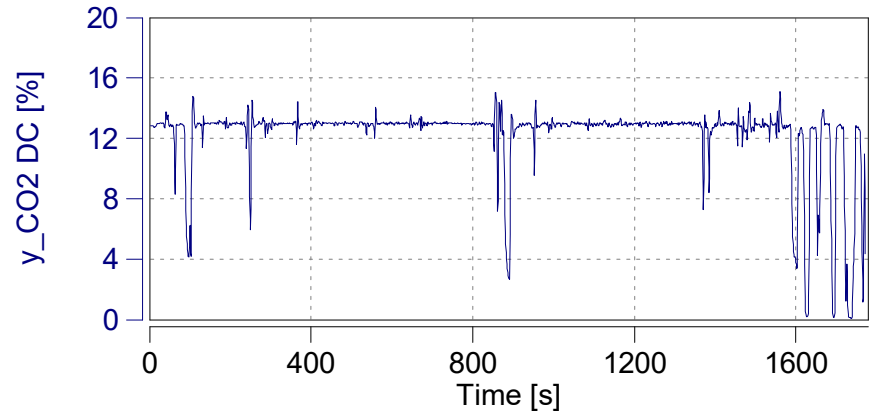
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

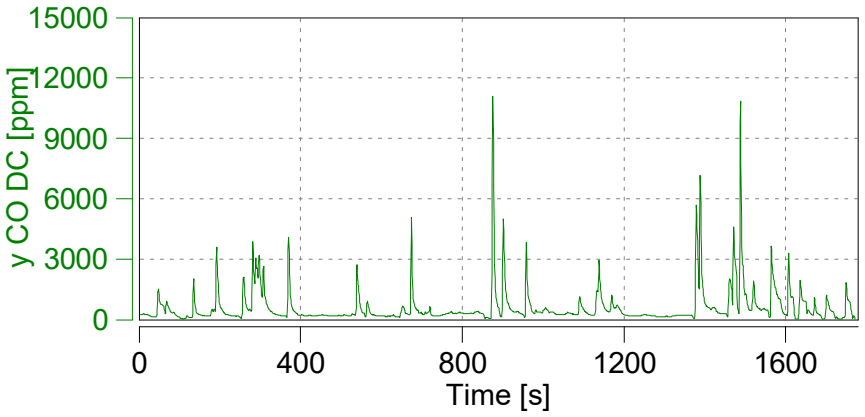
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

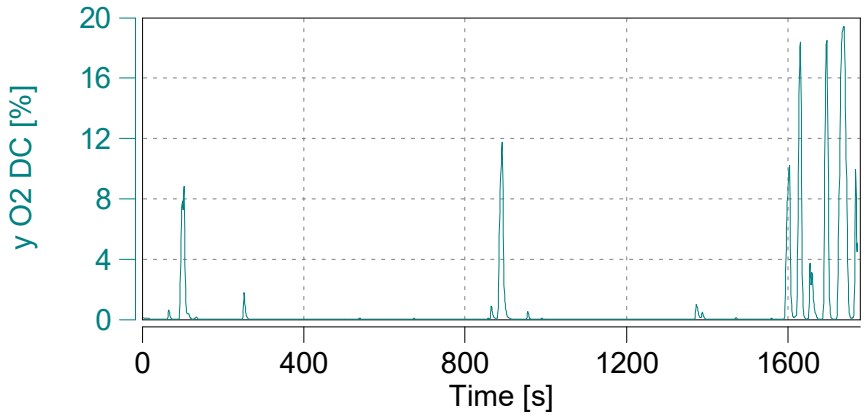
Case: X254-708
Page: Corrected Emissions (1)

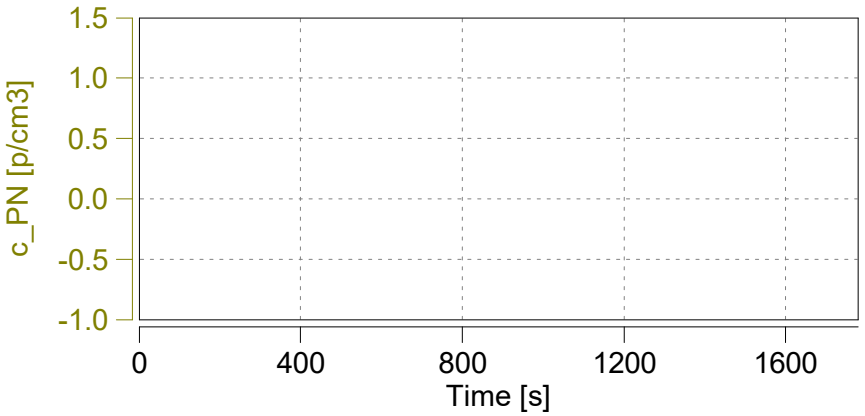
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









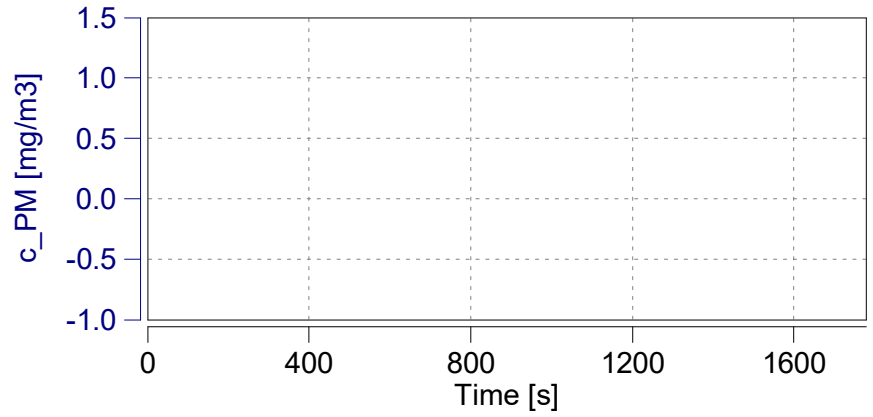
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

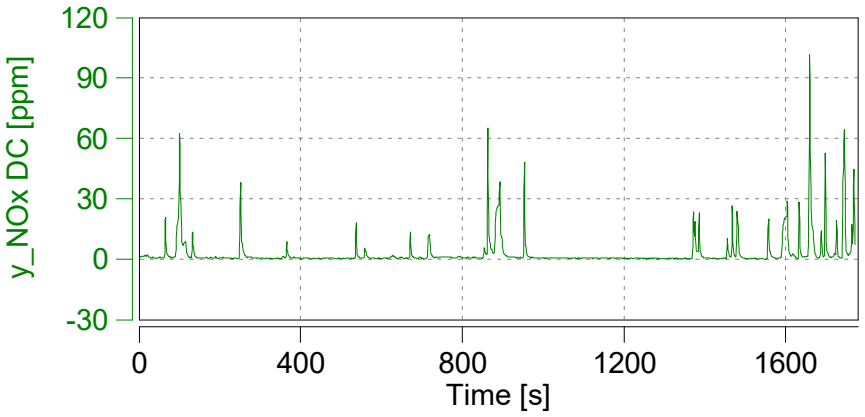
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

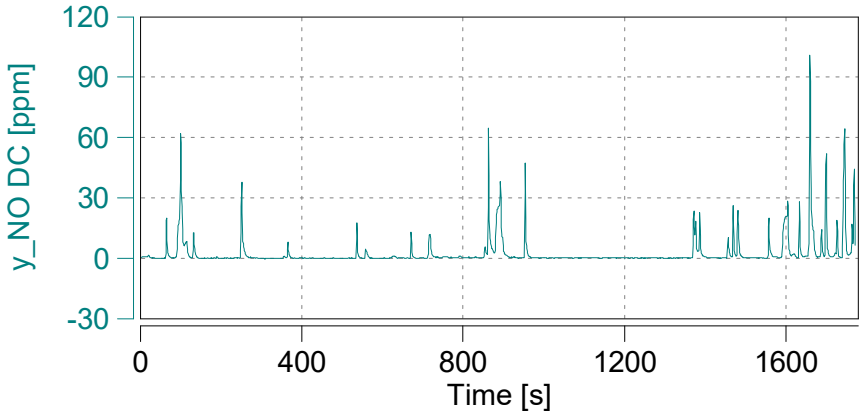
Case: X254-708
Page: Corrected Emissions (2)

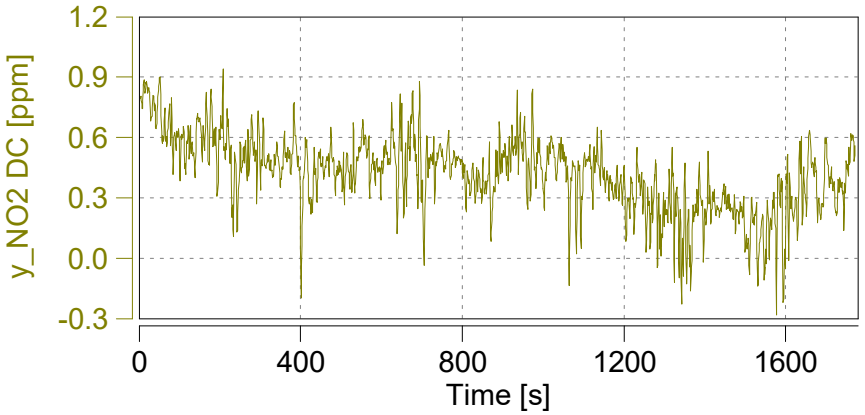
'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









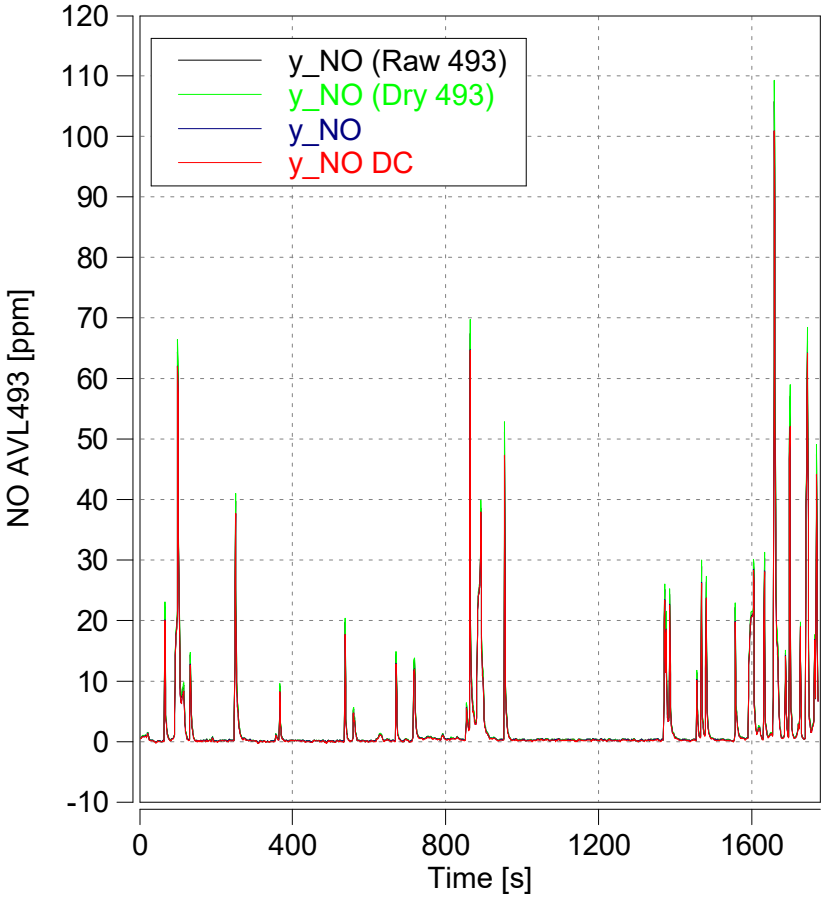
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

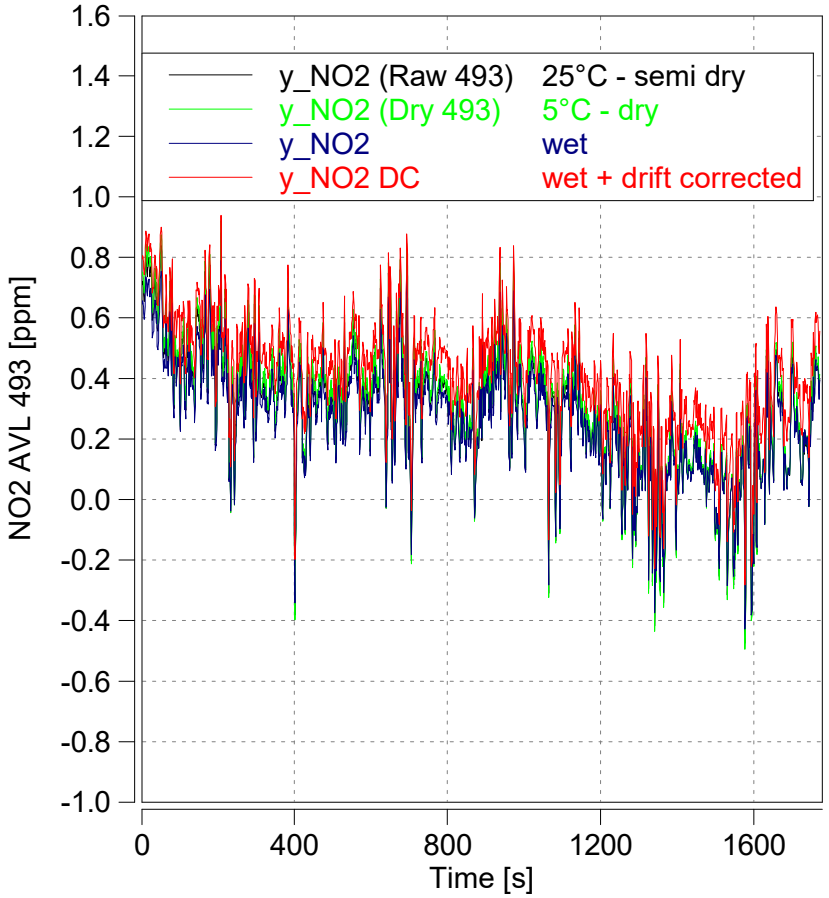
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (3)

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





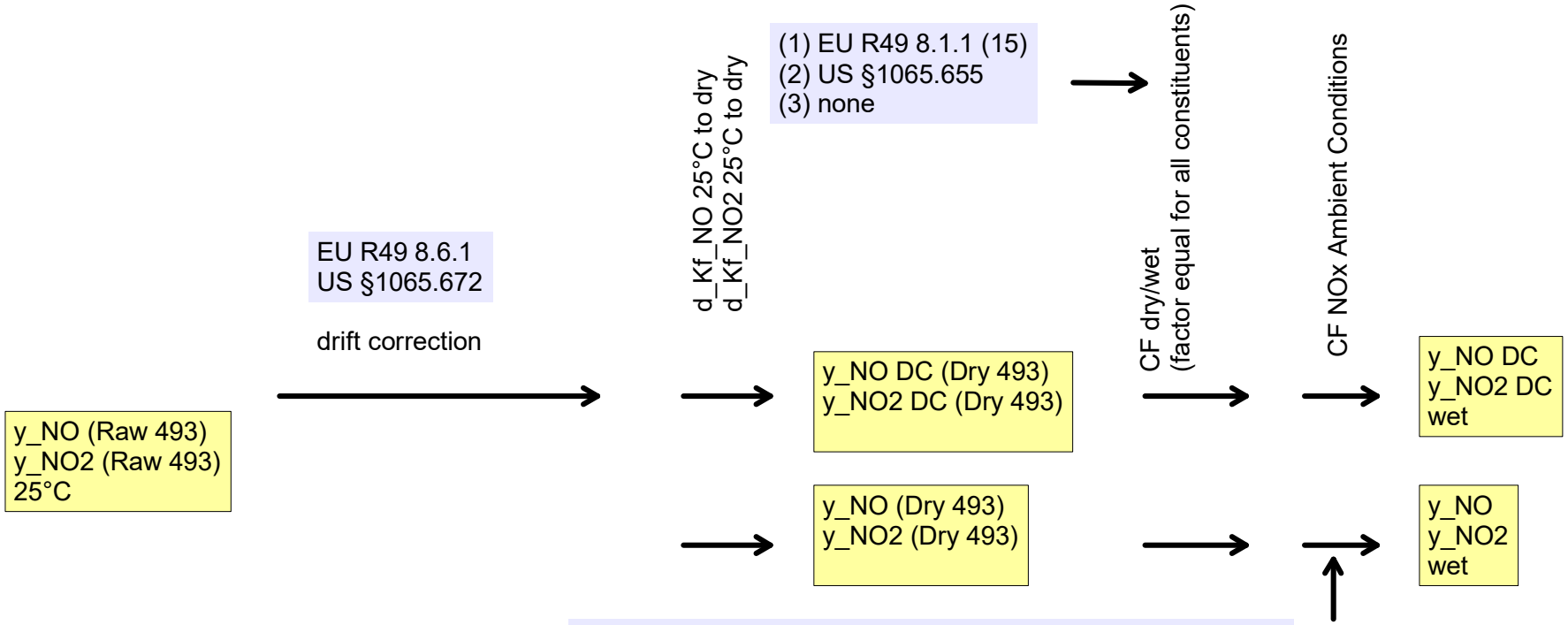
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

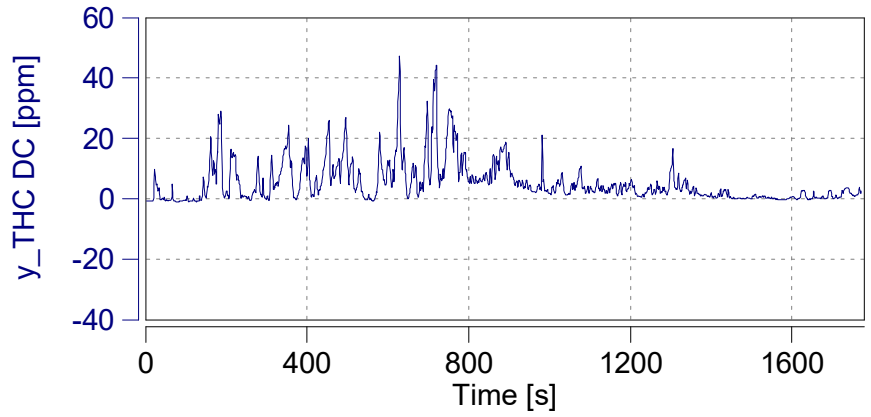
NOx - AVL 493

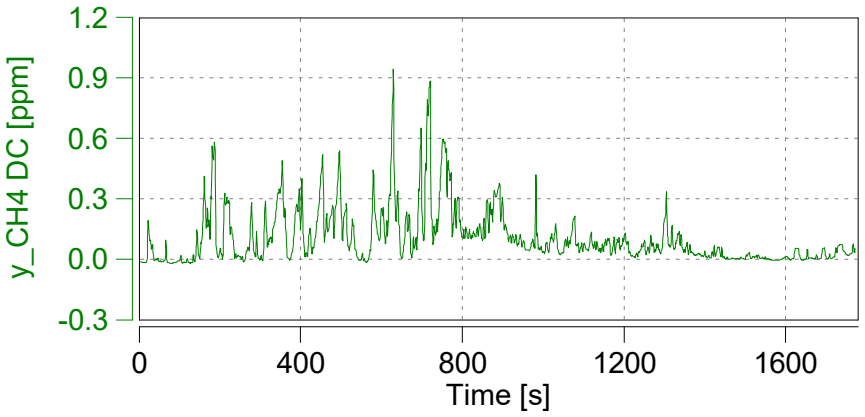


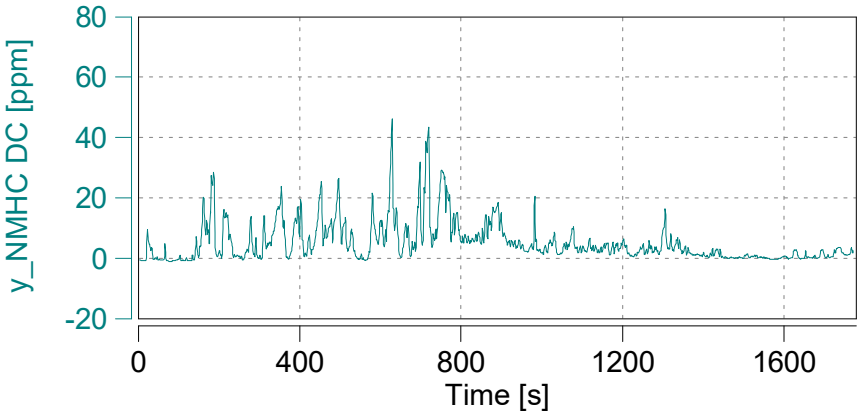
Case: X254-708
Page: Corrected Emissions (5)

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019







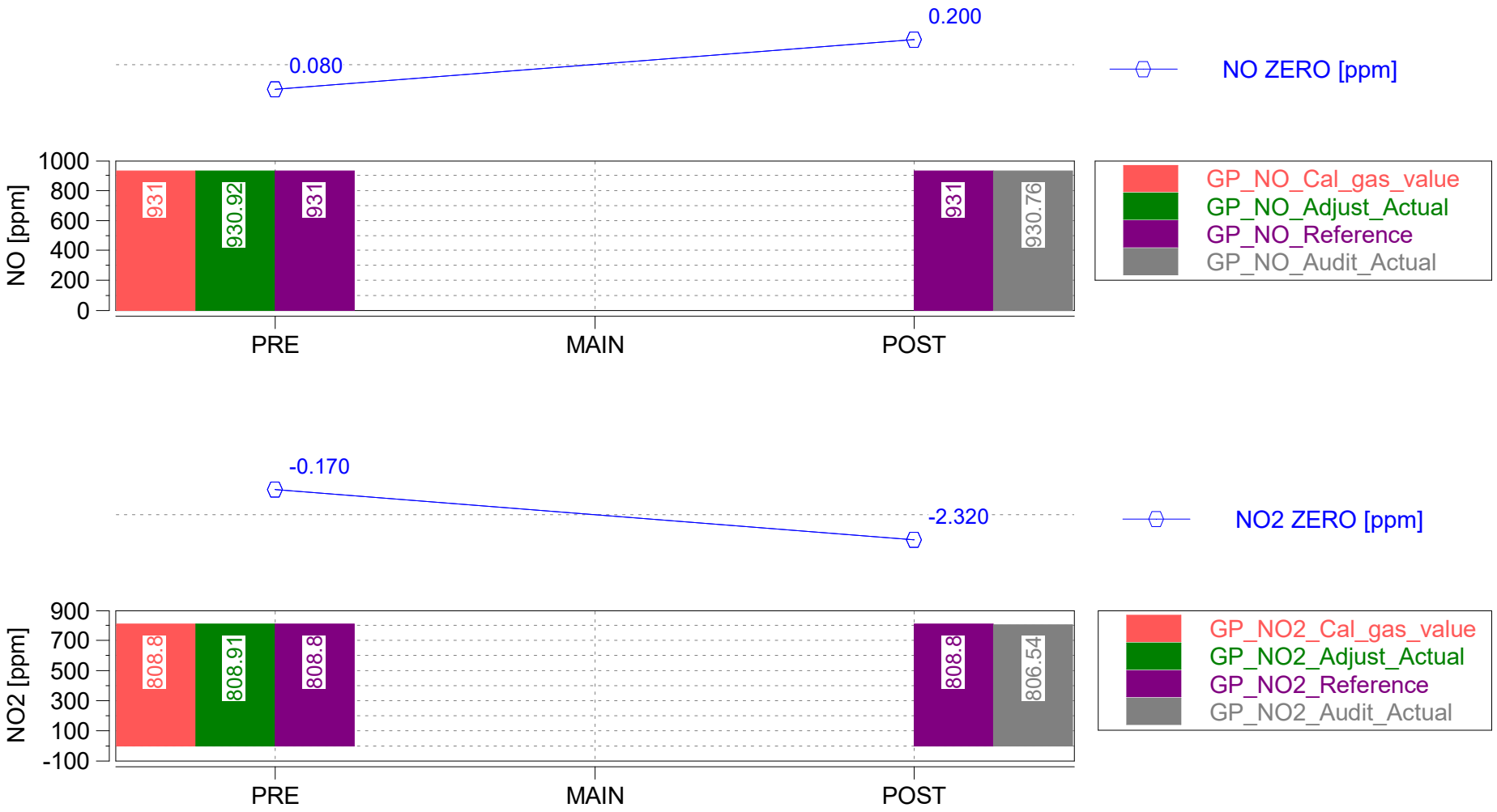
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



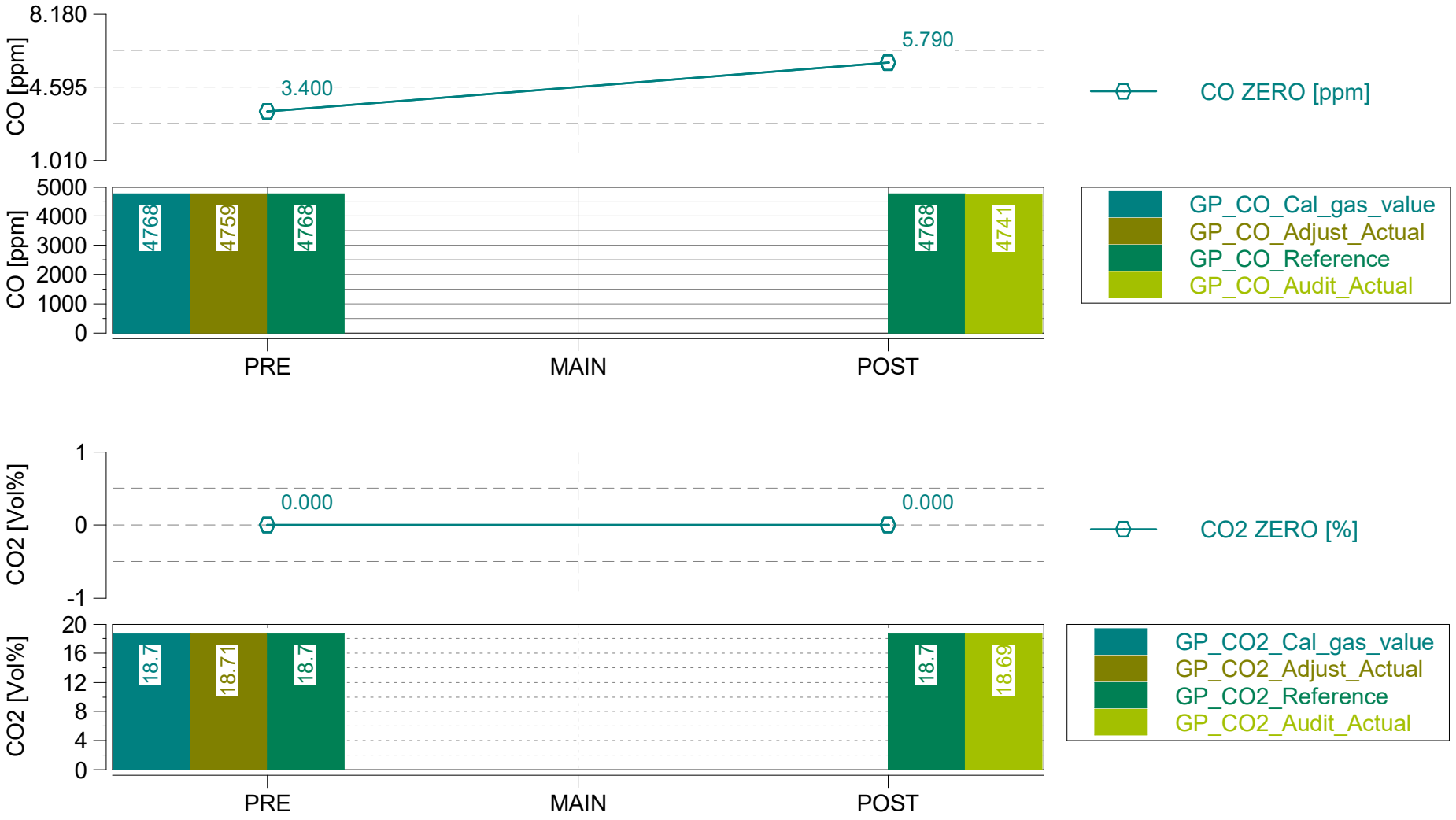
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



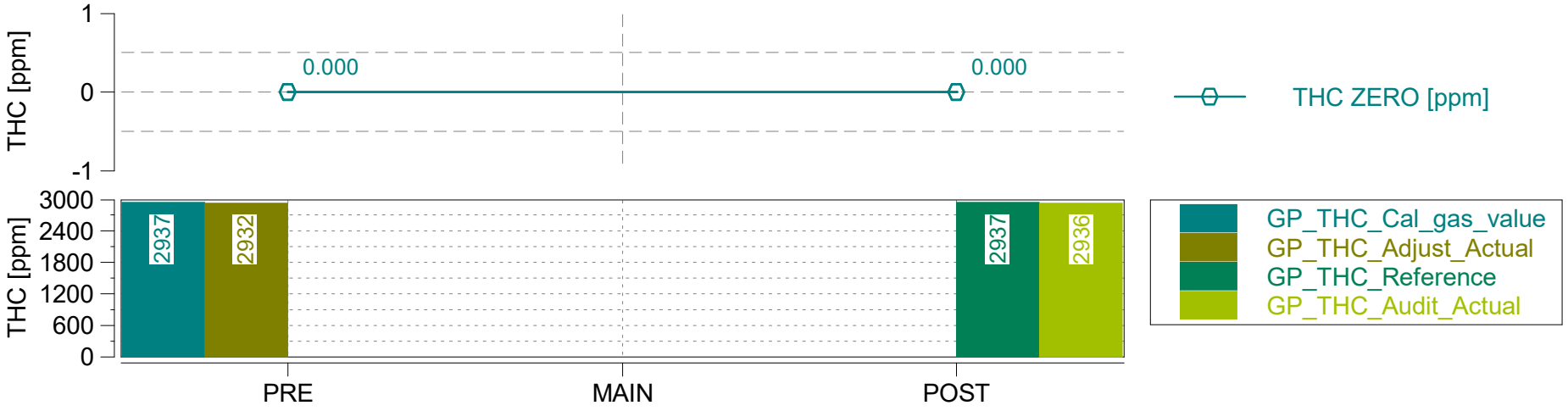
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

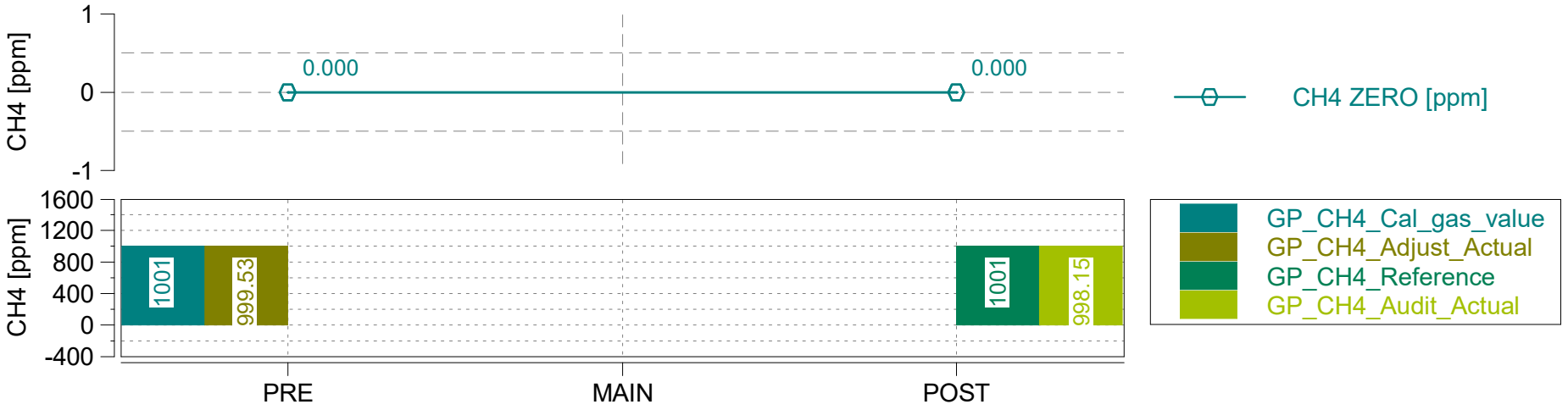
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.18**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-17
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

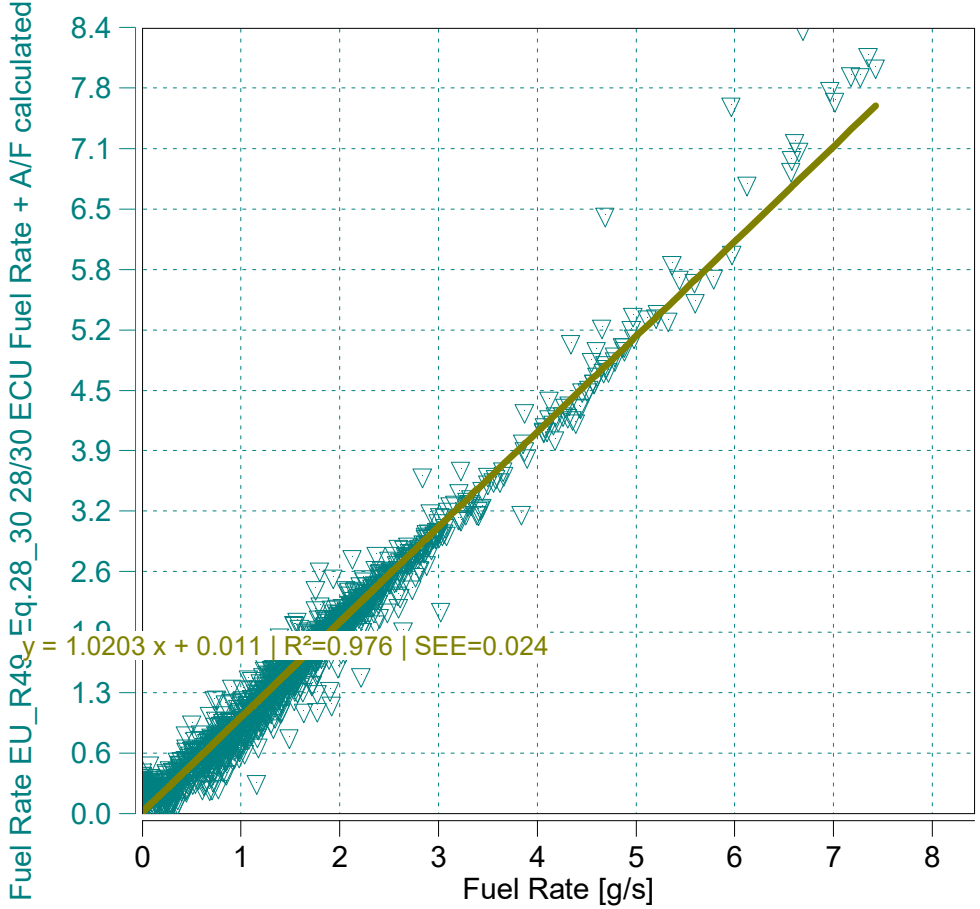
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 A1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 1.0203 x + 0.011 | R²=0.976 | SEE=0.024
m = 1.02 (0.9 - 1.1 recommended)
R² = 0.98 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1943.00	s
Trip Duration (a)	1943.00	s
Trip Distance	28.56	mi
Trip Distance (a)	28.56	mi
Trip Fuel Cons. (b)	2.04	kg
Trip Fuel Cons. (ab)	2.04	kg
Trip Fuel Cons. EU (ac)	2.13	kg
Trip Fuel Cons. US (ac)	2.11	kg
Trip Fuel Economy (b)	39.59	mpg_US
Trip Fuel Economy (ab)	39.60	mpg_US
Trip Fuel Economy EU (ac)	37.98	mpg_US
Trip Fuel Economy US (ac)	38.37	mpg_US
Trip Fuel Economy GGE (b)	39.59	mpg_US
Trip Fuel Economy GGE (ab)	39.60	mpg_US
Trip Fuel Economy EU GGE (ac)	37.98	mpg_US
Trip Fuel Economy US GGE (ac)	38.37	mpg_US
Trip Av. Eng. Speed	1464.47	rpm
Trip Av. Torque	65.96	lbft
Trip Av. Power	19.84	hp
Trip Work		
Trip Work (a)	10.67	hphr
Trip Exhaust Mass	32.76	kg
Trip Exhaust Mass EU (ac)	31.36	kg
Trip Exhaust Mass US (ac)	31.69	kg
Trip Av. Amb. Temperature	85.98	deg_F
Trip Av. Humidity	37.79	%
Trip Av. GPS Altitude	207.01	m
Fuel Type	Petrol (E10)	

ave THC	-0.87612	ppm
ave NMHC	-0.85859	ppm
ave CH4	-0.01752	ppm
ave CO	484.84138	ppm
ave CO2	12.29959	%
ave NOx	1.11248	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.00361	g
tot NMHC	0.00334	g
tot CH4	0.00008	g
tot CO	15.39051	g
tot CO2	6385.76739	g
tot NO (d)	0.06128	g
tot NO2	0.00000	g
tot NOx	0.04233	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	53.13116	mi/hr
Trip Distance Share Urban	5.24178	% distance
Trip Distance Share Rural	16.49149	% distance
Trip Distance Share Motorway	78.26672	% distance

BS CO2	598.72606	g/hphr
BS CO	1.44301	g/hphr
BS THC	0.00034	g/hphr
BS NMHC	0.00031	g/hphr
BS CH4	0.00001	g/hphr
BS NO (d)	0.00575	g/hphr
BS NO2	0.00000	g/hphr
BS NOx	0.00397	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	223.60695	g/mi
DS CO	0.53892	g/mi
DS THC	0.00013	g/mi
DS NMHC	0.00012	g/mi
DS CH4	0.00000	g/mi
DS NO (d)	0.00215	g/mi
DS NO2	0.00000	g/mi
DS NOx	0.00148	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3128.97360	g/kg
FS CO	7.54122	g/kg
FS THC	0.00177	g/kg
FS NMHC	0.00164	g/kg
FS CH4	0.00004	g/kg
FS NO (d)	0.03003	g/kg
FS NO2	0.00000	g/kg
FS NOx	0.02074	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1943.00	s
Trip Duration (a)	1943.00	s
Trip Distance	28.56	mi
Trip Distance (a)	28.56	mi
Trip Fuel Cons. (b)	2.04	kg
Trip Fuel Cons. (ab)	2.04	kg
Trip Fuel Cons. EU (ac)	2.13	kg
Trip Fuel Cons. US (ac)	2.11	kg
Trip Fuel Economy (b)	39.59	mpg_US
Trip Fuel Economy (ab)	39.60	mpg_US
Trip Fuel Economy EU (ac)	37.98	mpg_US
Trip Fuel Economy US (ac)	38.37	mpg_US
Trip Fuel Economy GGE (b)	39.59	mpg_US
Trip Fuel Economy GGE (ab)	39.60	mpg_US
Trip Fuel Economy EU GGE (ac)	37.98	mpg_US
Trip Fuel Economy US GGE (ac)	38.37	mpg_US
Trip Av. Eng. Speed	1464.47	rpm
Trip Av. Torque	65.96	lbft
Trip Av. Power	19.84	hp
Trip Work		
Trip Work (a)	10.67	hphr
Trip Exhaust Mass	32.76	kg
Trip Exhaust Mass EU (ac)	31.36	kg
Trip Exhaust Mass US (ac)	31.69	kg
Trip Av. Amb. Temperature	85.98	deg_F
Trip Av. Humidity	37.79	%
Trip Av. GPS Altitude	207.01	m
Fuel Type	Petrol (E10)	

ave THC DC	-0.87726	ppm
ave NMHC DC	-0.85972	ppm
ave CH4 DC	-0.01755	ppm
ave CO DC	483.98641	ppm
ave CO2 DC	12.29959	%
ave NOx DC	1.19029	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.00361	g
tot NMHC DC	0.00334	g
tot CH4 DC	0.00008	g
tot CO DC	15.36431	g
tot CO2 DC	6385.76739	g
tot NO DC (d)	0.05773	g
tot NO2 DC	0.00000	g
tot NOx DC	0.04300	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	53.13116	mi/hr
Trip Distance Share Urban	5.24178	% distance
Trip Distance Share Rural	16.49149	% distance
Trip Distance Share Motorway	78.26672	% distance

BS CO2 DC	598.72606	g/hphr
BS CO DC	1.44055	g/hphr
BS THC DC	0.00034	g/hphr
BS NMHC DC	0.00031	g/hphr
BS CH4 DC	0.00001	g/hphr
BS NO DC (d)	0.00541	g/hphr
BS NO2 DC	0.00000	g/hphr
BS NOx DC	0.00403	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	223.60695	g/mi
DS CO DC	0.53800	g/mi
DS THC DC	0.00013	g/mi
DS NMHC DC	0.00012	g/mi
DS CH4 DC	0.00000	g/mi
DS NO DC (d)	0.00202	g/mi
DS NO2 DC	0.00000	g/mi
DS NOx DC	0.00151	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3128.97360	g/kg
FS CO DC	7.52838	g/kg
FS THC DC	0.00177	g/kg
FS NMHC DC	0.00164	g/kg
FS CH4 DC	0.00004	g/kg
FS NO DC (d)	0.02829	g/kg
FS NO2 DC	0.00000	g/kg
FS NOx DC	0.02107	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

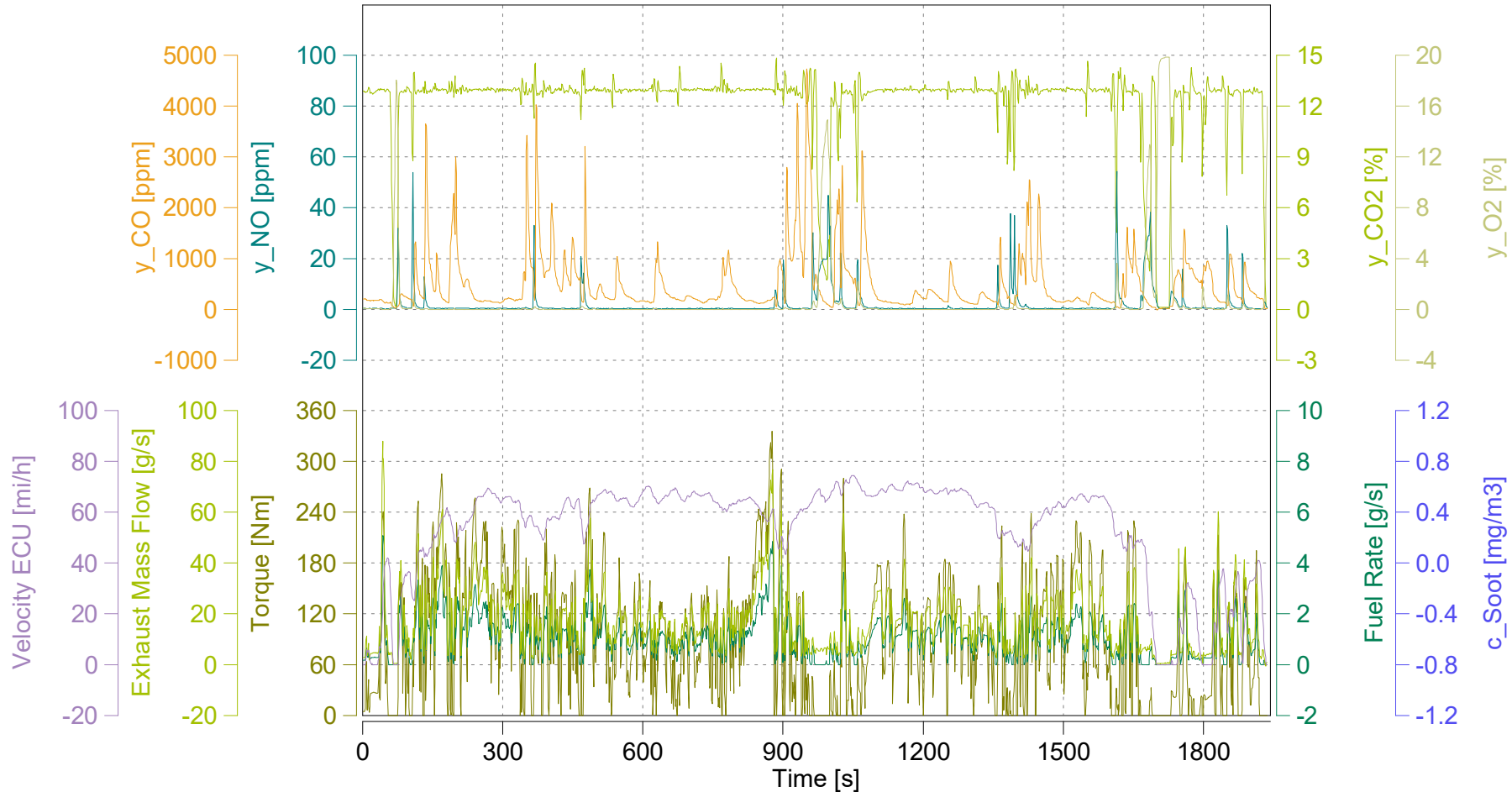
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NO
CO/CO
O2
Appl

Alignme
Reset
Re
Appl

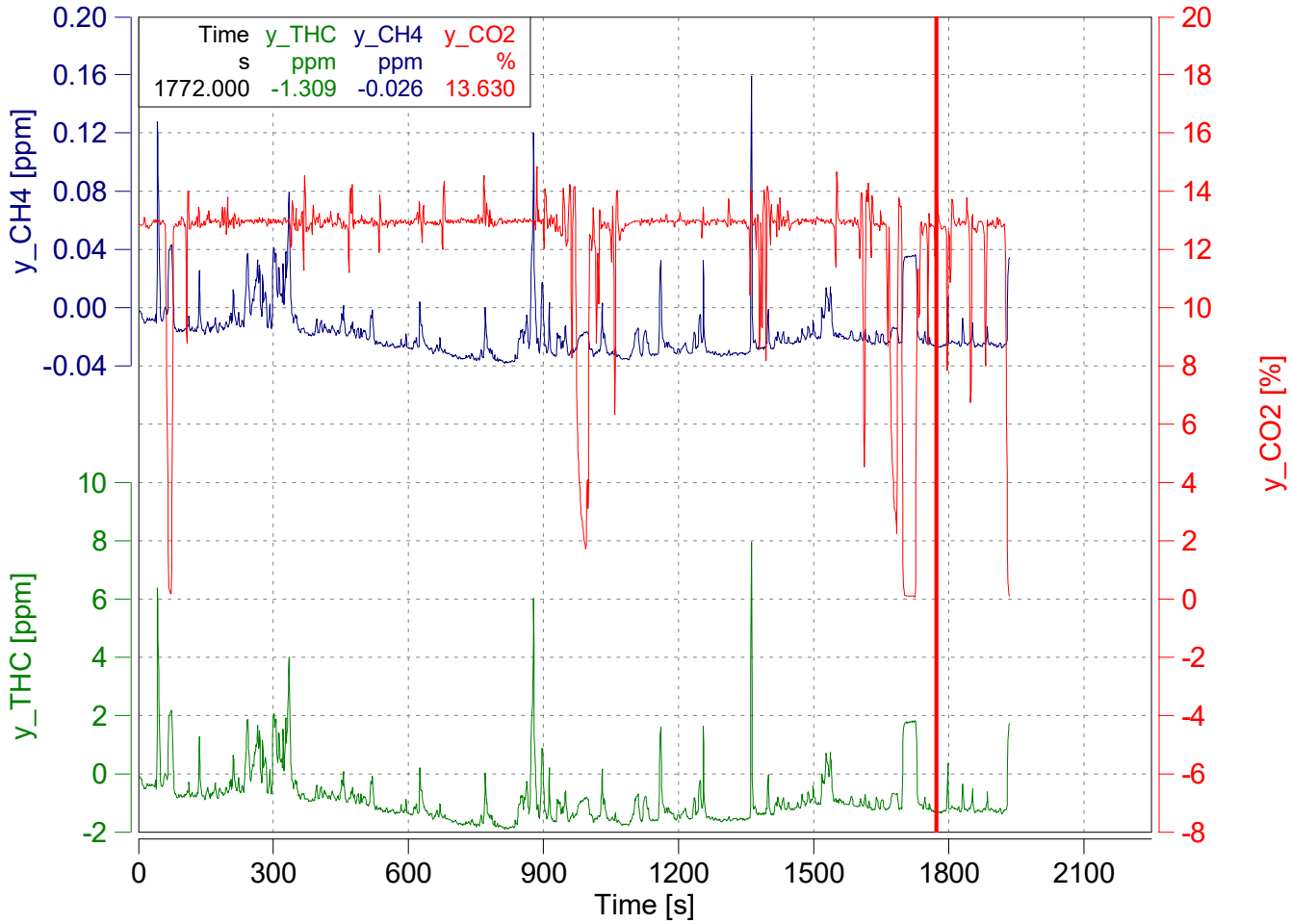
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

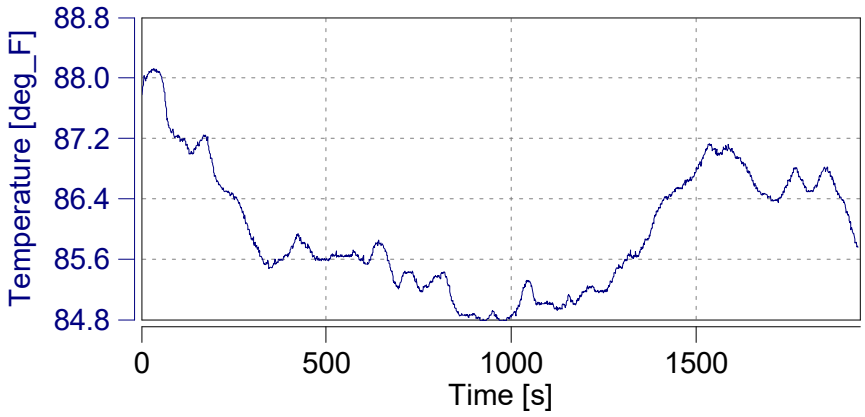
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

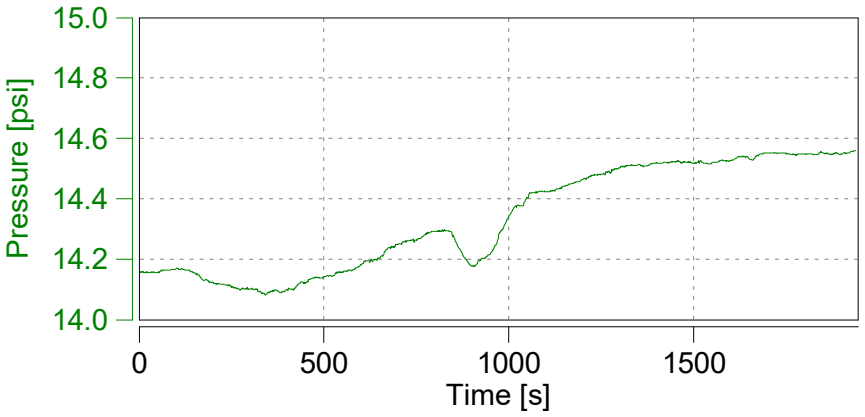
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

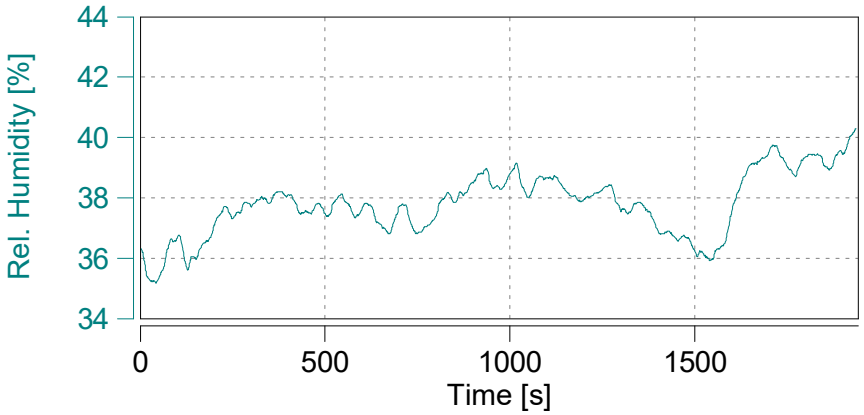
Case: X254-708
Page: Ambient Conditions

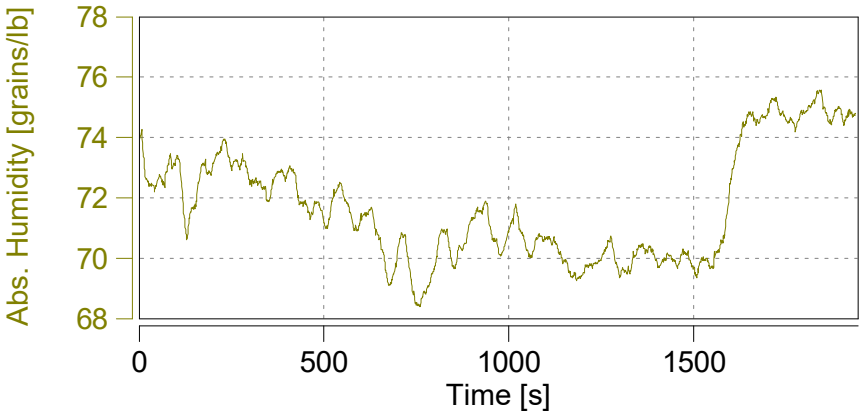
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









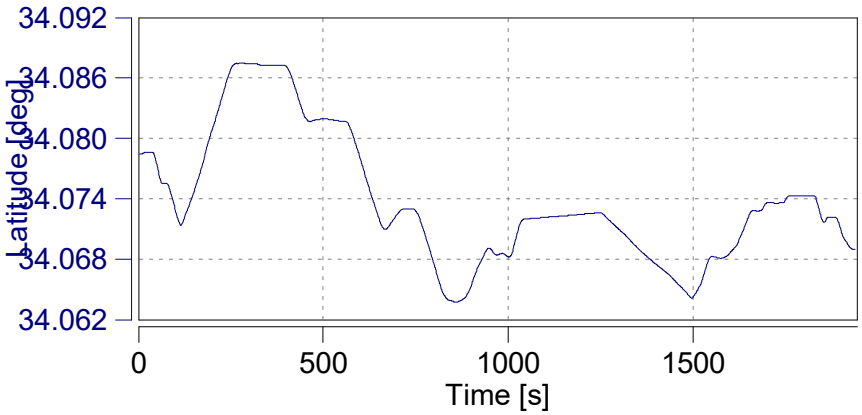
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

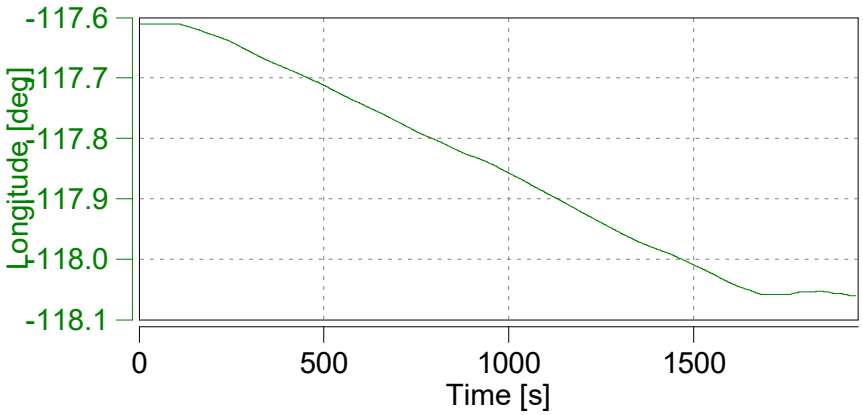
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

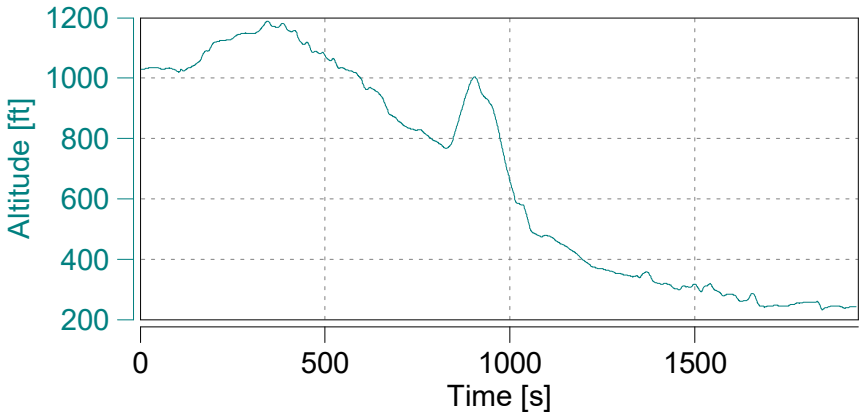
Case: X254-708
Page: GPS

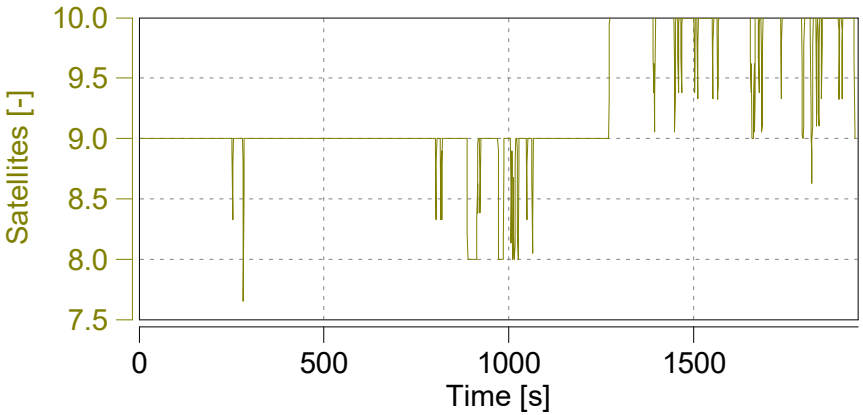
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









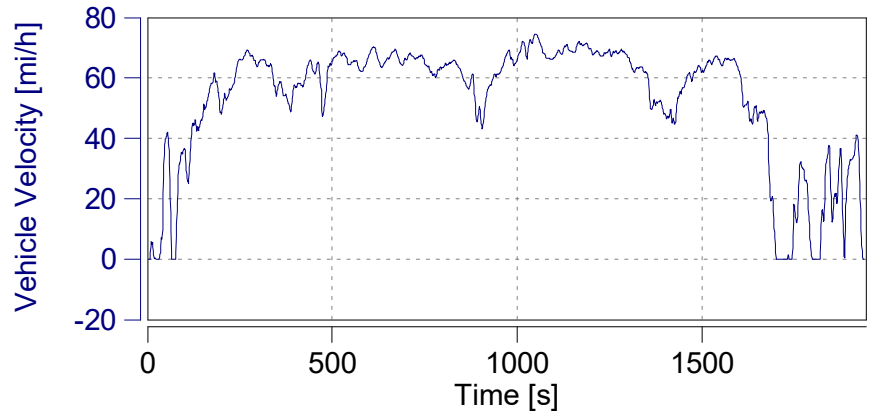
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

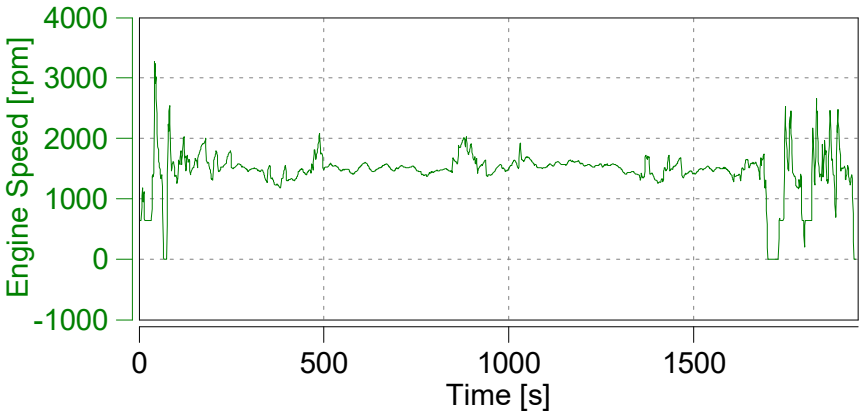
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

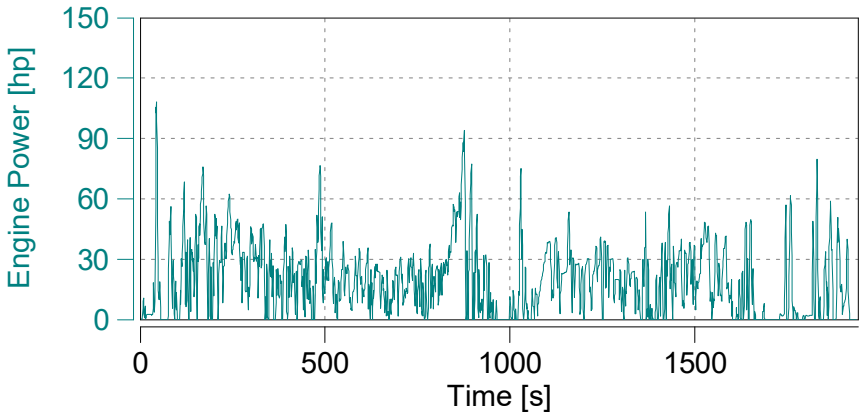
Case: X254-708
Page: Engine (1)

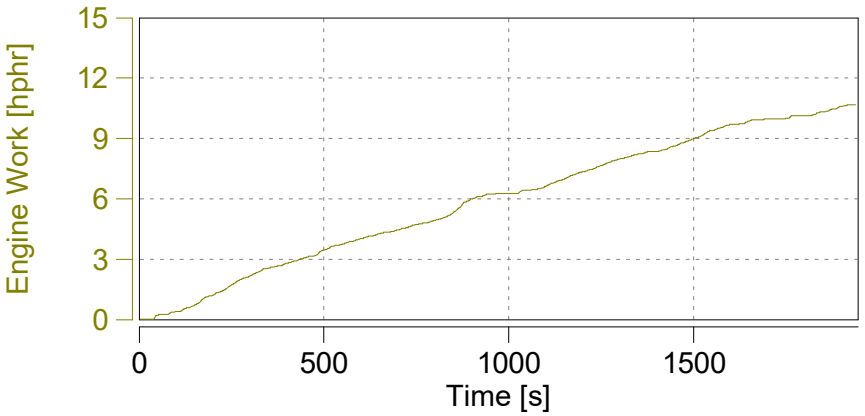
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









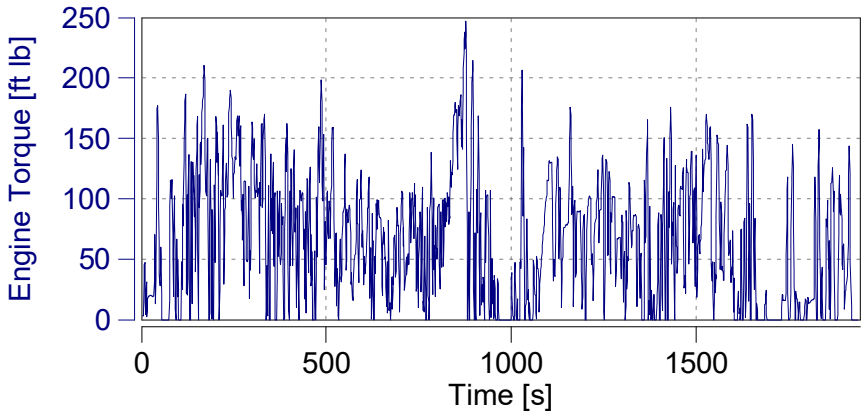
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

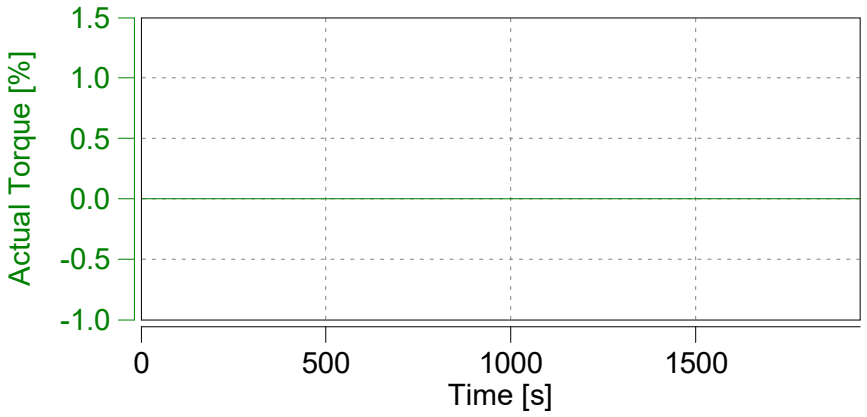
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

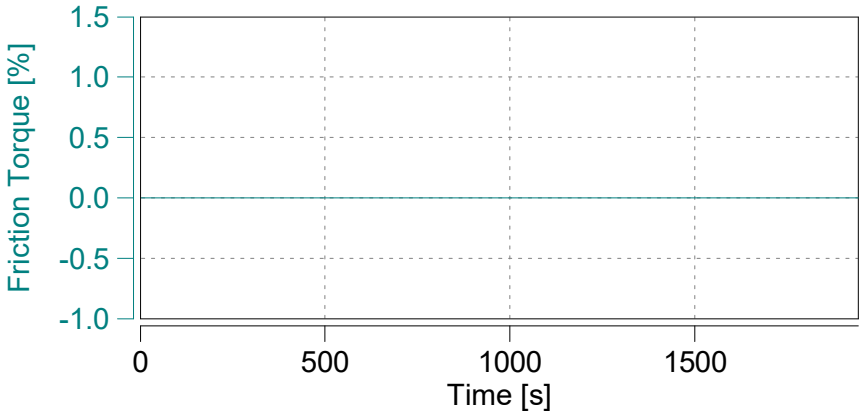
Case: X254-708
Page: Engine (2)

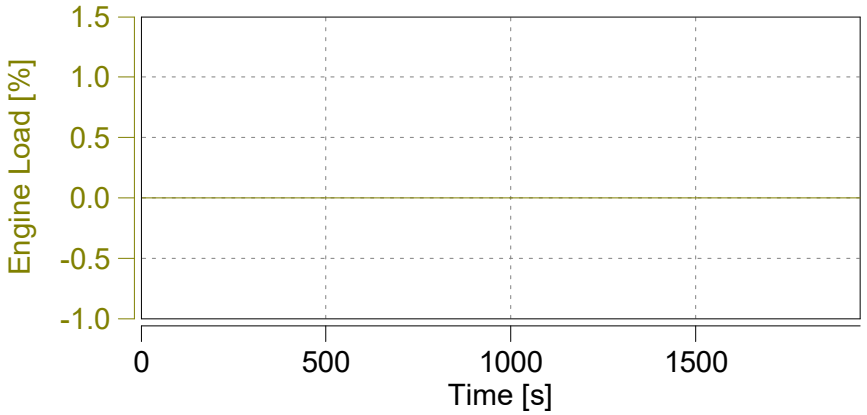
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









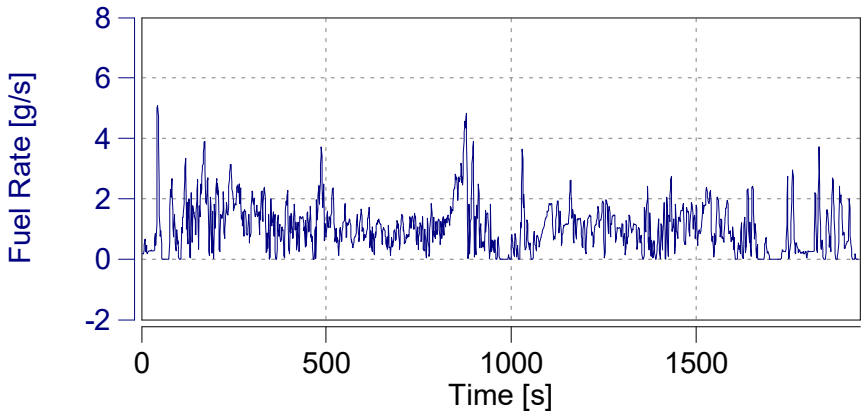
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

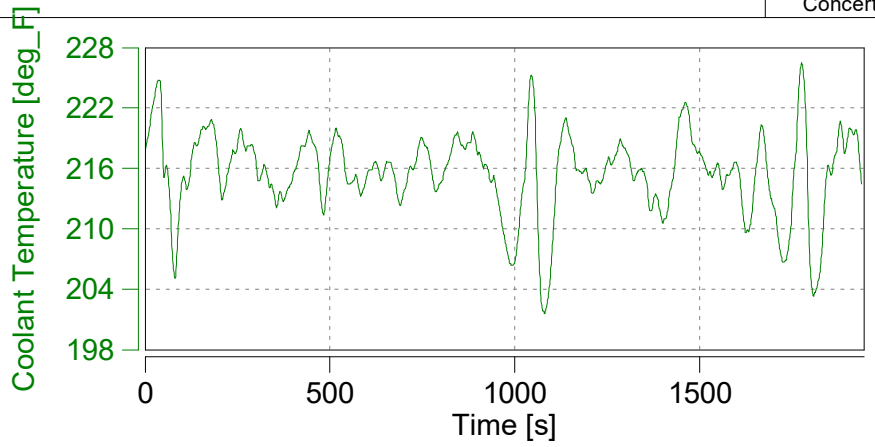
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

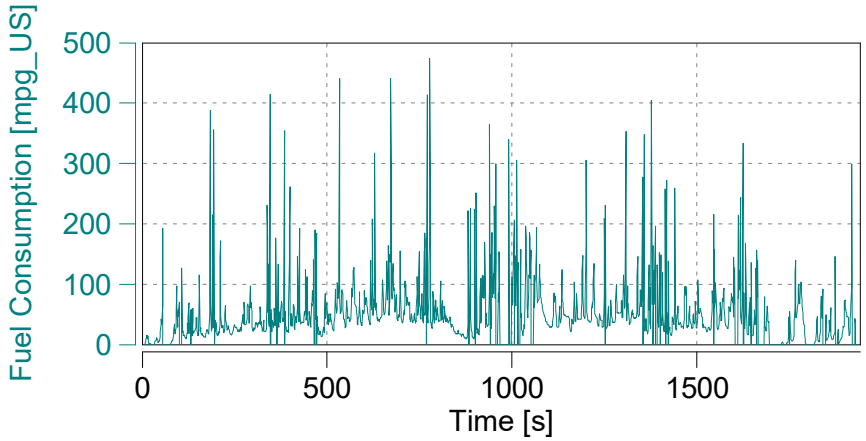
Case: X254-708
Page: Engine (3)

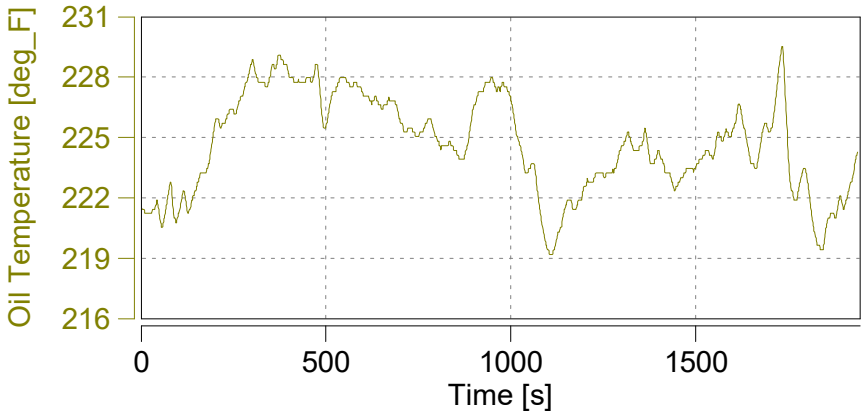
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









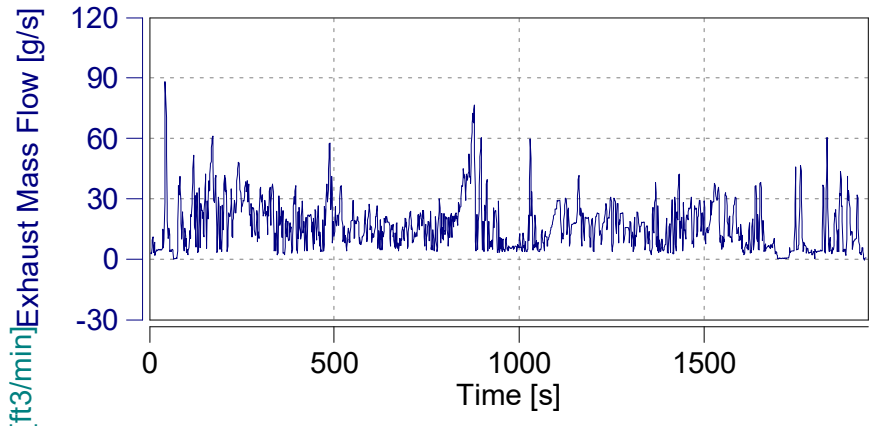
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

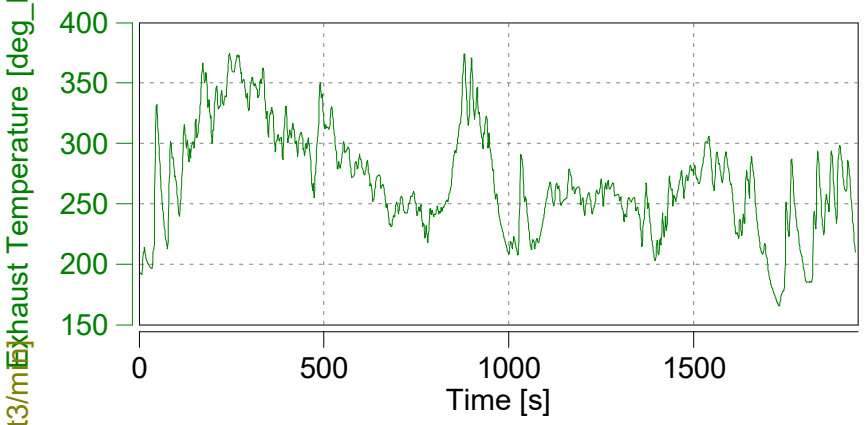
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

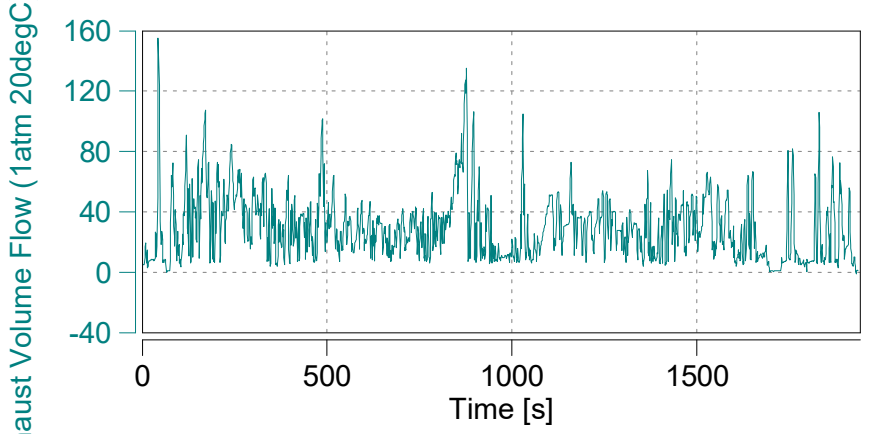
Case: X254-708
Page: Exhaust Flow (1)

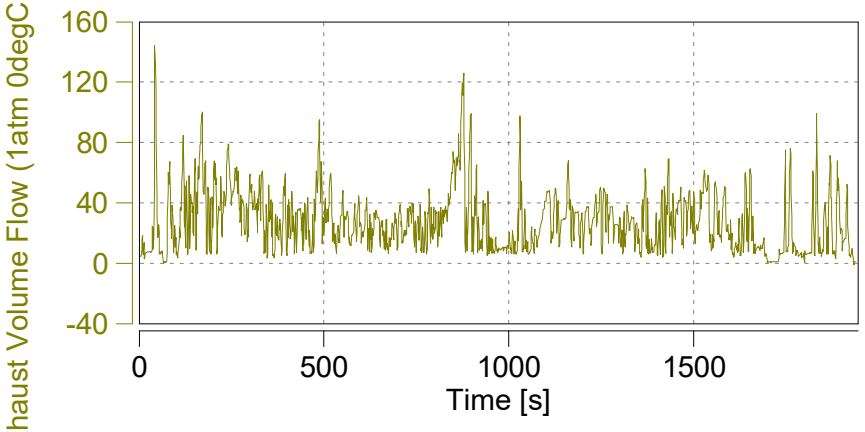
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









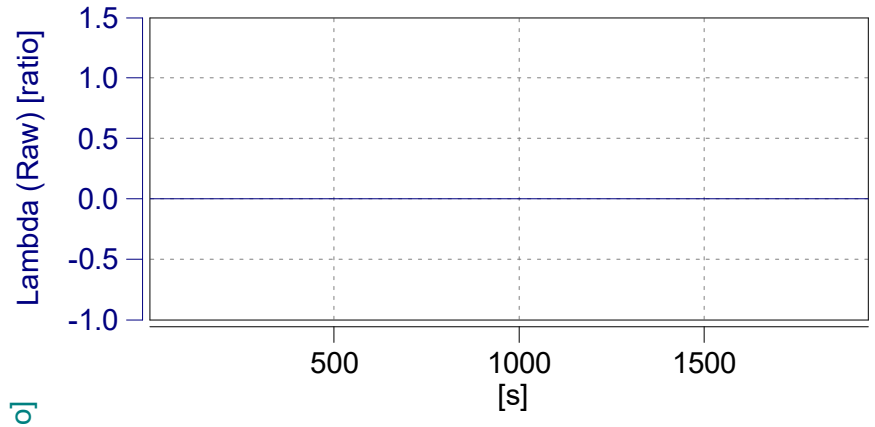
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

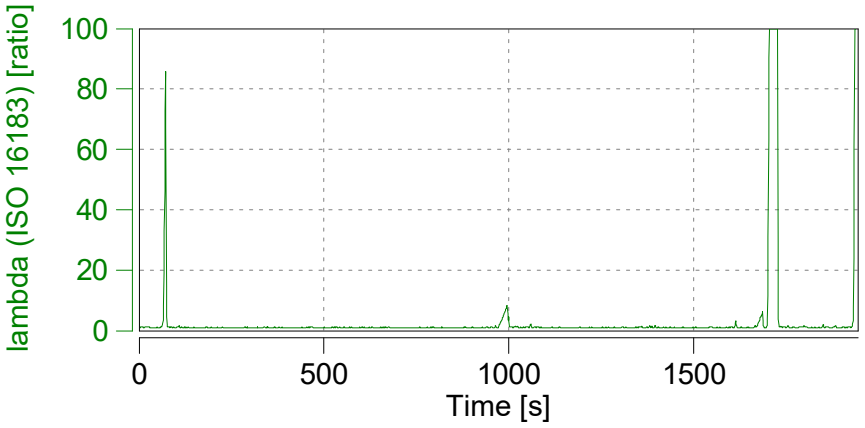
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

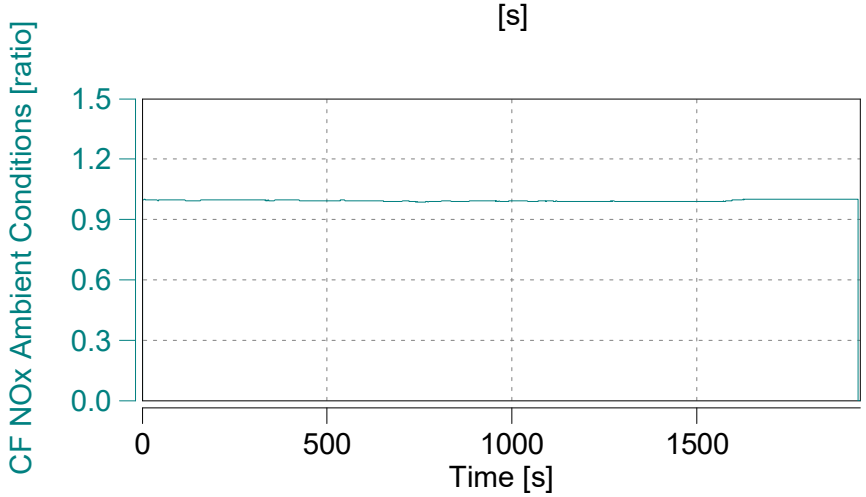
Case: X254-708
Page: Exhaust Flow (2)

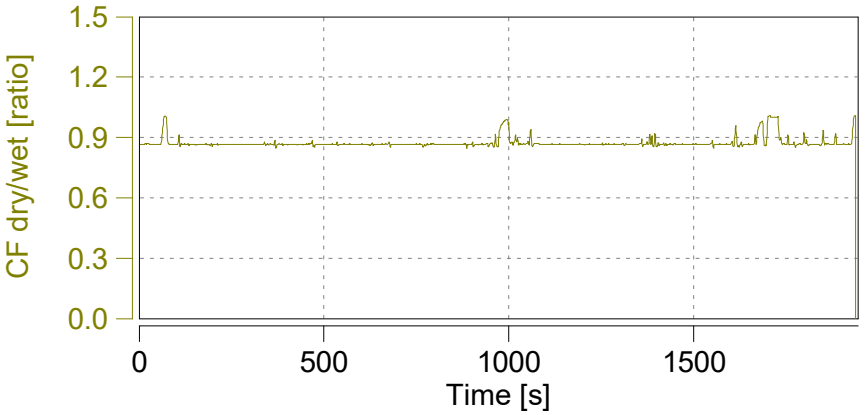
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









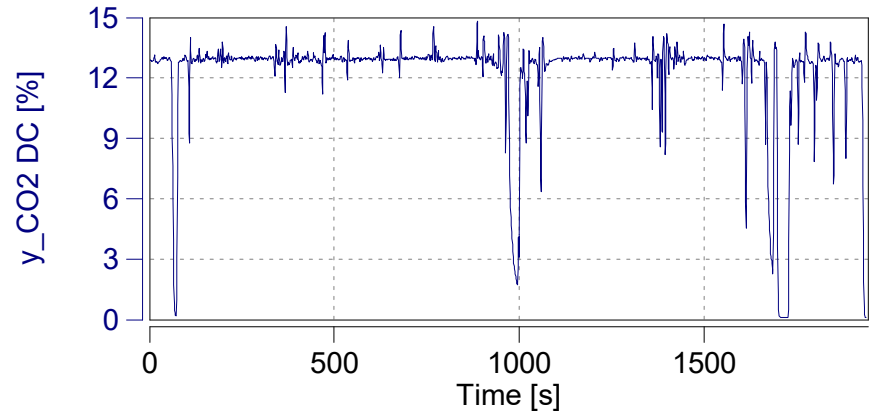
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

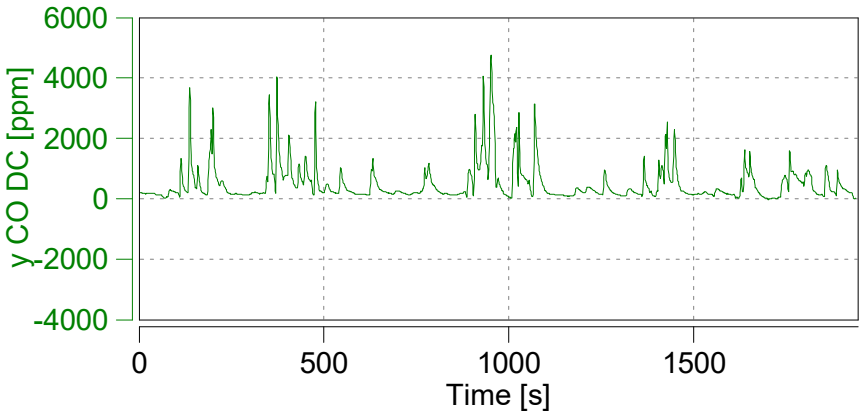
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

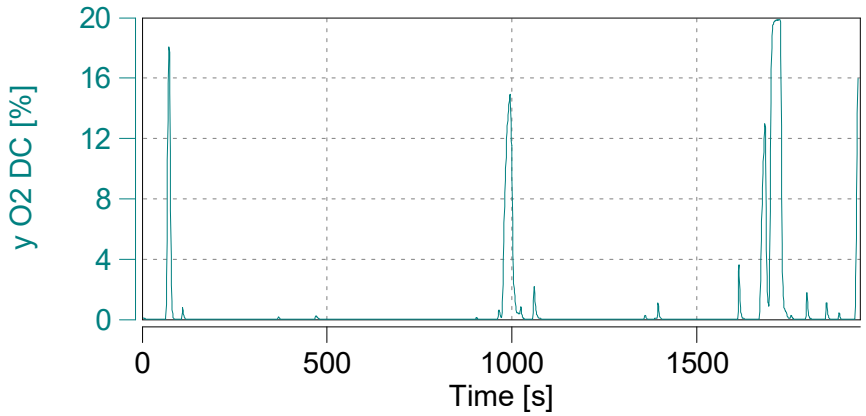
Case: X254-708
Page: Corrected Emissions (1)

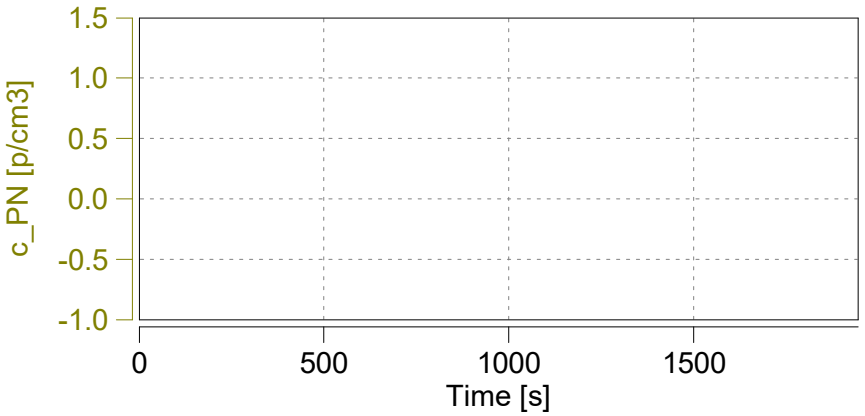
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









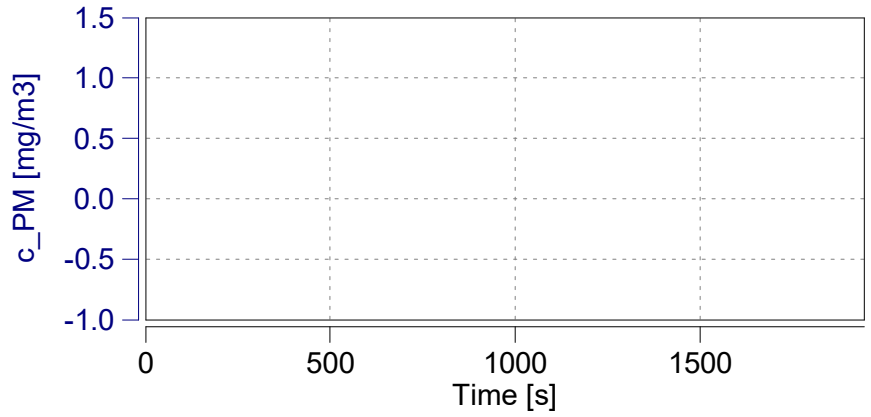
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

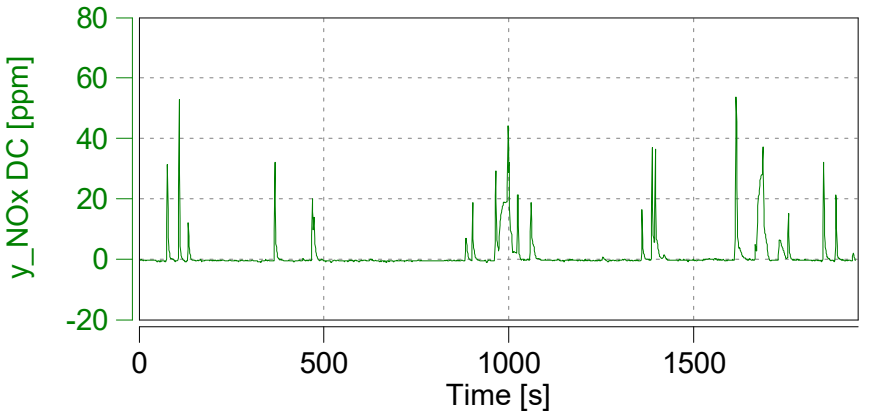
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

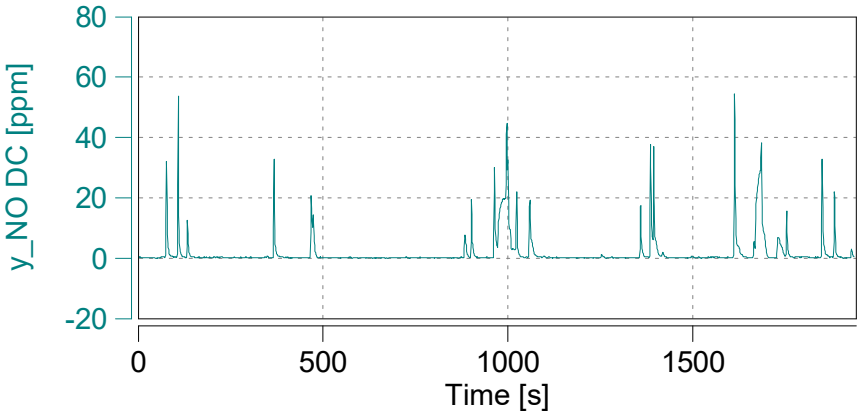
Case: X254-708
Page: Corrected Emissions (2)

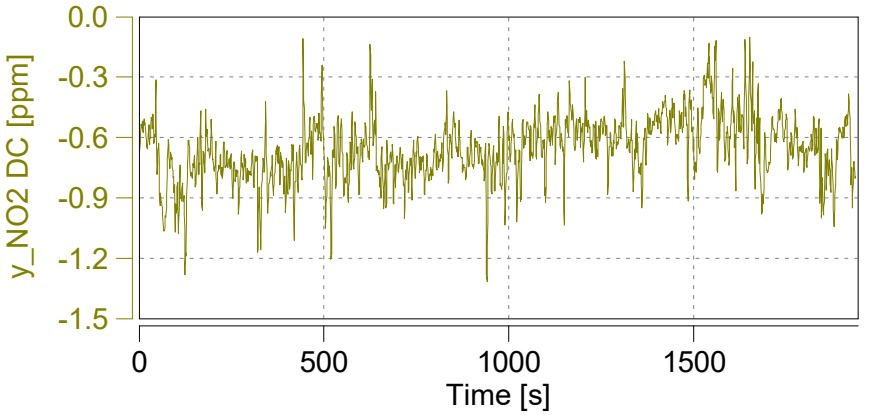
'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









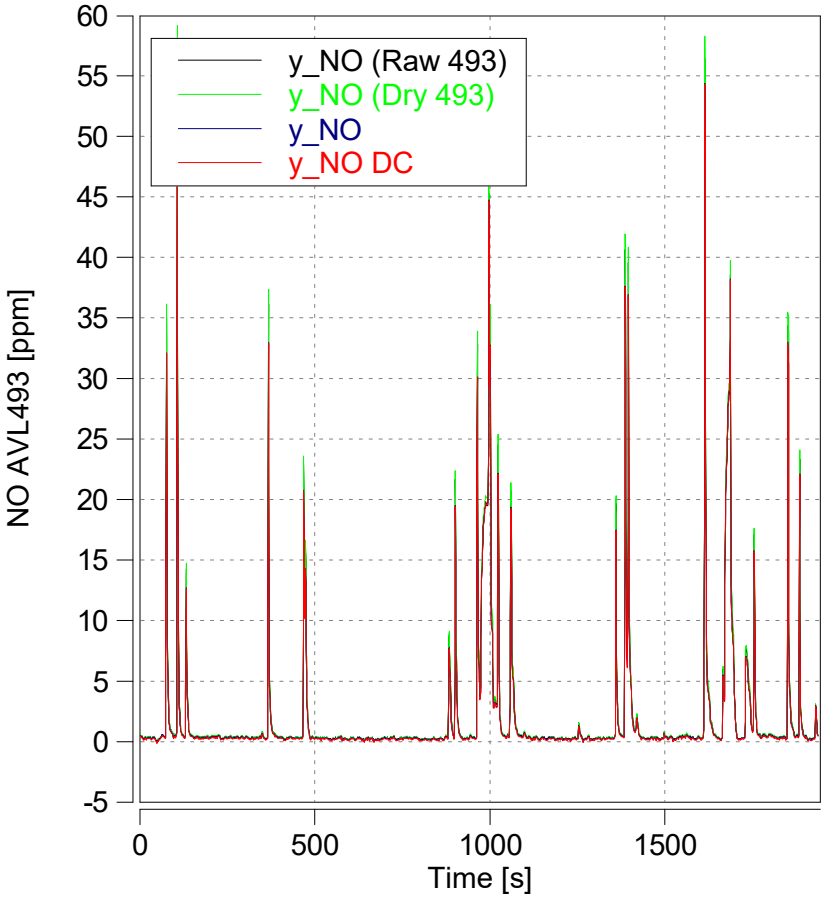
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

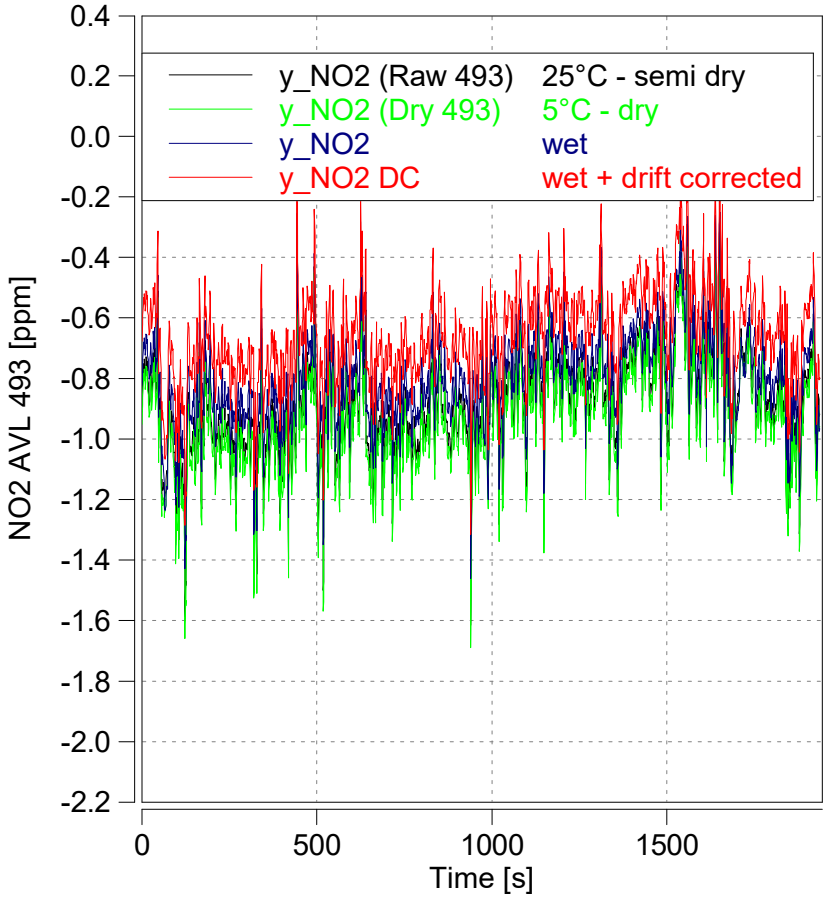
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (3)

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





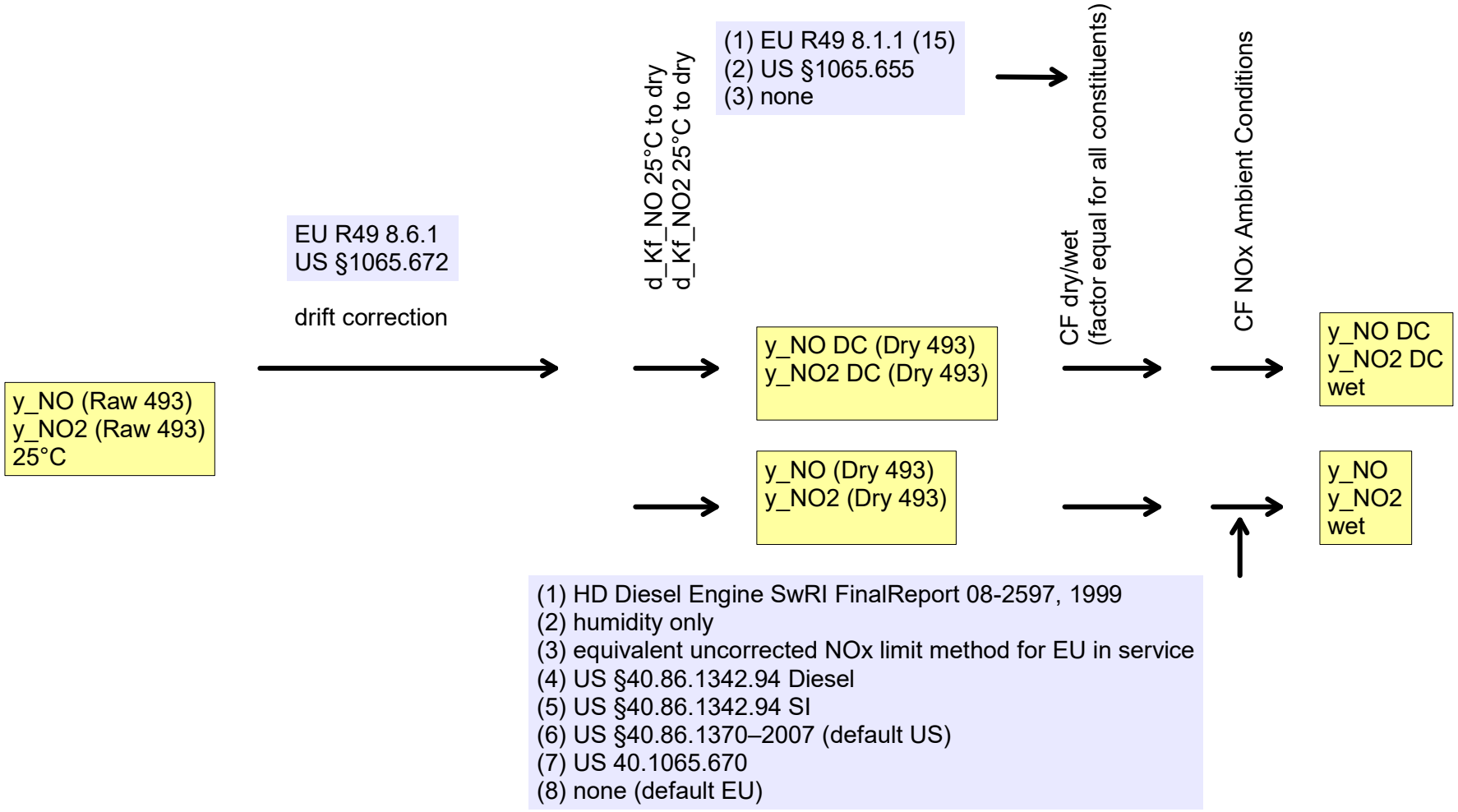
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

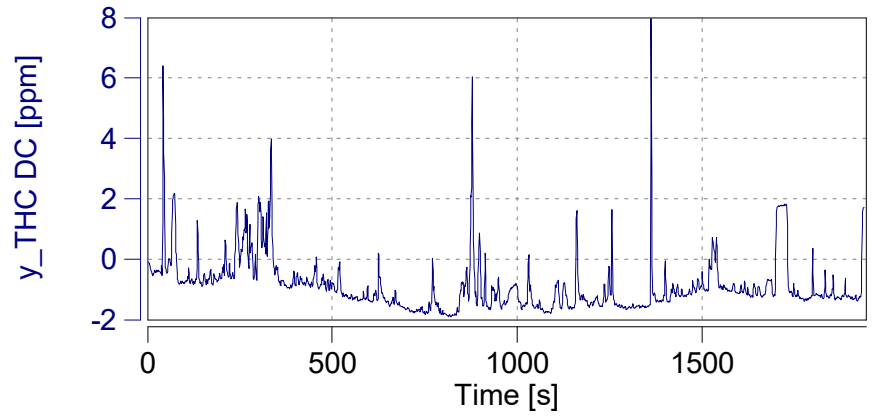
Concerto M.O.V.E, 2019

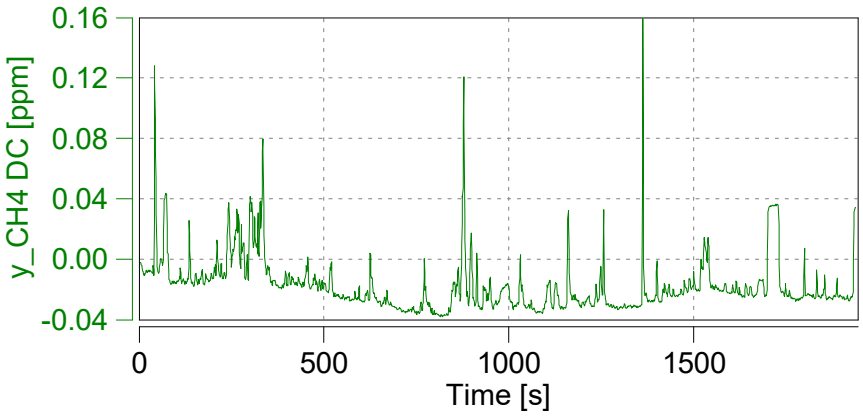
NOx - AVL 493

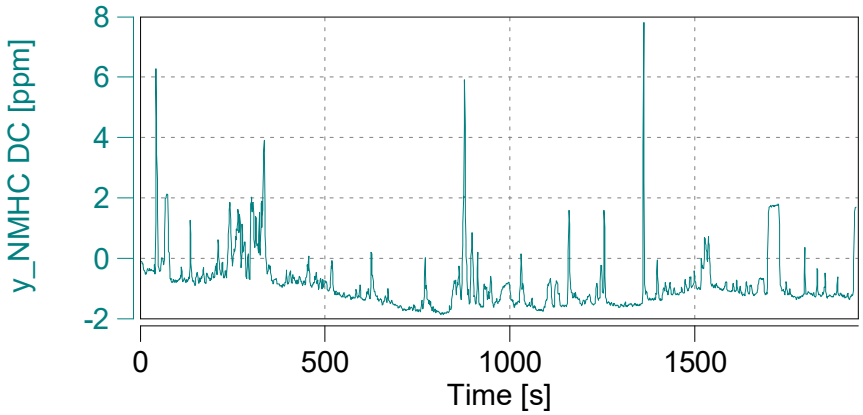


'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019







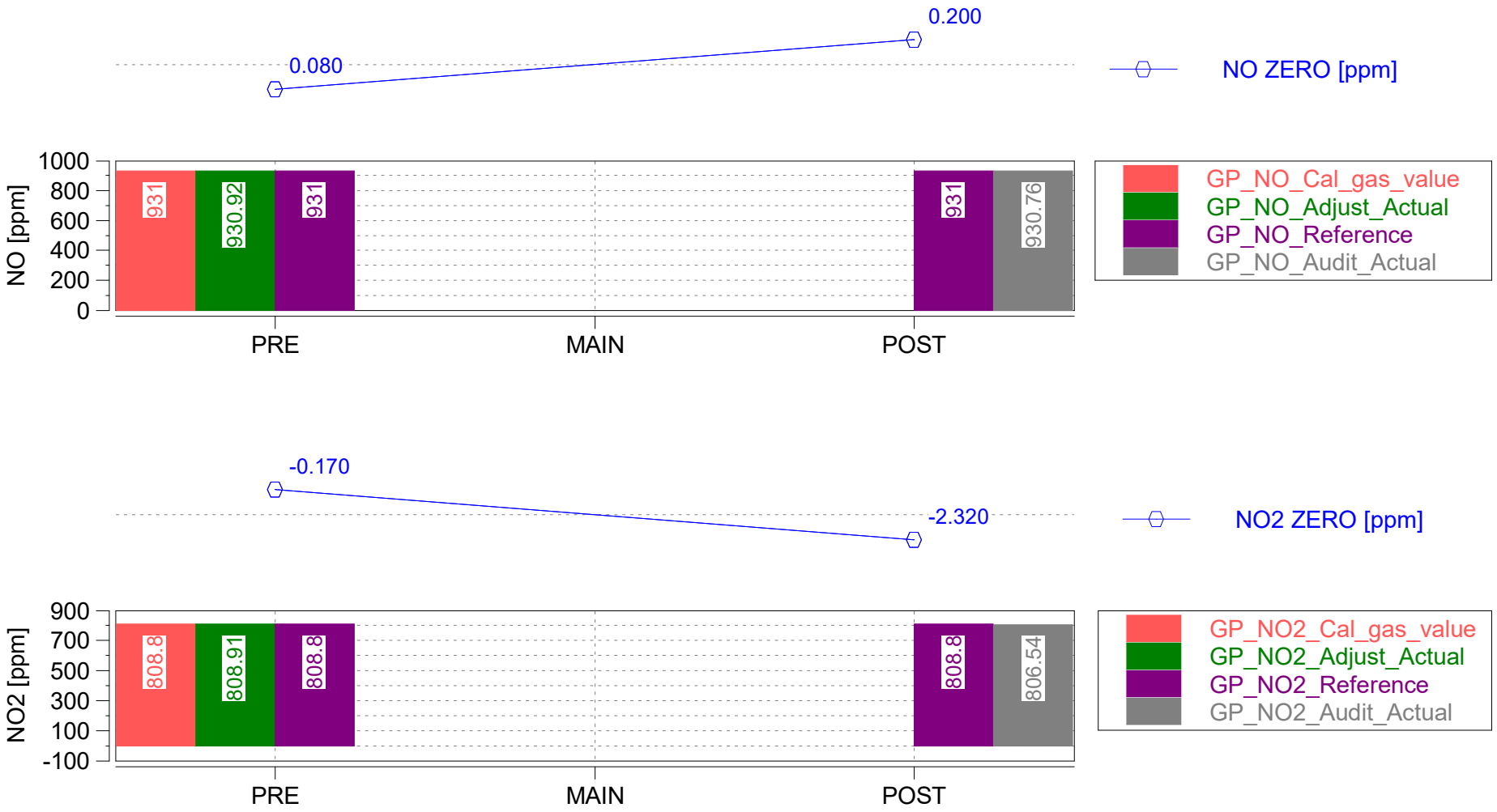
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



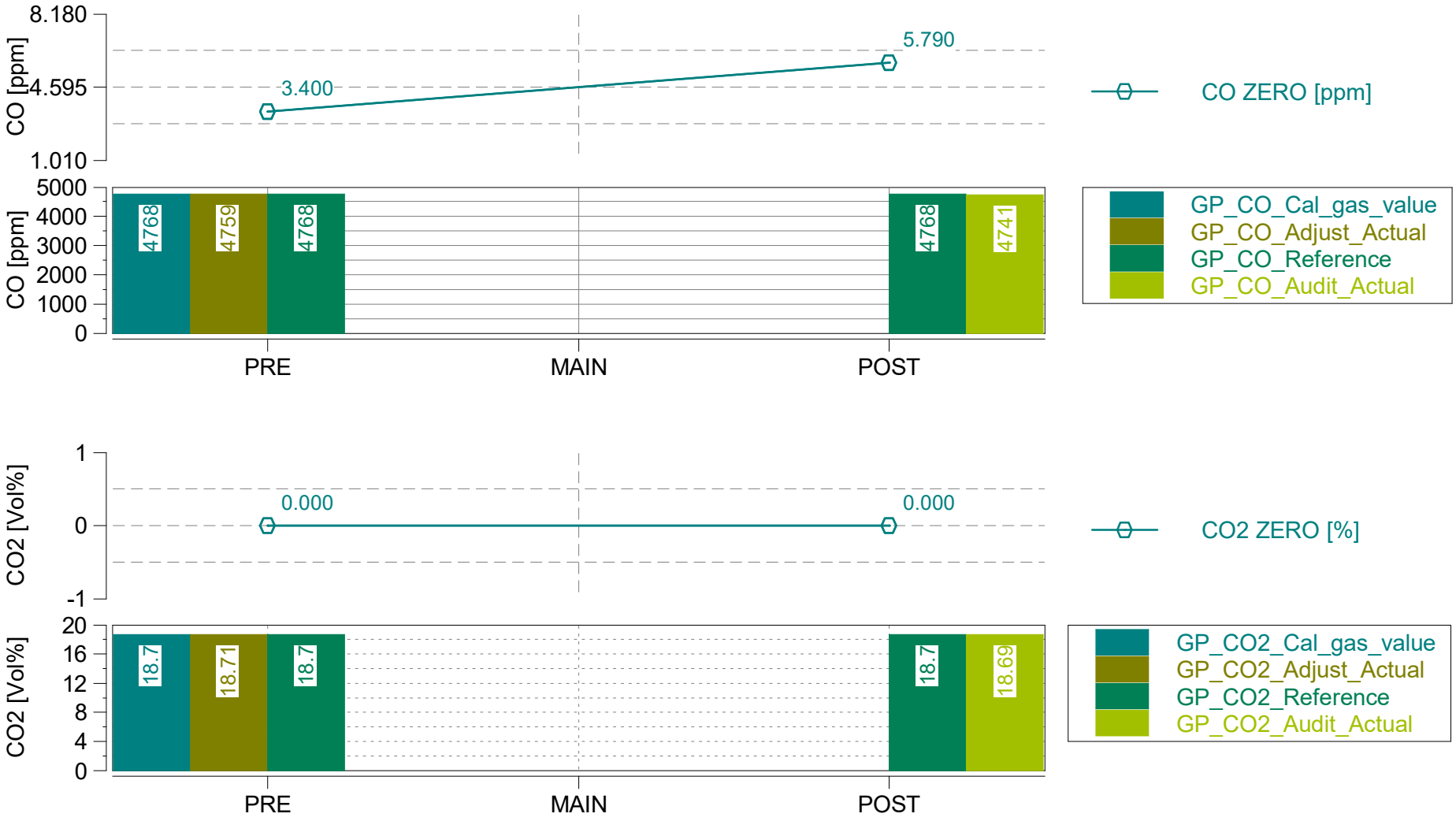
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



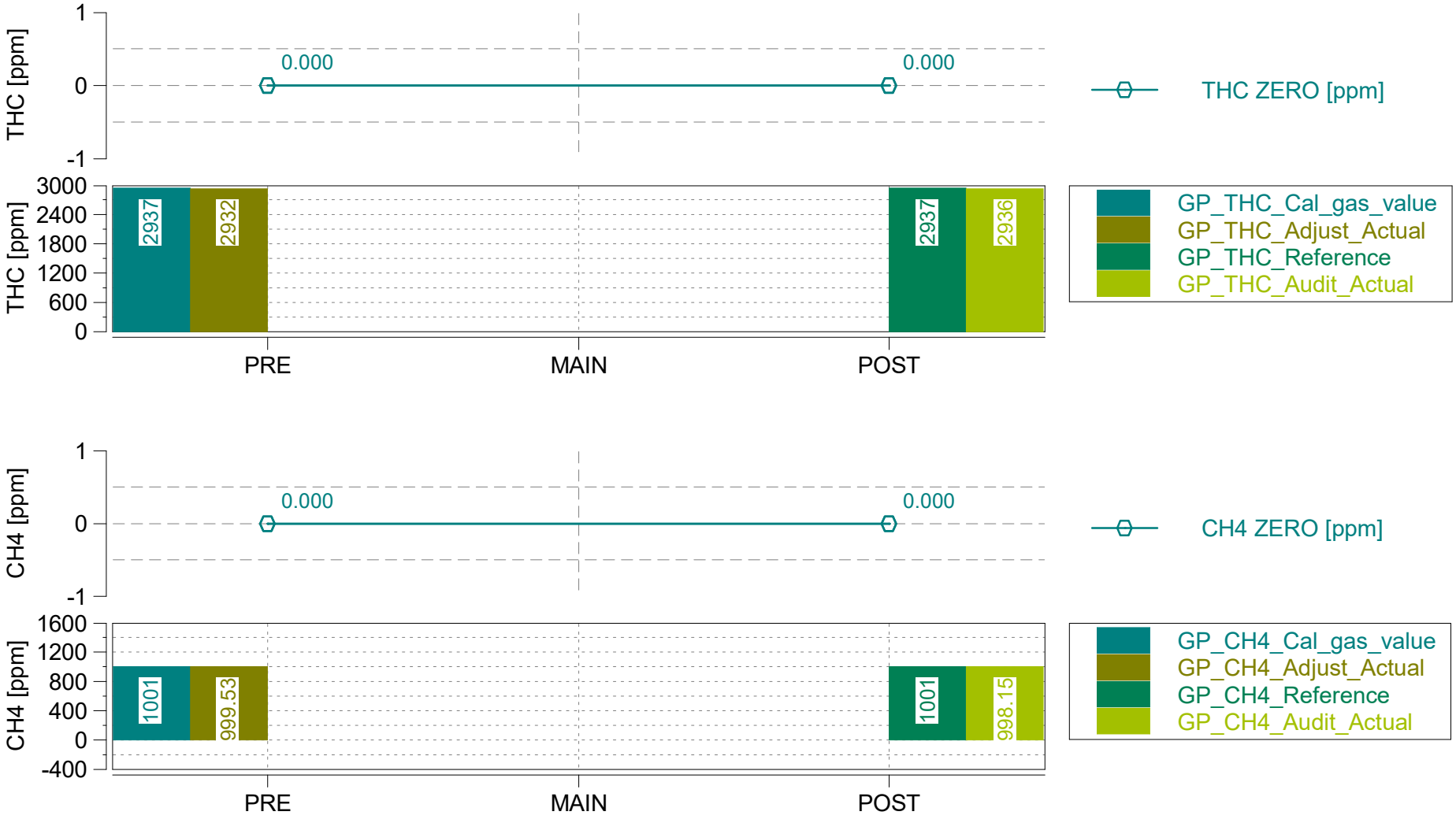
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.18**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-17
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

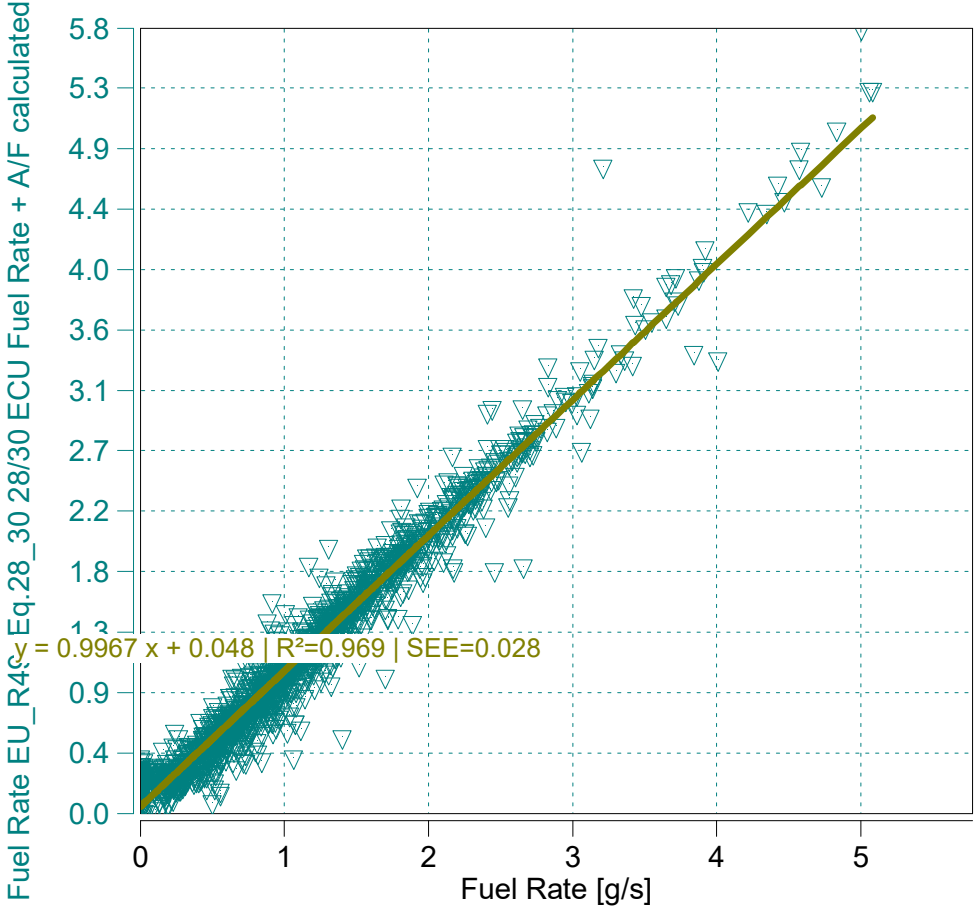
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 B2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 0.9967 x + 0.048 | R²=0.969 | SEE=0.028
m = 1.00 (0.9 - 1.1 recommended)
R² = 0.97 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1908.00	s
Trip Duration (a)	1908.00	s
Trip Distance	17.23	mi
Trip Distance (a)	17.23	mi
Trip Fuel Cons. (b)	2.99	kg
Trip Fuel Cons. (ab)	2.99	kg
Trip Fuel Cons. EU (ac)	3.06	kg
Trip Fuel Cons. US (ac)	3.03	kg
Trip Fuel Economy (b)	16.32	mpg_US
Trip Fuel Economy (ab)	16.32	mpg_US
Trip Fuel Economy EU (ac)	15.94	mpg_US
Trip Fuel Economy US (ac)	16.10	mpg_US
Trip Fuel Economy GGE (b)	16.32	mpg_US
Trip Fuel Economy GGE (ab)	16.32	mpg_US
Trip Fuel Economy EU GGE (ac)	15.94	mpg_US
Trip Fuel Economy US GGE (ac)	16.10	mpg_US
Trip Av. Eng. Speed	1501.85	rpm
Trip Av. Torque	87.73	lbft
Trip Av. Power	31.17	hp
Trip Work		
Trip Work (a)	16.45	hphr
Trip Exhaust Mass	46.95	kg
Trip Exhaust Mass EU (ac)	45.89	kg
Trip Exhaust Mass US (ac)	46.39	kg
Trip Av. Amb. Temperature	81.69	deg_F
Trip Av. Humidity	42.08	%
Trip Av. GPS Altitude	587.57	m
Fuel Type	Petrol (E10)	

ave THC	3.76014	ppm
ave NMHC	3.68494	ppm
ave CH4	0.07520	ppm
ave CO	404.11899	ppm
ave CO2	11.47576	%
ave NOx	2.40713	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.13118	g
tot NMHC	0.12134	g
tot CH4	0.00291	g
tot CO	19.52483	g
tot CO2	9180.65339	g
tot NO (d)	0.09206	g
tot NO2	0.00366	g
tot NOx	0.07655	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	32.64075	mi/hr
Trip Distance Share Urban	21.31420	% distance
Trip Distance Share Rural	78.68580	% distance
Trip Distance Share Motorway	0.00000	% distance

BS CO2	558.02721	g/hphr
BS CO	1.18678	g/hphr
BS THC	0.00797	g/hphr
BS NMHC	0.00738	g/hphr
BS CH4	0.00018	g/hphr
BS NO (d)	0.00560	g/hphr
BS NO2	0.00022	g/hphr
BS NOx	0.00465	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	532.92050	g/mi
DS CO	1.13338	g/mi
DS THC	0.00761	g/mi
DS NMHC	0.00704	g/mi
DS CH4	0.00017	g/mi
DS NO (d)	0.00534	g/mi
DS NO2	0.00021	g/mi
DS NOx	0.00444	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3072.78977	g/kg
FS CO	6.53501	g/kg
FS THC	0.04391	g/kg
FS NMHC	0.04061	g/kg
FS CH4	0.00097	g/kg
FS NO (d)	0.03081	g/kg
FS NO2	0.00122	g/kg
FS NOx	0.02562	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1908.00	s
Trip Duration (a)	1908.00	s
Trip Distance	17.23	mi
Trip Distance (a)	17.23	mi
Trip Fuel Cons. (b)	2.99	kg
Trip Fuel Cons. (ab)	2.99	kg
Trip Fuel Cons. EU (ac)	3.06	kg
Trip Fuel Cons. US (ac)	3.03	kg
Trip Fuel Economy (b)	16.32	mpg_US
Trip Fuel Economy (ab)	16.32	mpg_US
Trip Fuel Economy EU (ac)	15.94	mpg_US
Trip Fuel Economy US (ac)	16.10	mpg_US
Trip Fuel Economy GGE (b)	16.32	mpg_US
Trip Fuel Economy GGE (ab)	16.32	mpg_US
Trip Fuel Economy EU GGE (ac)	15.94	mpg_US
Trip Fuel Economy US GGE (ac)	16.10	mpg_US
Trip Av. Eng. Speed	1501.85	rpm
Trip Av. Torque	87.73	lbft
Trip Av. Power	31.17	hp
Trip Work		
Trip Work (a)	16.45	hphr
Trip Exhaust Mass	46.95	kg
Trip Exhaust Mass EU (ac)	45.89	kg
Trip Exhaust Mass US (ac)	46.39	kg
Trip Av. Amb. Temperature	81.69	deg_F
Trip Av. Humidity	42.08	%
Trip Av. GPS Altitude	587.57	m
Fuel Type	Petrol (E10)	

ave THC DC	3.76506	ppm
ave NMHC DC	3.68976	ppm
ave CH4 DC	0.07530	ppm
ave CO DC	402.87971	ppm
ave CO2 DC	11.47576	%
ave NOx DC	2.48673	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.13135	g
tot NMHC DC	0.12150	g
tot CH4 DC	0.00291	g
tot CO DC	19.47624	g
tot CO2 DC	9180.65339	g
tot NO DC (d)	0.08701	g
tot NO2 DC	0.00780	g
tot NOx DC	0.08004	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	32.64075	mi/hr
Trip Distance Share Urban	21.31420	% distance
Trip Distance Share Rural	78.68580	% distance
Trip Distance Share Motorway	0.00000	% distance

BS CO2 DC	558.02721	g/hphr
BS CO DC	1.18382	g/hphr
BS THC DC	0.00798	g/hphr
BS NMHC DC	0.00739	g/hphr
BS CH4 DC	0.00018	g/hphr
BS NO DC (d)	0.00529	g/hphr
BS NO2 DC	0.00047	g/hphr
BS NOx DC	0.00487	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	532.92050	g/mi
DS CO DC	1.13056	g/mi
DS THC DC	0.00762	g/mi
DS NMHC DC	0.00705	g/mi
DS CH4 DC	0.00017	g/mi
DS NO DC (d)	0.00505	g/mi
DS NO2 DC	0.00045	g/mi
DS NOx DC	0.00465	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3072.78977	g/kg
FS CO DC	6.51875	g/kg
FS THC DC	0.04396	g/kg
FS NMHC DC	0.04067	g/kg
FS CH4 DC	0.00097	g/kg
FS NO DC (d)	0.02912	g/kg
FS NO2 DC	0.00261	g/kg
FS NOx DC	0.02679	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

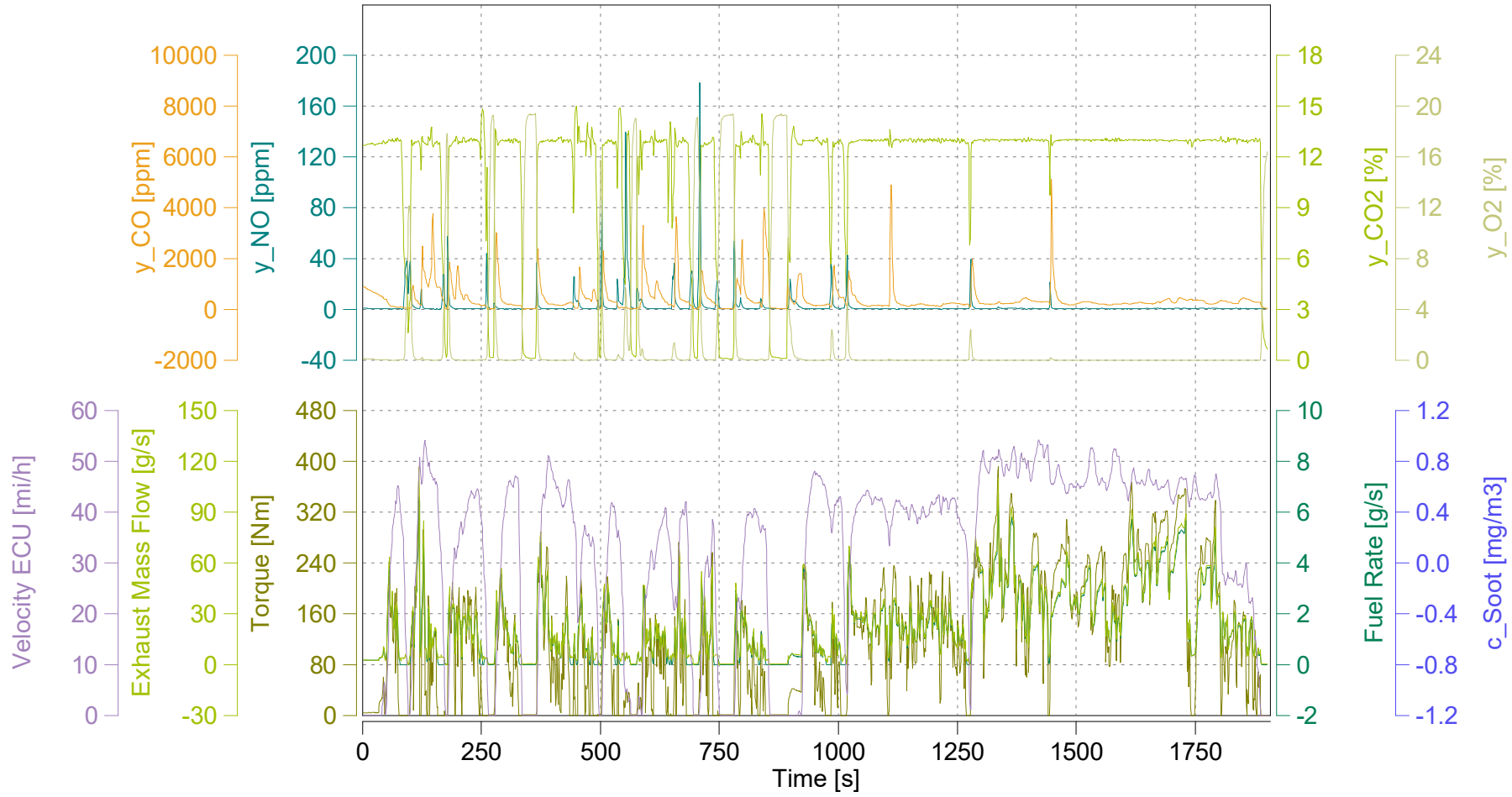
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NO
CO/CO
O2
Appl

Alignme
Reset
Re
Appl

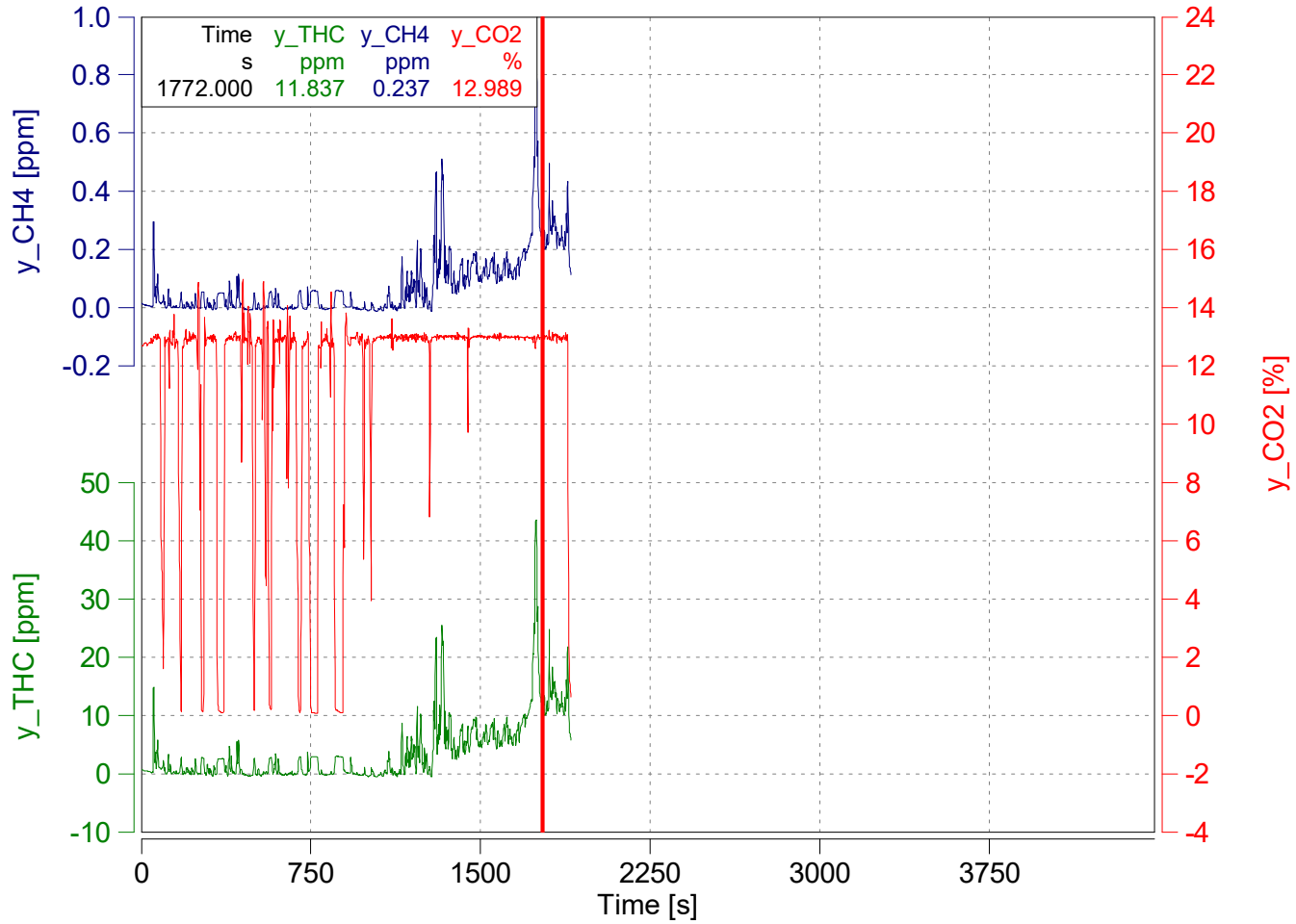
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

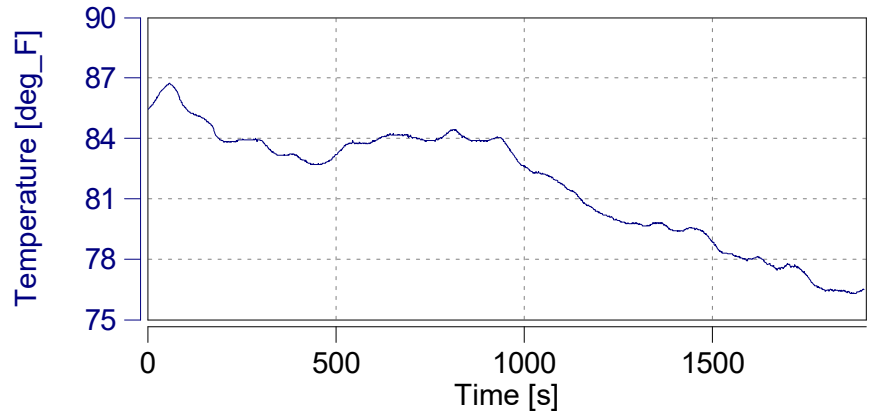
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

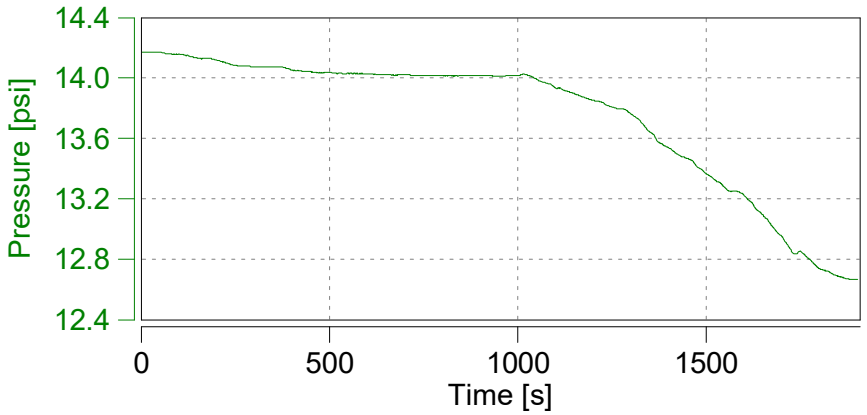
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

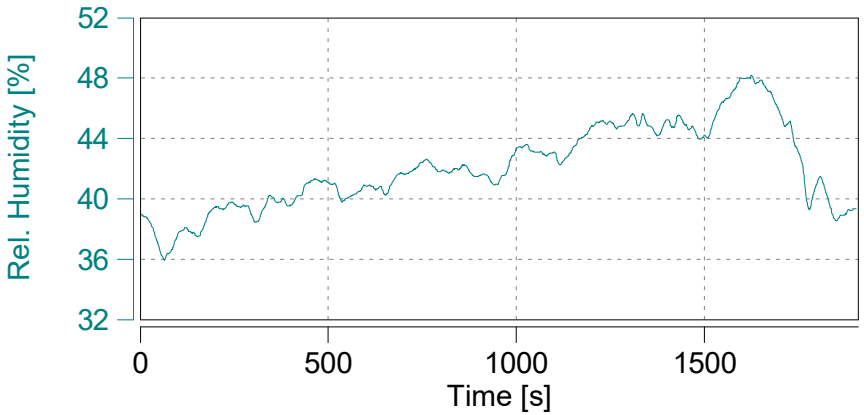
Case: X254-708
Page: Ambient Conditions

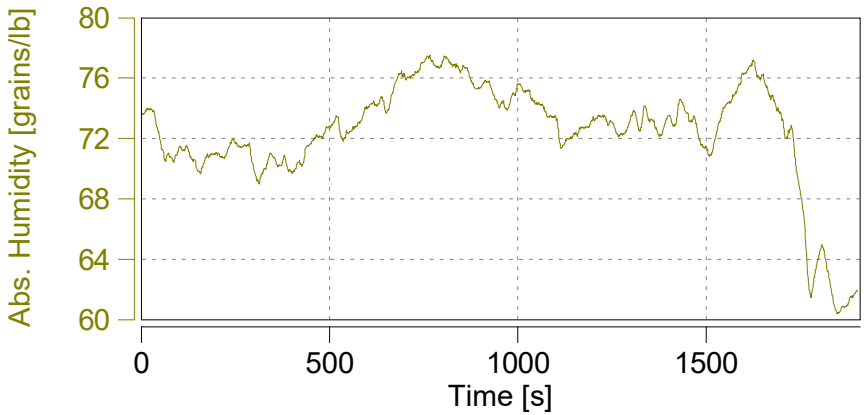
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









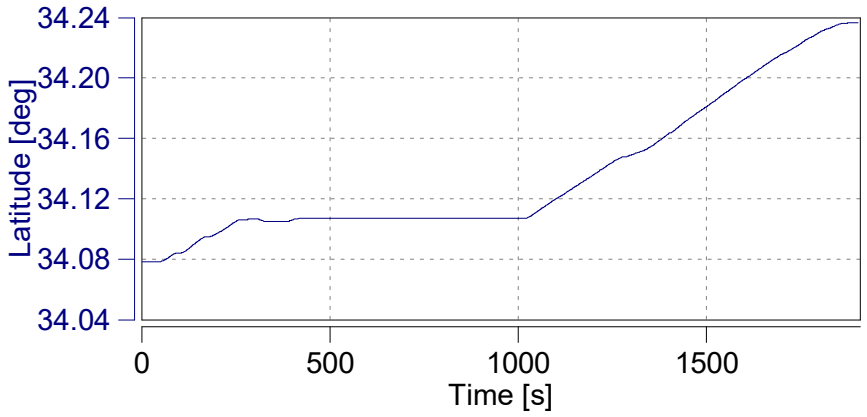
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

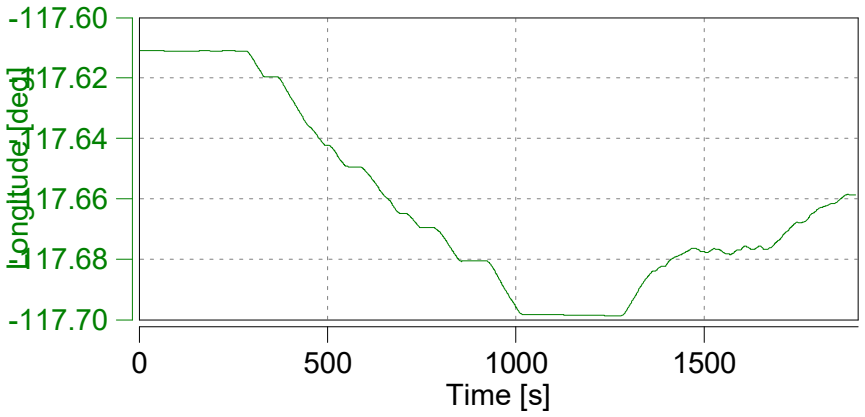
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

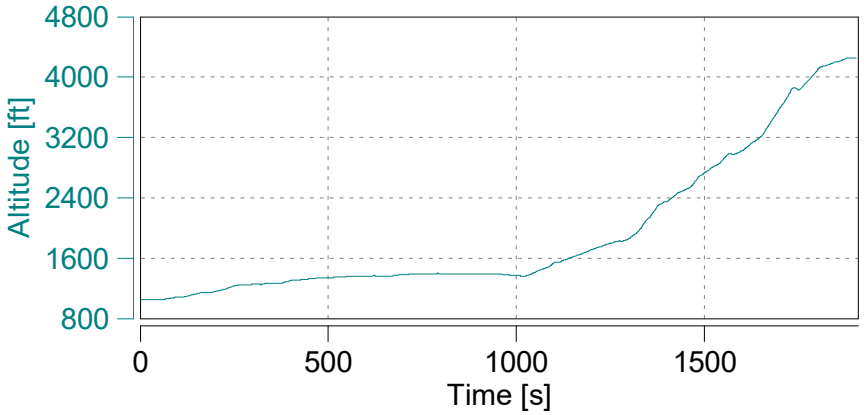
Case: X254-708
Page: GPS

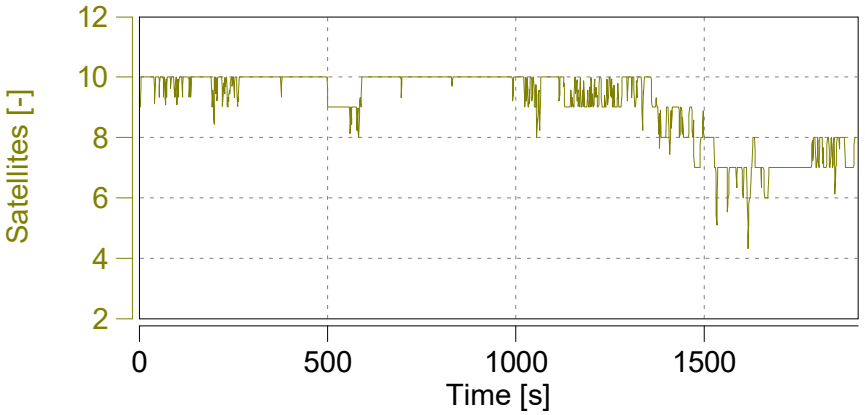
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









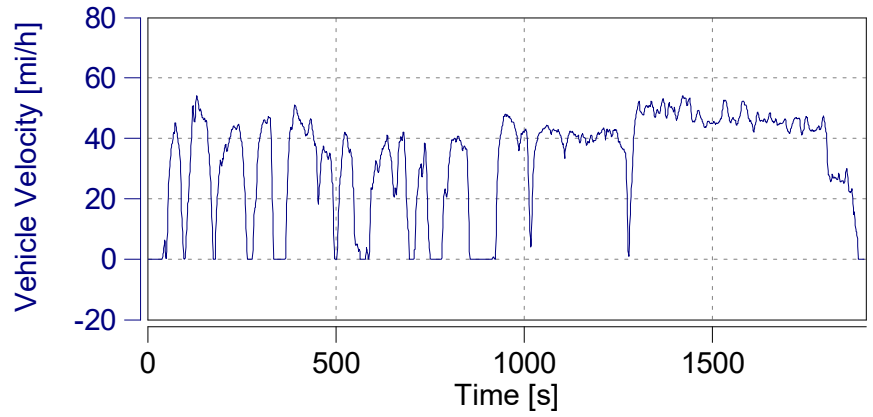
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

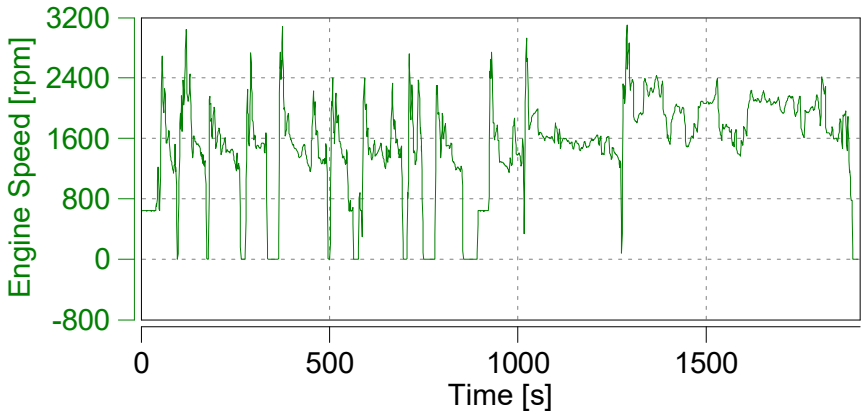
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

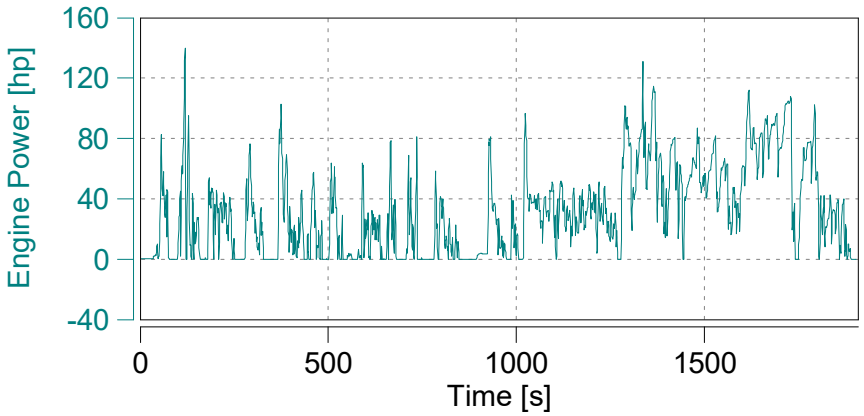
Case: X254-708
Page: Engine (1)

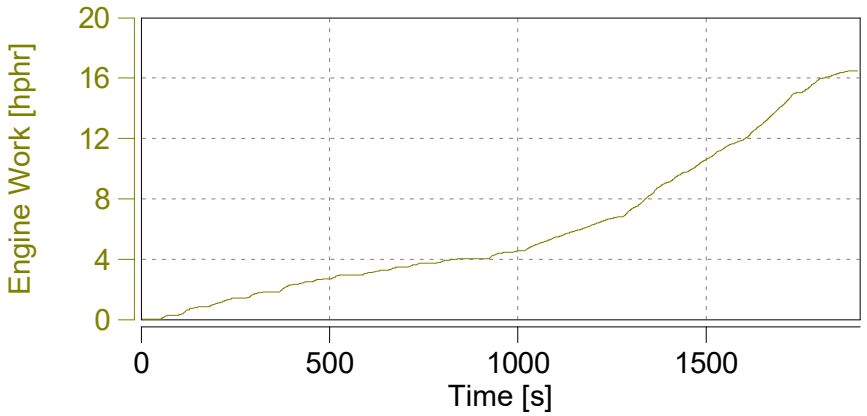
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









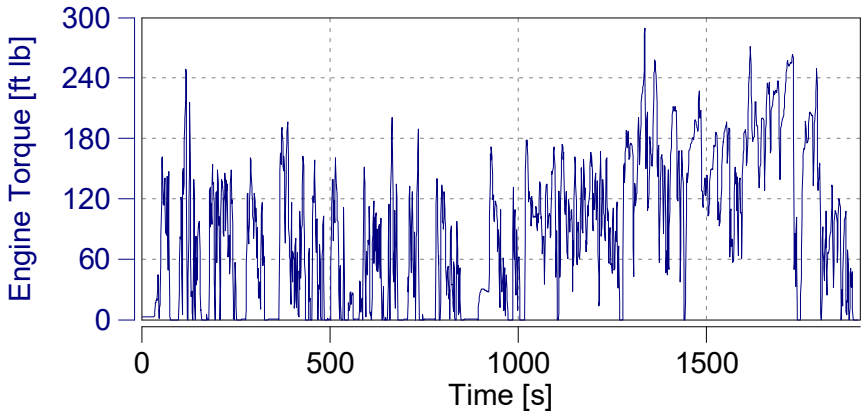
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

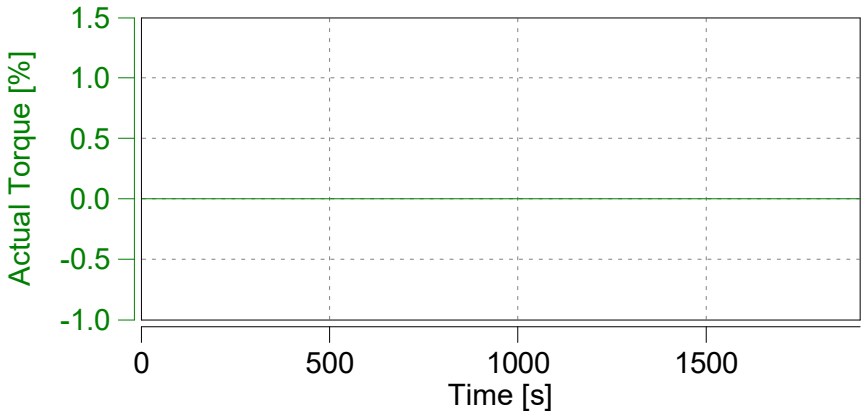
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

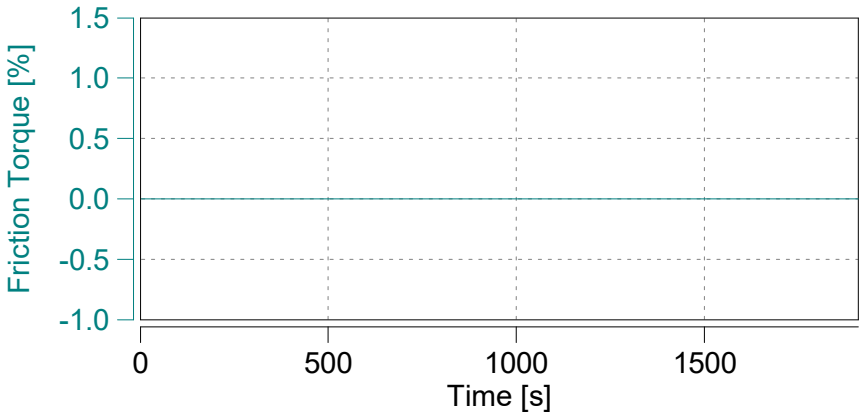
Case: X254-708
Page: Engine (2)

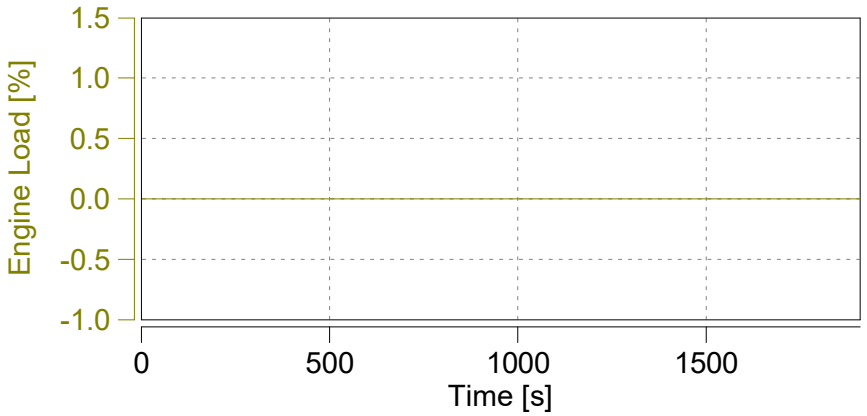
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019







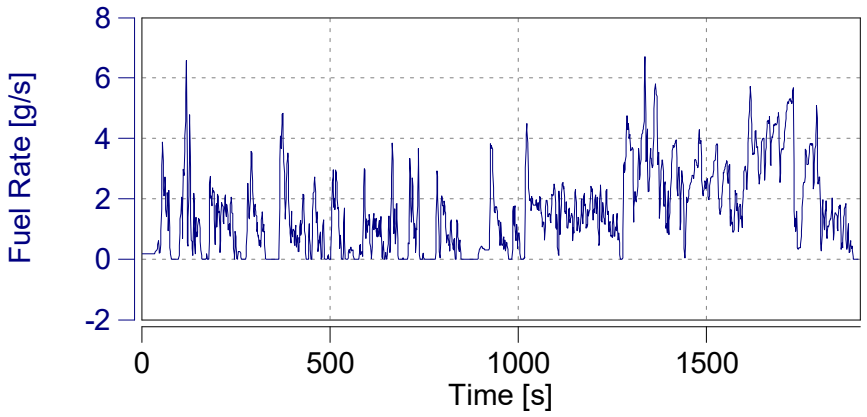


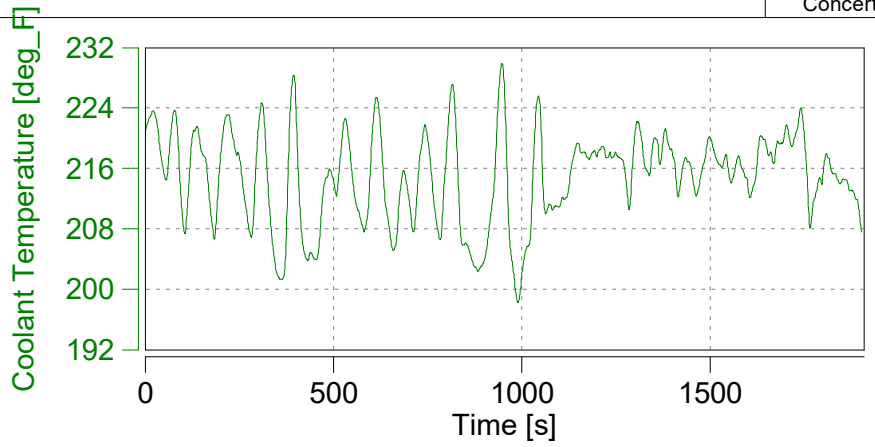
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

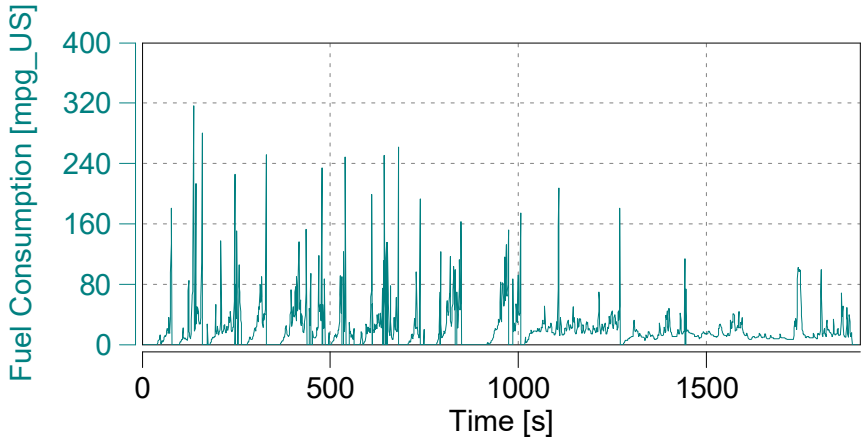
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

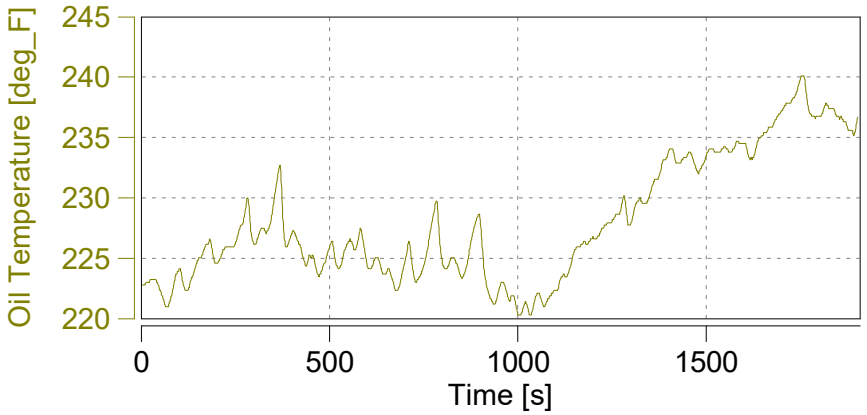
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









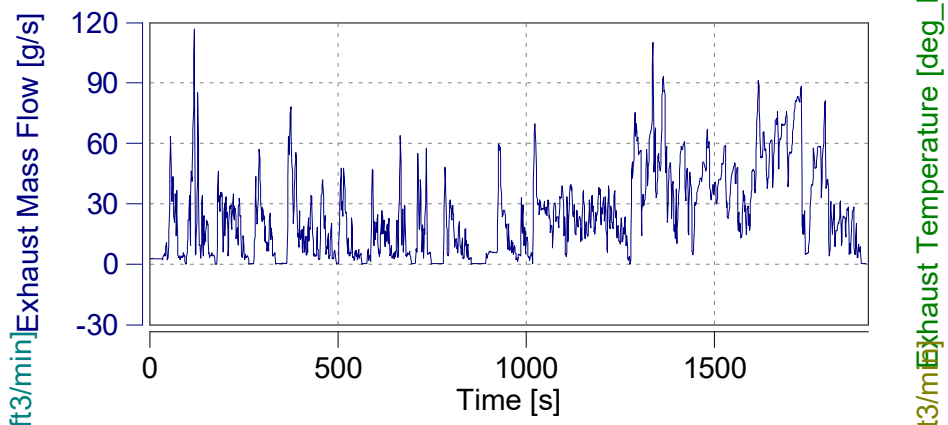
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

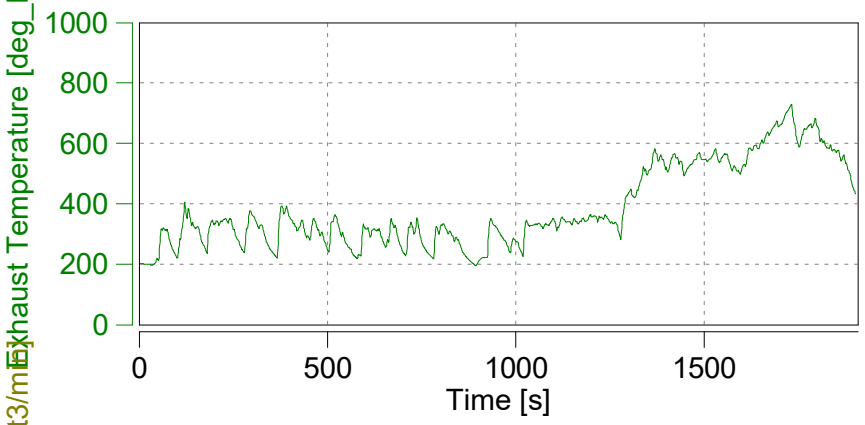
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

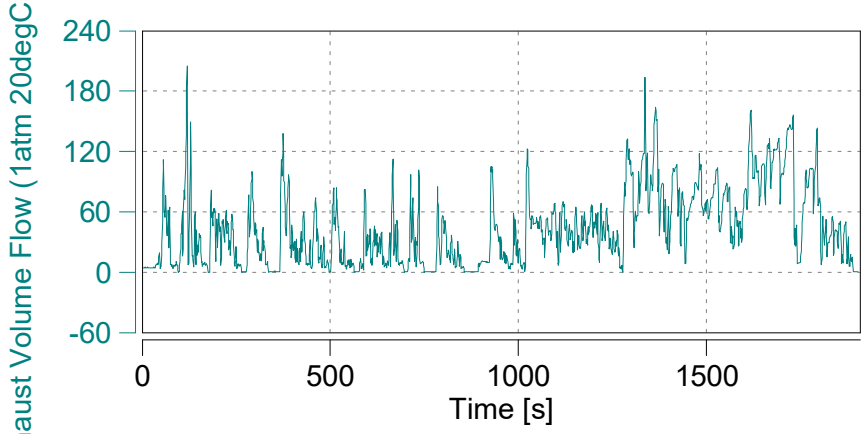
Case: X254-708
Page: Exhaust Flow (1)

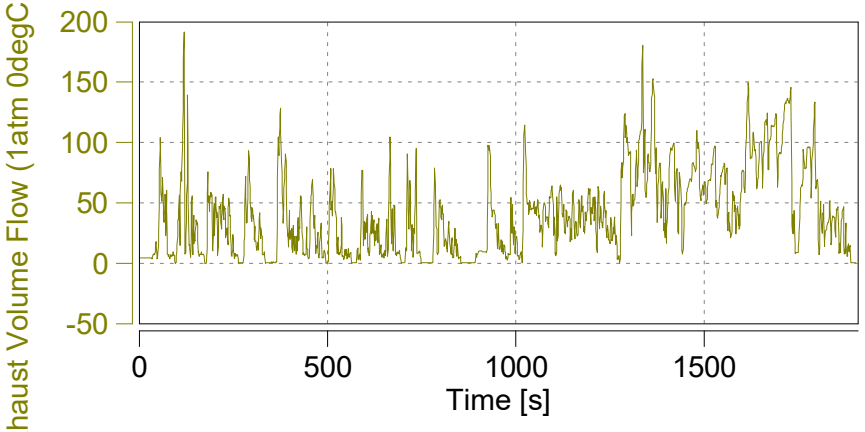
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









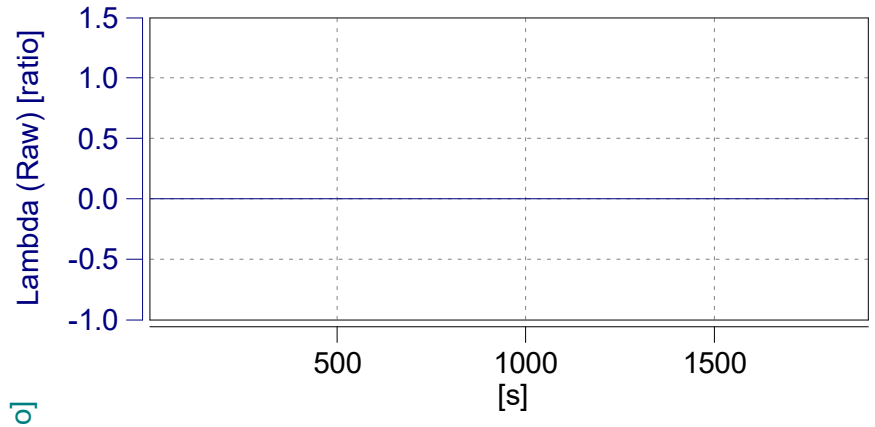
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

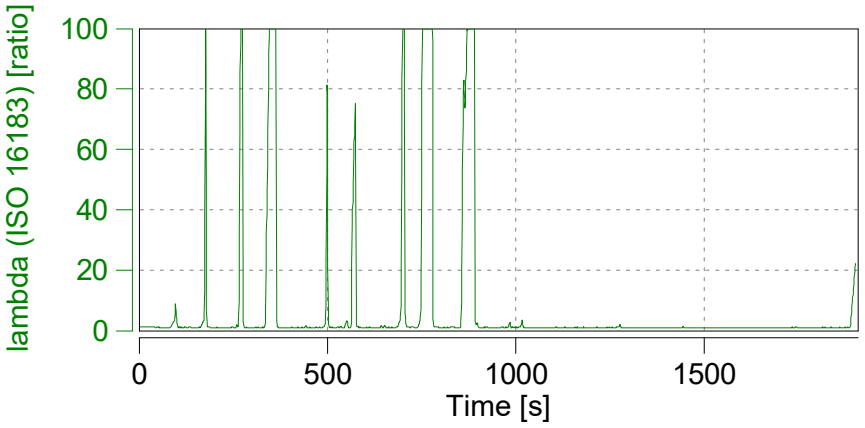
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

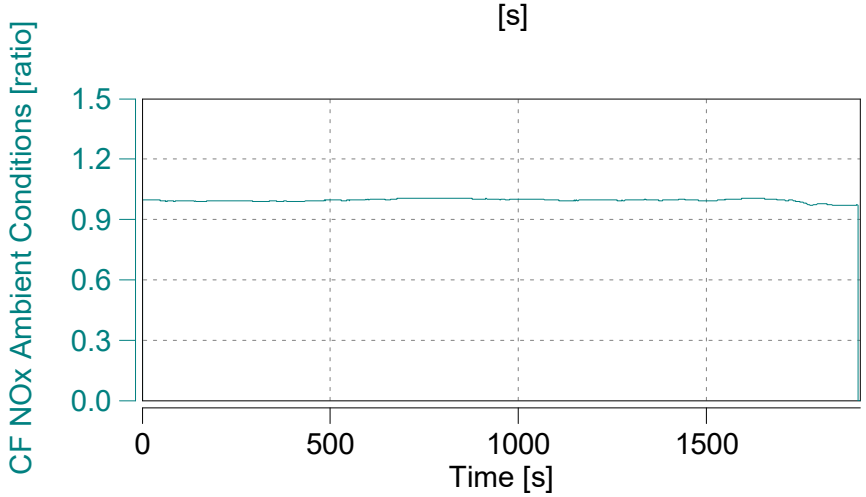
Case: X254-708
Page: Exhaust Flow (2)

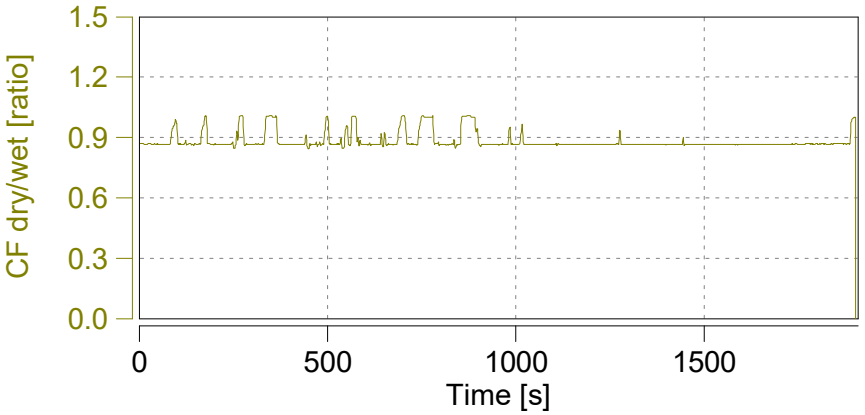
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









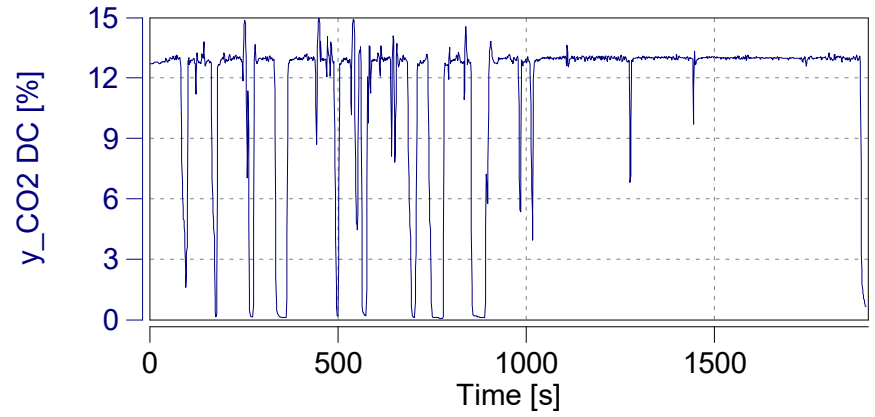
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

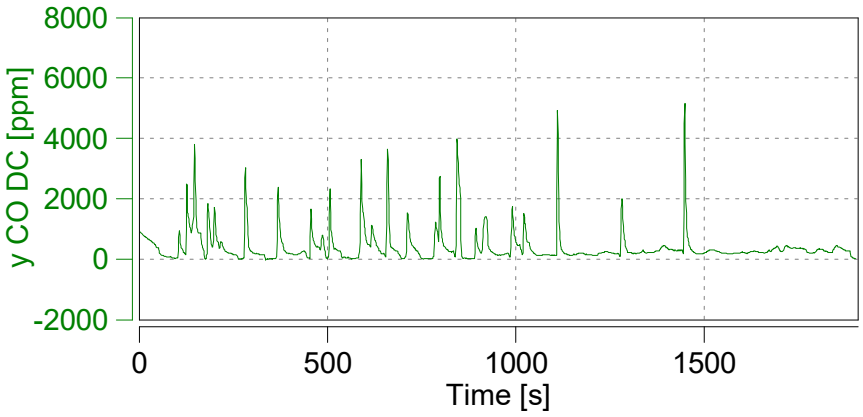
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

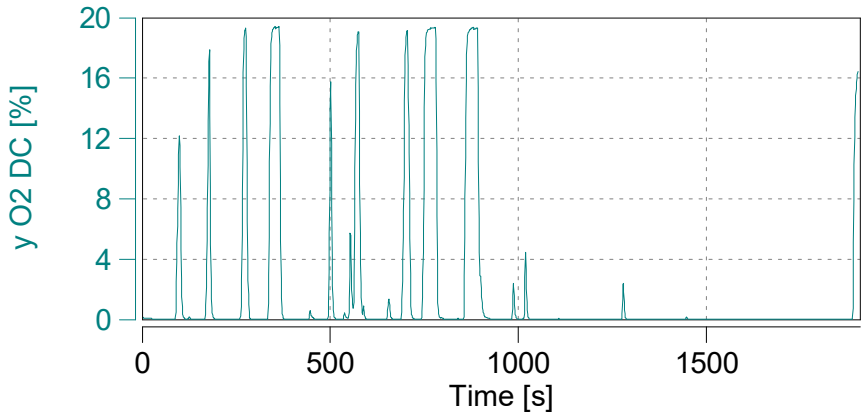
Case: X254-708
Page: Corrected Emissions (1)

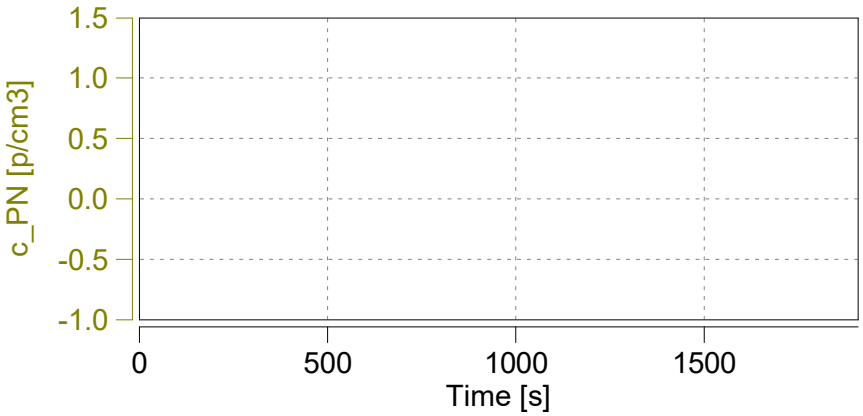
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









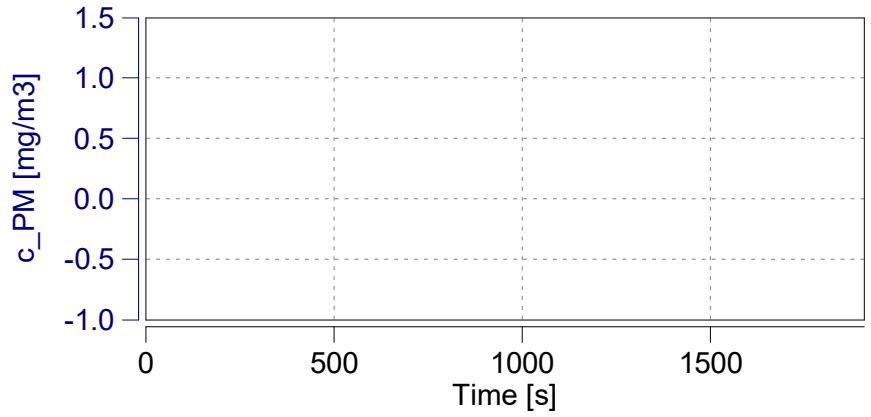
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

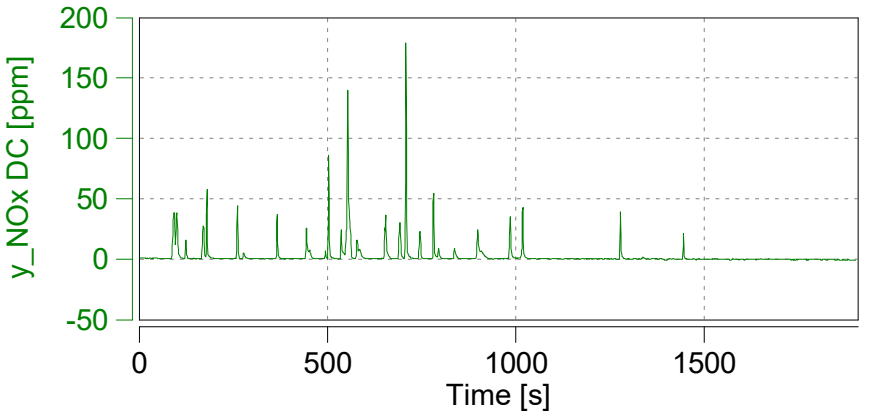
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

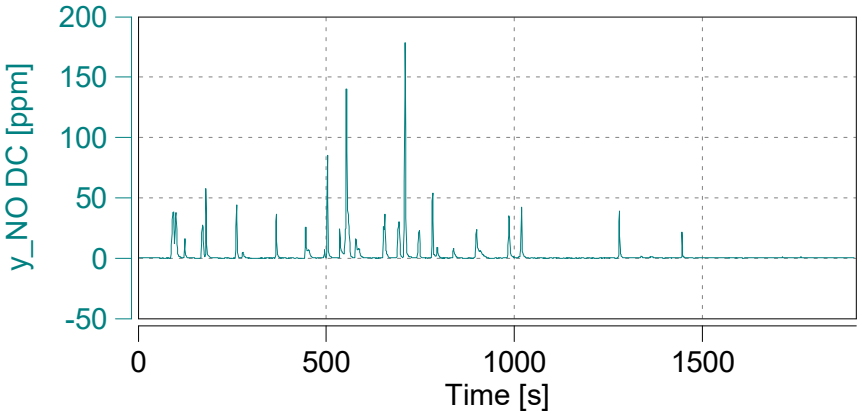
Case: X254-708
Page: Corrected Emissions (2)

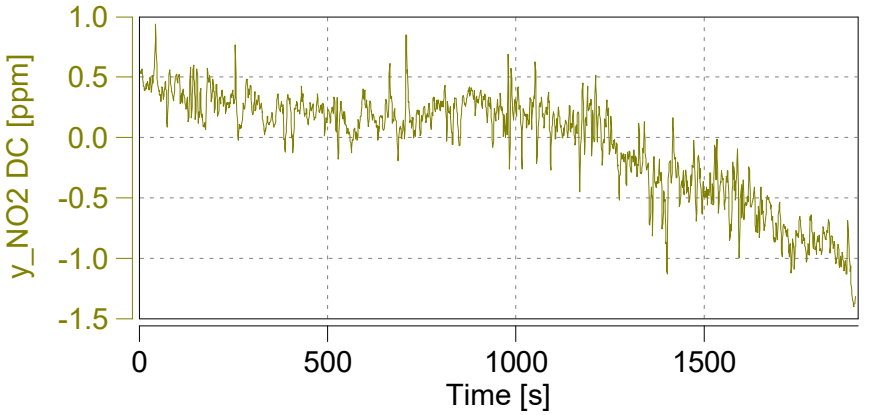
'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









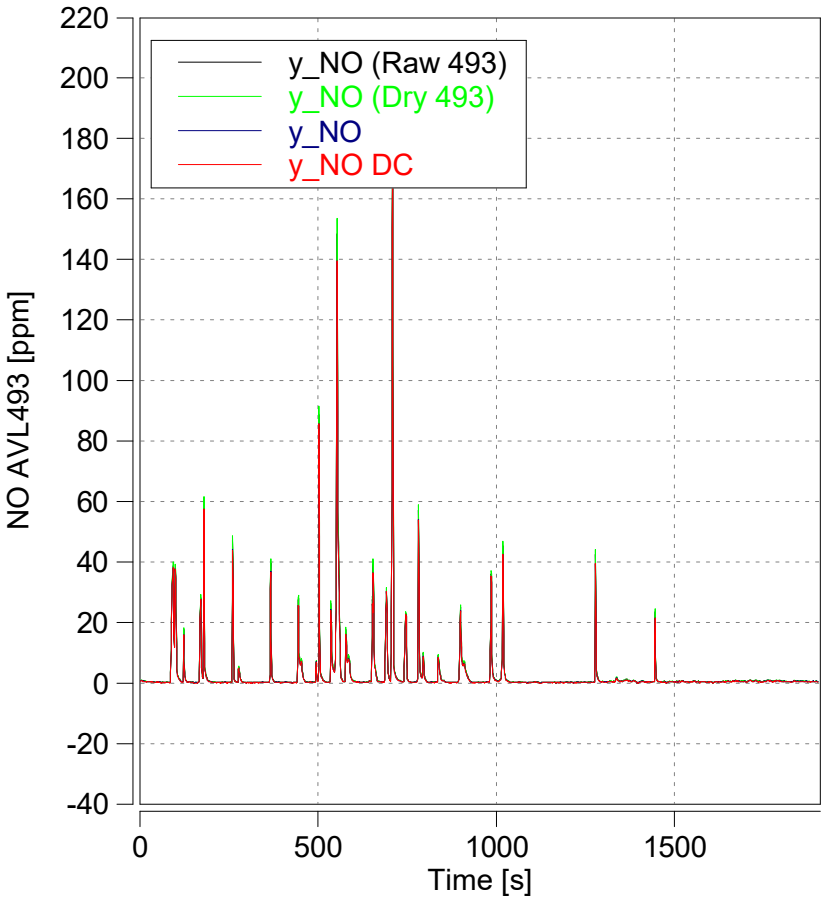
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

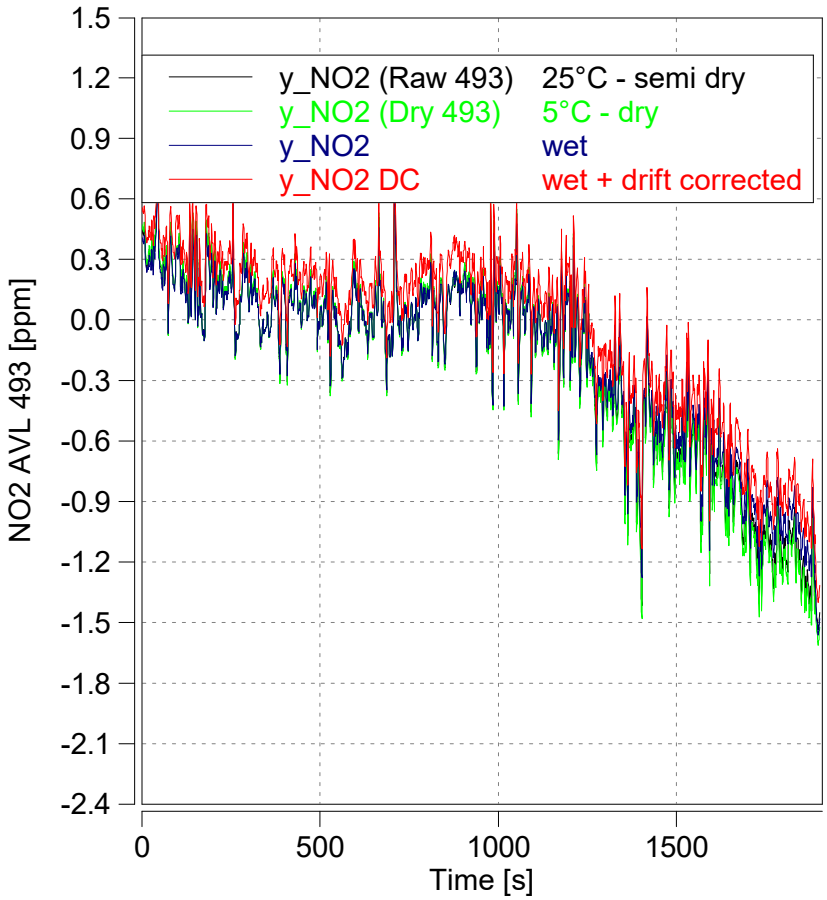
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (3)

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

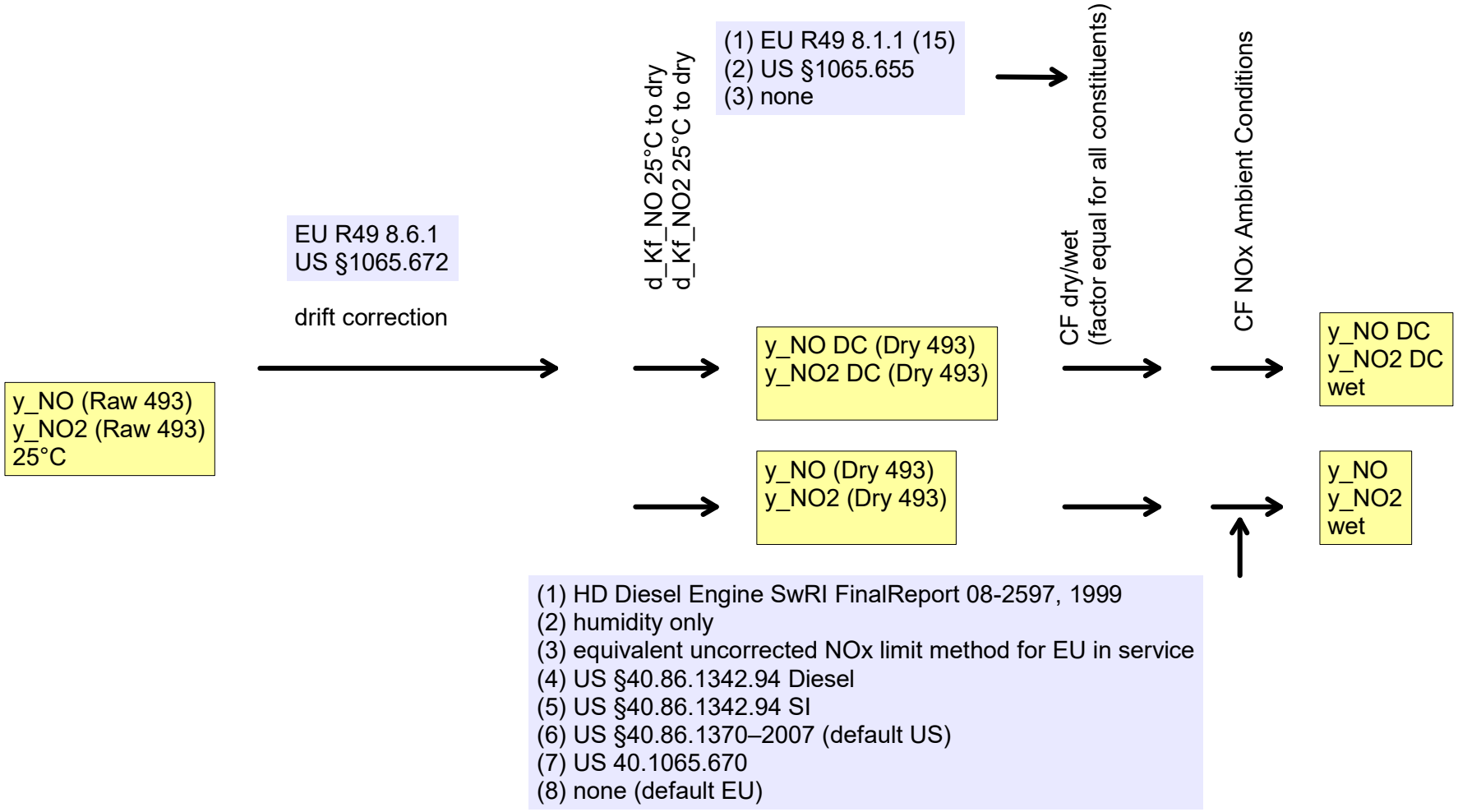
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (4) NOx Corrections

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

Concerto M.O.V.E, 2019

NOx - AVL 493



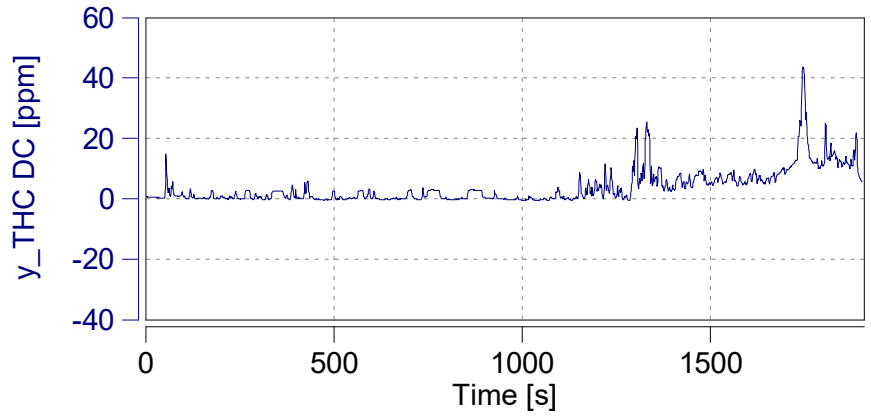
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

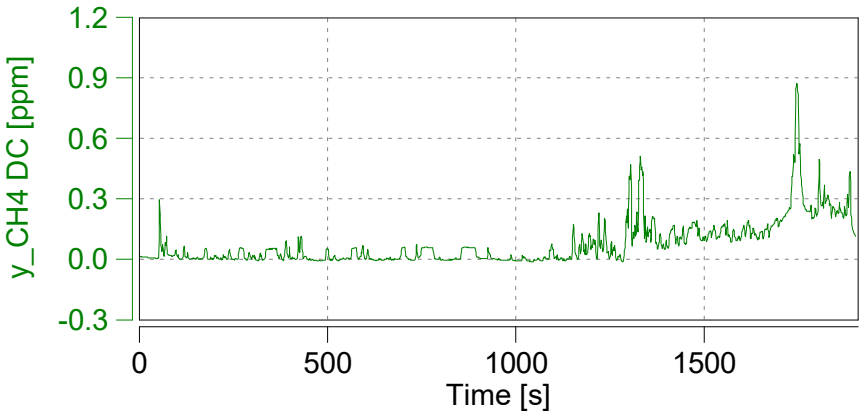
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

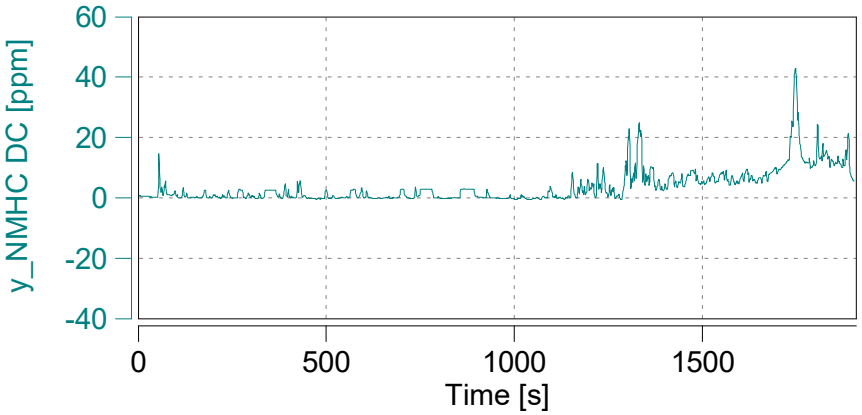
Case: X254-708
Page: Corrected Emissions (5)

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019







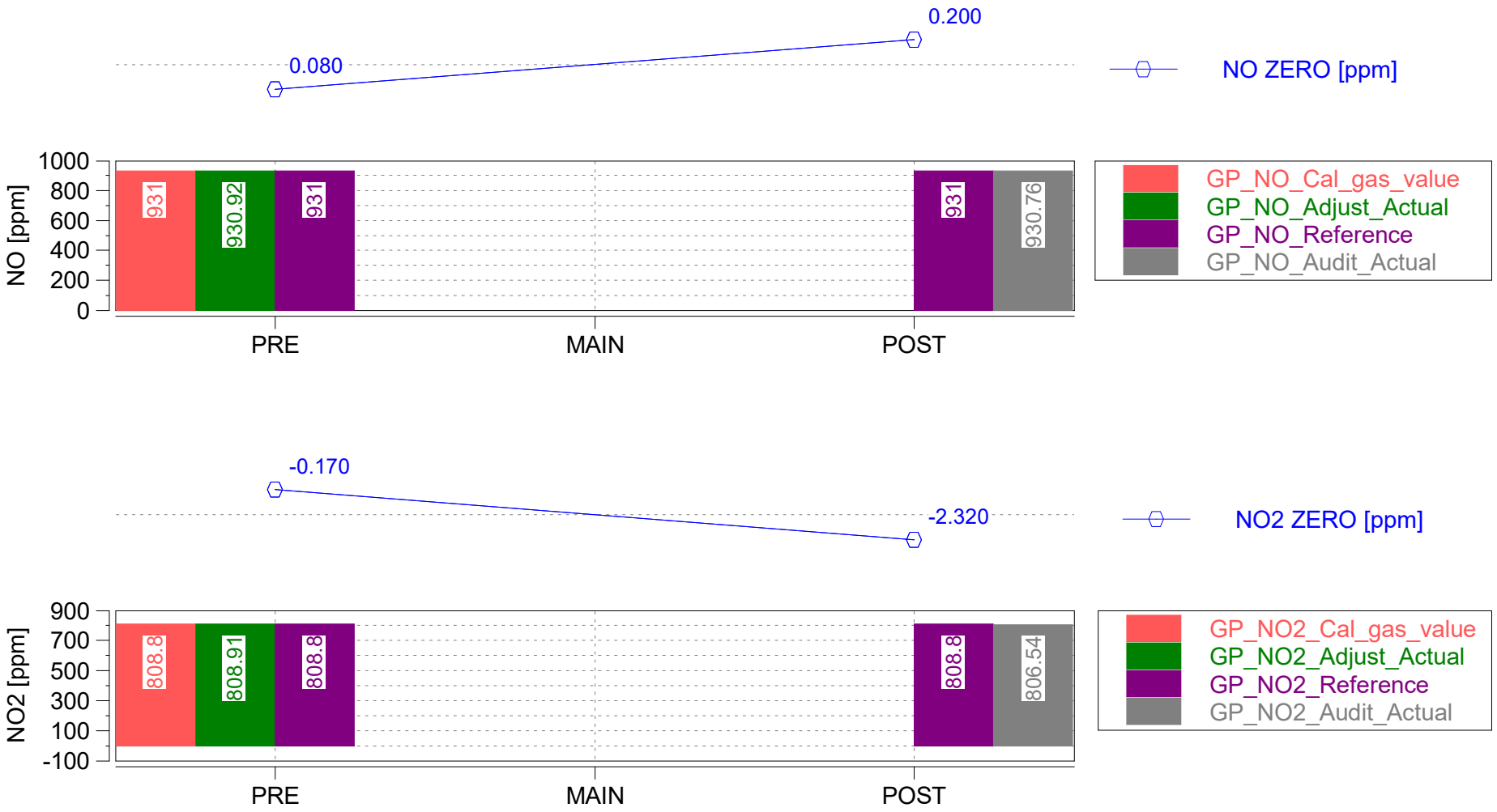
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



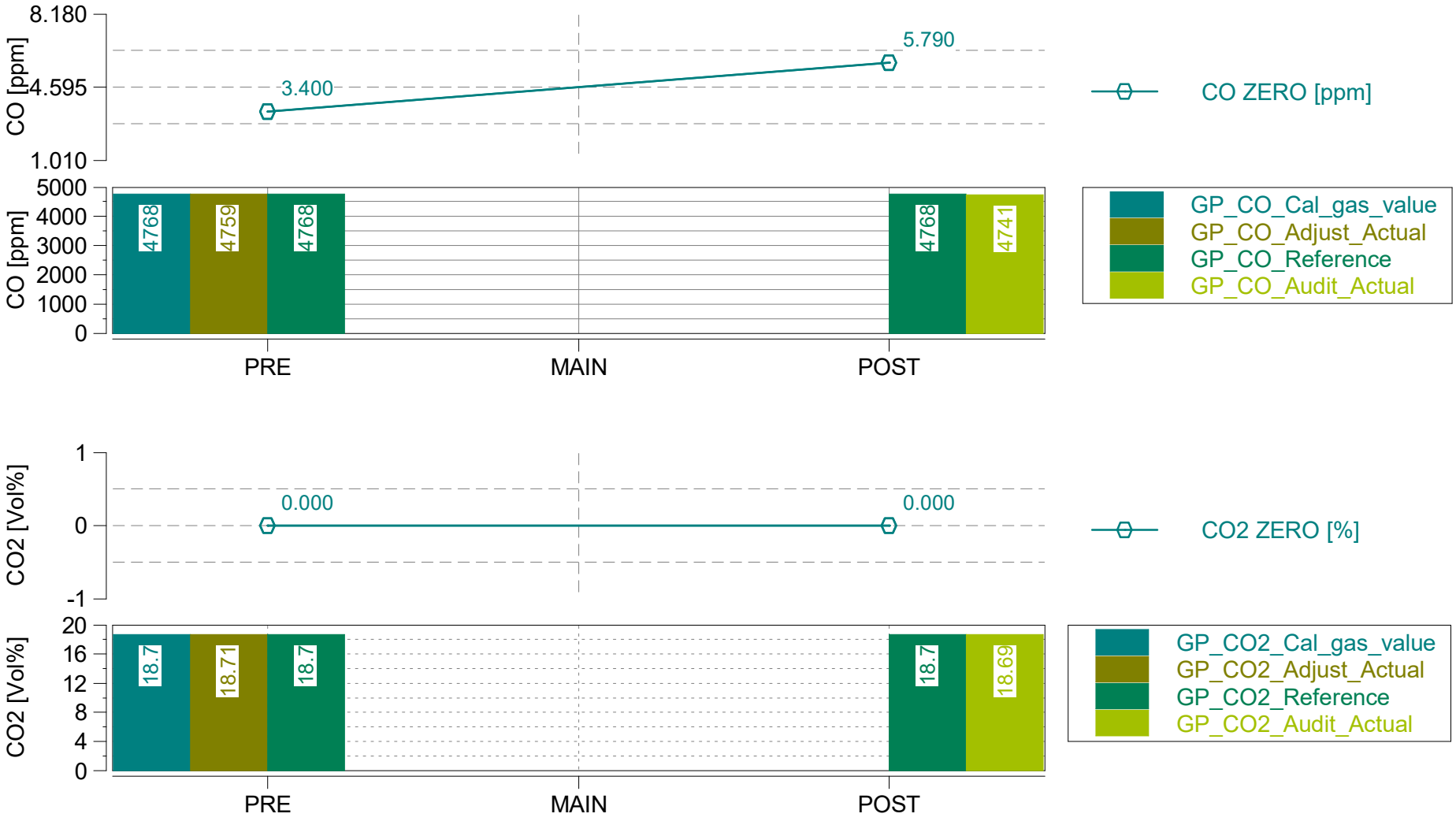
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



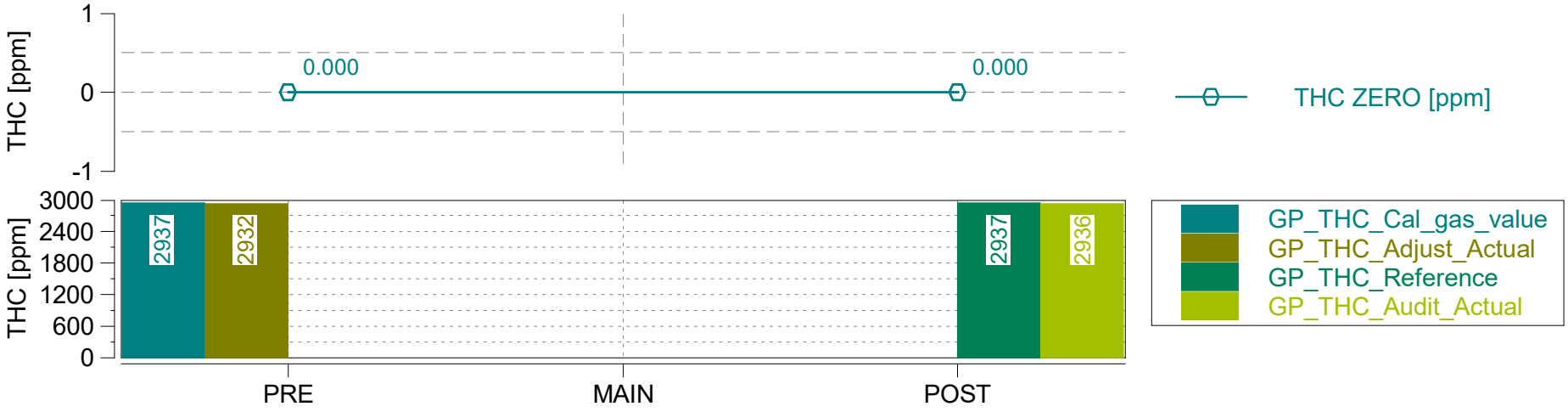
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

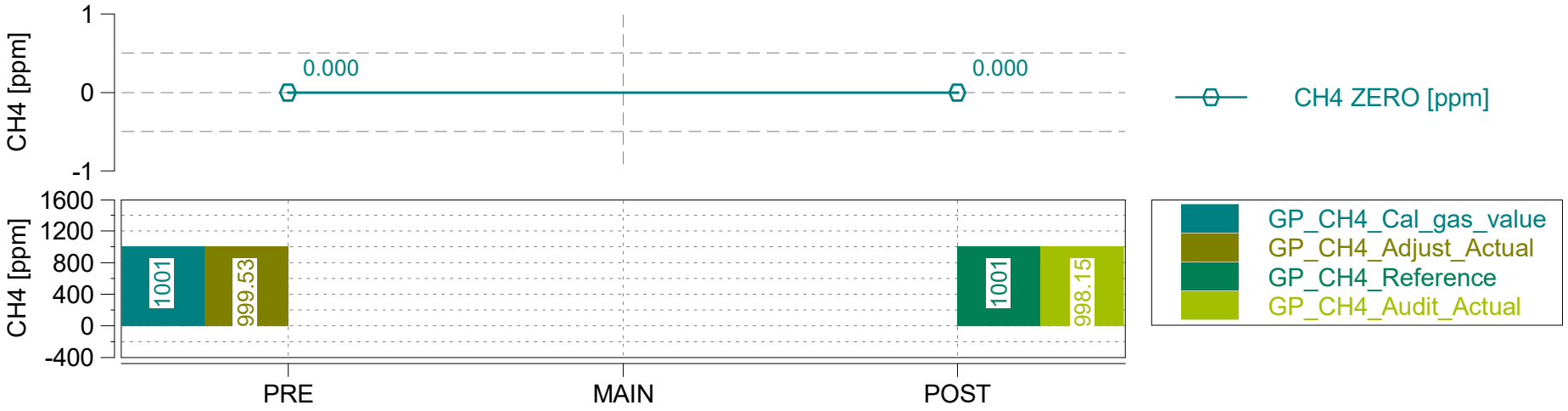
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.18**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-17
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

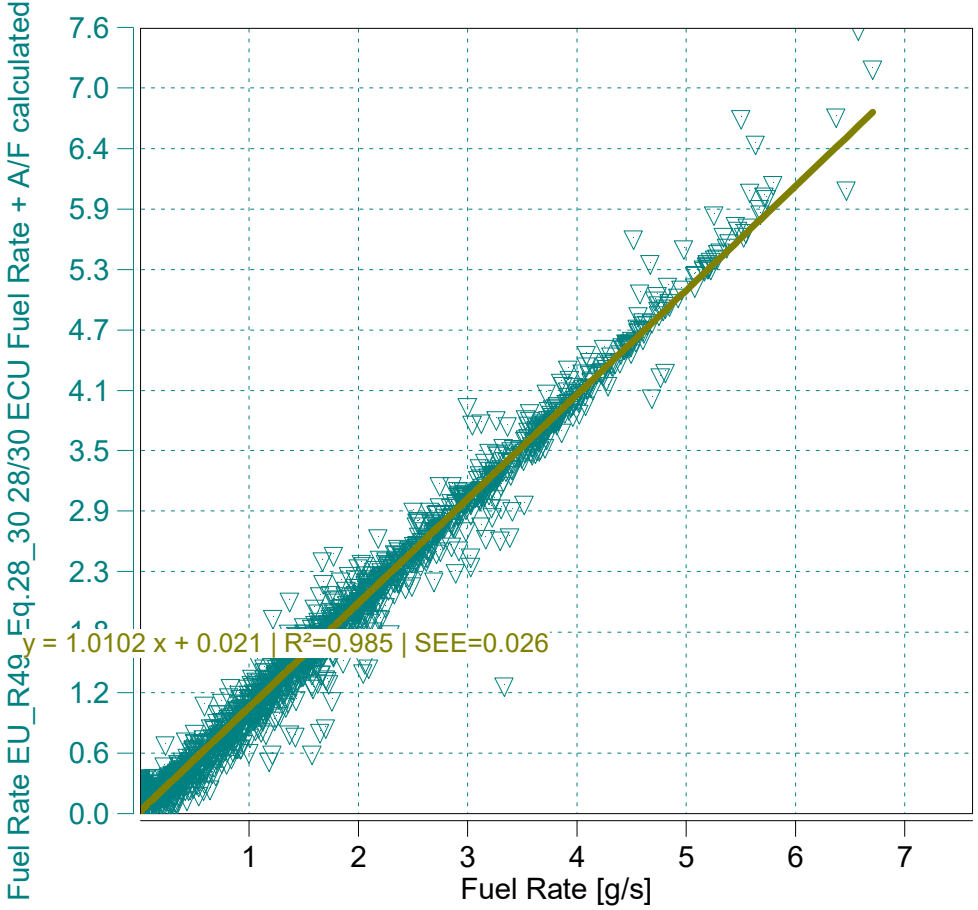
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 A2'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 1.0102 x + 0.021 | R²=0.985 | SEE=0.026
m = 1.01 (0.9 - 1.1 recommended)
R² = 0.99 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1898.00	s
Trip Duration (a)	1898.00	s
Trip Distance	18.00	mi
Trip Distance (a)	18.00	mi
Trip Fuel Cons. (b)	0.93	kg
Trip Fuel Cons. (ab)	0.93	kg
Trip Fuel Cons. EU (ac)	0.99	kg
Trip Fuel Cons. US (ac)	0.98	kg
Trip Fuel Economy (b)	54.81	mpg_US
Trip Fuel Economy (ab)	54.81	mpg_US
Trip Fuel Economy EU (ac)	51.36	mpg_US
Trip Fuel Economy US (ac)	51.88	mpg_US
Trip Fuel Economy GGE (b)	54.81	mpg_US
Trip Fuel Economy GGE (ab)	54.81	mpg_US
Trip Fuel Economy EU GGE (ac)	51.36	mpg_US
Trip Fuel Economy US GGE (ac)	51.88	mpg_US
Trip Av. Eng. Speed	1431.29	rpm
Trip Av. Torque	23.72	lbft
Trip Av. Power	8.31	hp
Trip Work		
Trip Work (a)	4.35	hphr
Trip Exhaust Mass	17.89	kg
Trip Exhaust Mass EU (ac)	18.42	kg
Trip Exhaust Mass US (ac)	19.32	kg
Trip Av. Amb. Temperature	81.86	deg_F
Trip Av. Humidity	42.04	%
Trip Av. GPS Altitude	556.65	m
Fuel Type	Petrol (E10)	

ave THC	1.64688	ppm
ave NMHC	1.61394	ppm
ave CH4	0.03294	ppm
ave CO	209.28697	ppm
ave CO2	7.72019	%
ave NOx	3.22256	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.02263	g
tot NMHC	0.02094	g
tot CH4	0.00050	g
tot CO	5.65094	g
tot CO2	2979.81801	g
tot NO (d)	0.07530	g
tot NO2	0.00000	g
tot NOx	0.05913	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	34.38456	mi/hr
Trip Distance Share Urban	17.85221	% distance
Trip Distance Share Rural	61.23135	% distance
Trip Distance Share Motorway	20.91644	% distance

BS CO2	684.82132	g/hphr
BS CO	1.29870	g/hphr
BS THC	0.00520	g/hphr
BS NMHC	0.00481	g/hphr
BS CH4	0.00012	g/hphr
BS NO (d)	0.01731	g/hphr
BS NO2	0.00000	g/hphr
BS NOx	0.01359	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	165.50796	g/mi
DS CO	0.31387	g/mi
DS THC	0.00126	g/mi
DS NMHC	0.00116	g/mi
DS CH4	0.00003	g/mi
DS NO (d)	0.00418	g/mi
DS NO2	0.00000	g/mi
DS NOx	0.00328	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3206.19662	g/kg
FS CO	6.08025	g/kg
FS THC	0.02435	g/kg
FS NMHC	0.02253	g/kg
FS CH4	0.00054	g/kg
FS NO (d)	0.08102	g/kg
FS NO2	0.00001	g/kg
FS NOx	0.06363	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1898.00	s
Trip Duration (a)	1898.00	s
Trip Distance	18.00	mi
Trip Distance (a)	18.00	mi
Trip Fuel Cons. (b)	0.93	kg
Trip Fuel Cons. (ab)	0.93	kg
Trip Fuel Cons. EU (ac)	0.99	kg
Trip Fuel Cons. US (ac)	0.98	kg
Trip Fuel Economy (b)	54.81	mpg_US
Trip Fuel Economy (ab)	54.81	mpg_US
Trip Fuel Economy EU (ac)	51.36	mpg_US
Trip Fuel Economy US (ac)	51.88	mpg_US
Trip Fuel Economy GGE (b)	54.81	mpg_US
Trip Fuel Economy GGE (ab)	54.81	mpg_US
Trip Fuel Economy EU GGE (ac)	51.36	mpg_US
Trip Fuel Economy US GGE (ac)	51.88	mpg_US
Trip Av. Eng. Speed	1431.29	rpm
Trip Av. Torque	23.72	lbft
Trip Av. Power	8.31	hp
Trip Work		
Trip Work (a)	4.35	hphr
Trip Exhaust Mass	17.89	kg
Trip Exhaust Mass EU (ac)	18.42	kg
Trip Exhaust Mass US (ac)	19.32	kg
Trip Av. Amb. Temperature	81.86	deg_F
Trip Av. Humidity	42.04	%
Trip Av. GPS Altitude	556.65	m
Fuel Type	Petrol (E10)	

ave THC DC	1.64903	ppm
ave NMHC DC	1.61605	ppm
ave CH4 DC	0.03298	ppm
ave CO DC	207.05303	ppm
ave CO2 DC	7.72019	%
ave NOx DC	3.30547	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.02266	g
tot NMHC DC	0.02096	g
tot CH4 DC	0.00050	g
tot CO DC	5.62548	g
tot CO2 DC	2979.81801	g
tot NO DC (d)	0.07332	g
tot NO2 DC	0.00001	g
tot NOx DC	0.06032	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	34.38456	mi/hr
Trip Distance Share Urban	17.85221	% distance
Trip Distance Share Rural	61.23135	% distance
Trip Distance Share Motorway	20.91644	% distance

BS CO2 DC	684.82132	g/hphr
BS CO DC	1.29285	g/hphr
BS THC DC	0.00521	g/hphr
BS NMHC DC	0.00482	g/hphr
BS CH4 DC	0.00012	g/hphr
BS NO DC (d)	0.01685	g/hphr
BS NO2 DC	0.00000	g/hphr
BS NOx DC	0.01386	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	165.50796	g/mi
DS CO DC	0.31246	g/mi
DS THC DC	0.00126	g/mi
DS NMHC DC	0.00116	g/mi
DS CH4 DC	0.00003	g/mi
DS NO DC (d)	0.00407	g/mi
DS NO2 DC	0.00000	g/mi
DS NOx DC	0.00335	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3206.19662	g/kg
FS CO DC	6.05285	g/kg
FS THC DC	0.02439	g/kg
FS NMHC DC	0.02256	g/kg
FS CH4 DC	0.00054	g/kg
FS NO DC (d)	0.07889	g/kg
FS NO2 DC	0.00001	g/kg
FS NOx DC	0.06490	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

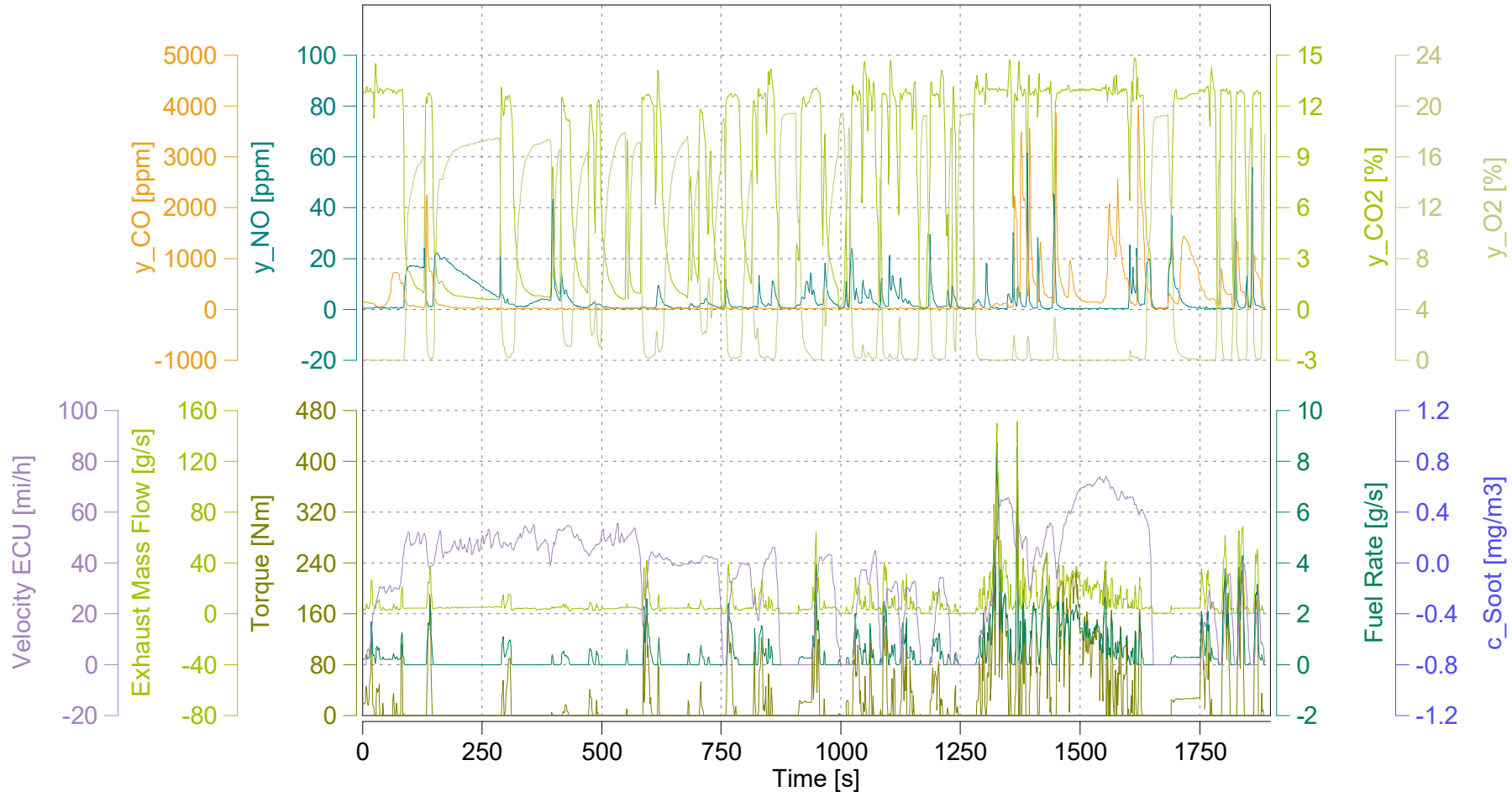
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NC
CO/CC
O2
Appl

Alignme
Reset
Re
Appl

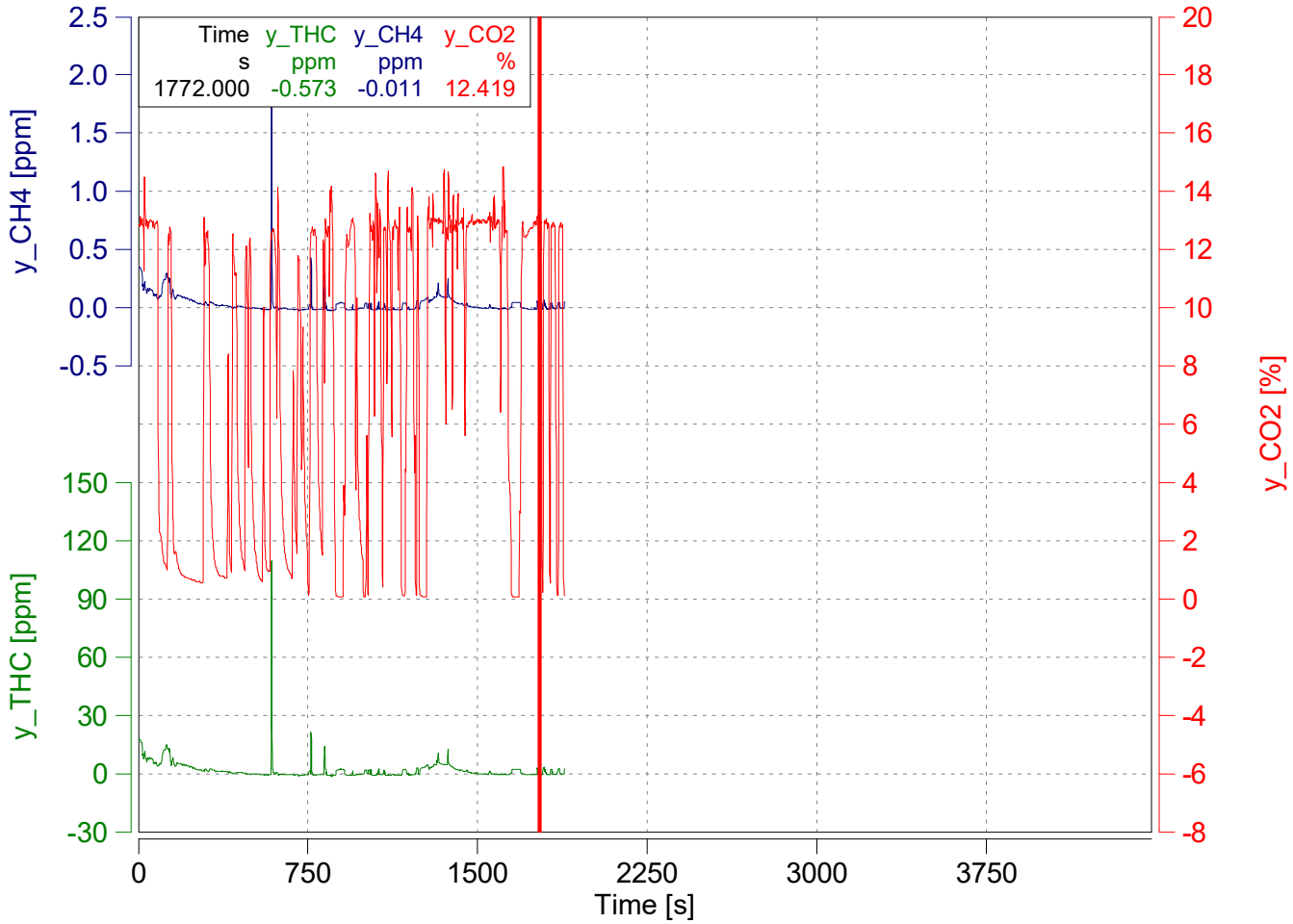
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

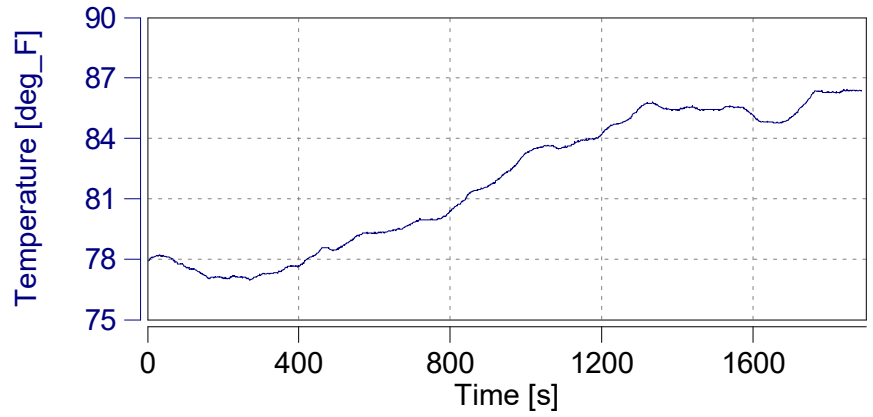
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

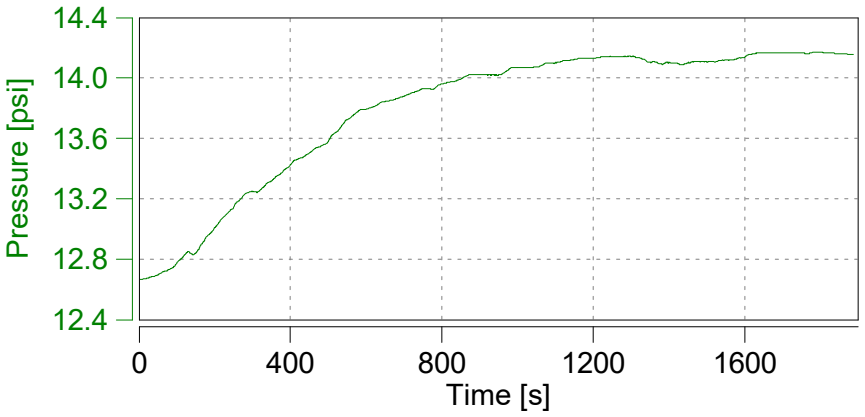
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

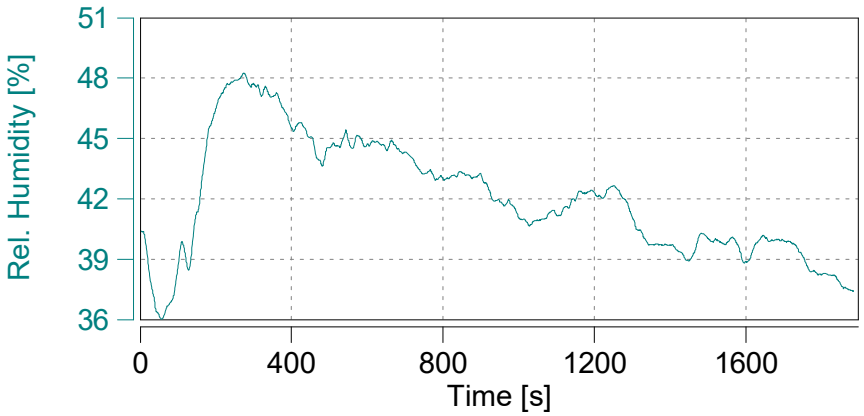
Case: X254-708
Page: Ambient Conditions

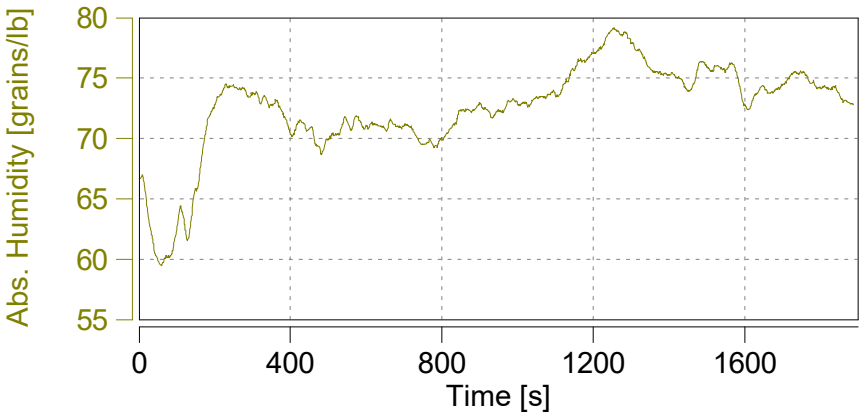
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









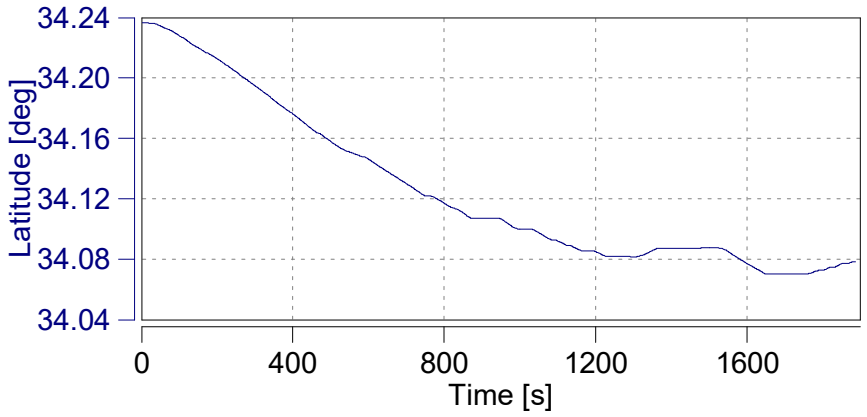
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

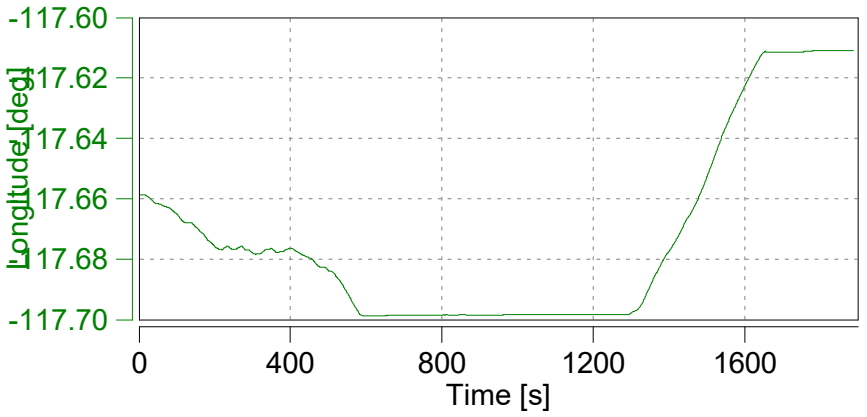
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

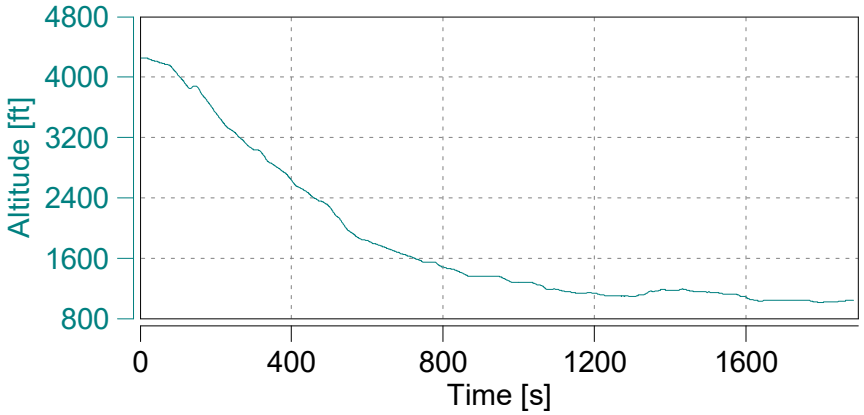
Case: X254-708
Page: GPS

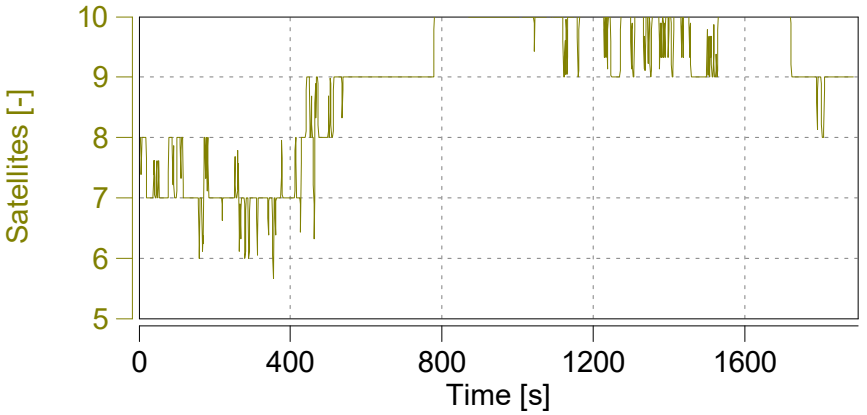
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









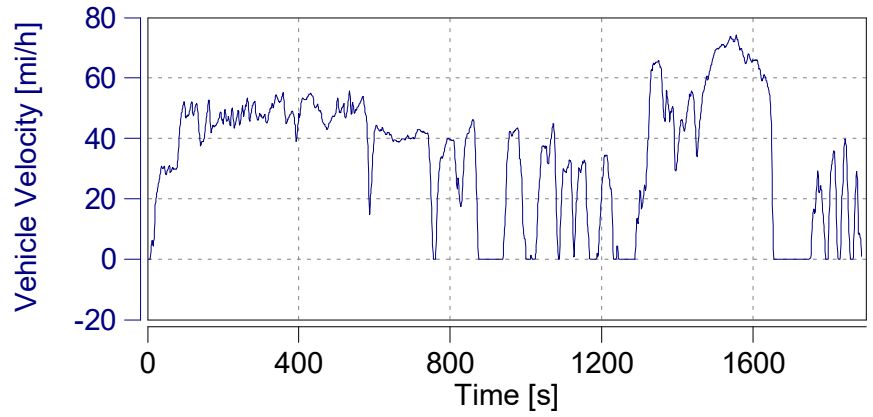
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

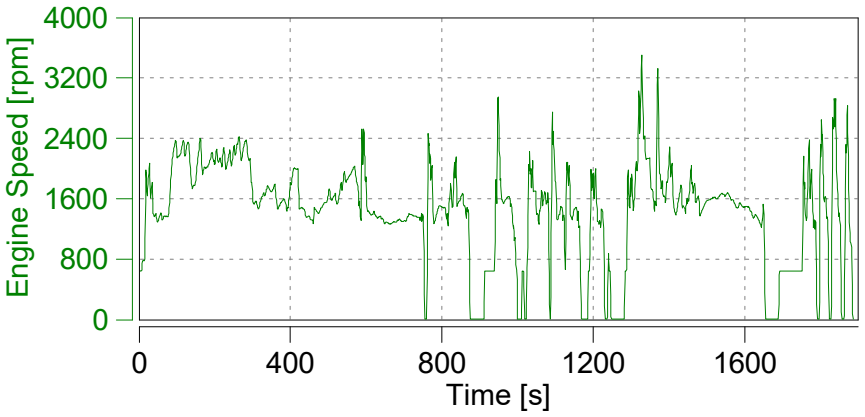
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

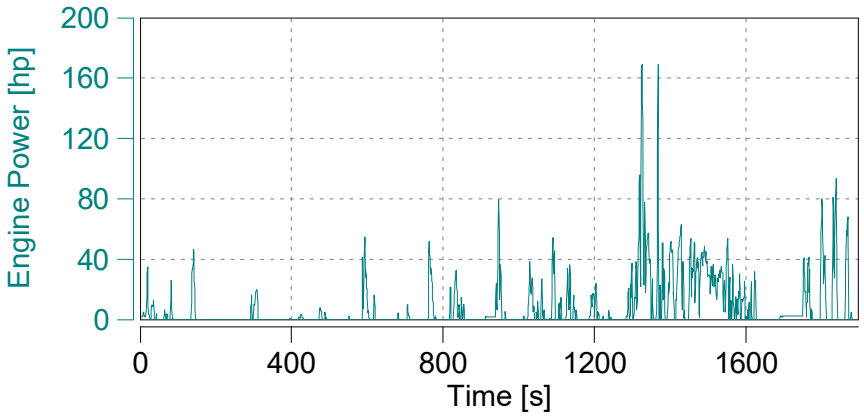
Case: X254-708
Page: Engine (1)

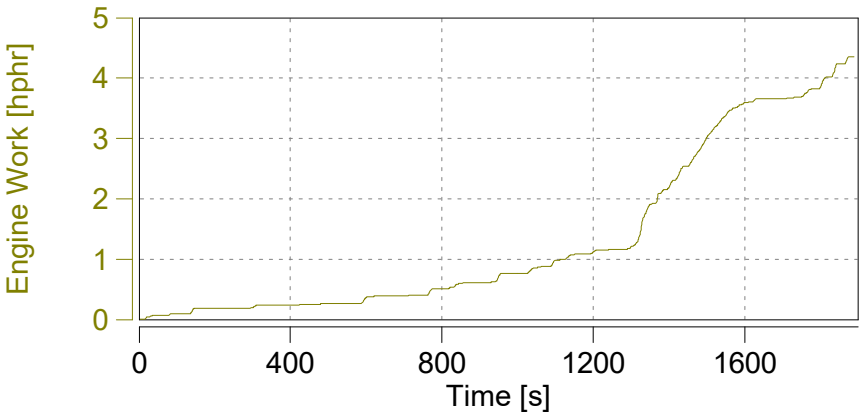
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









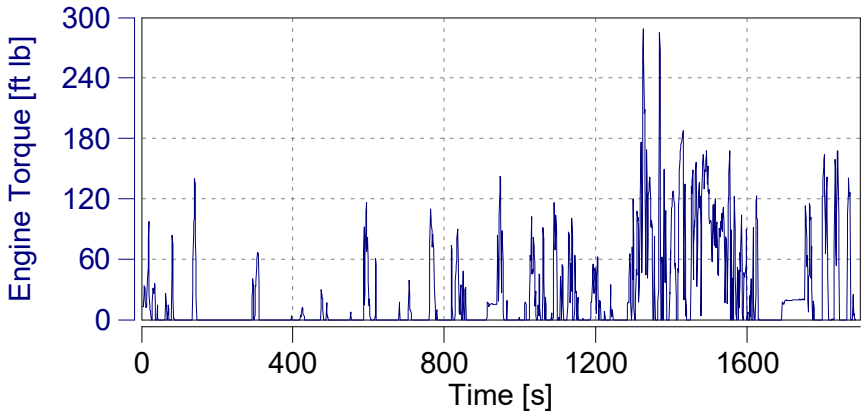
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

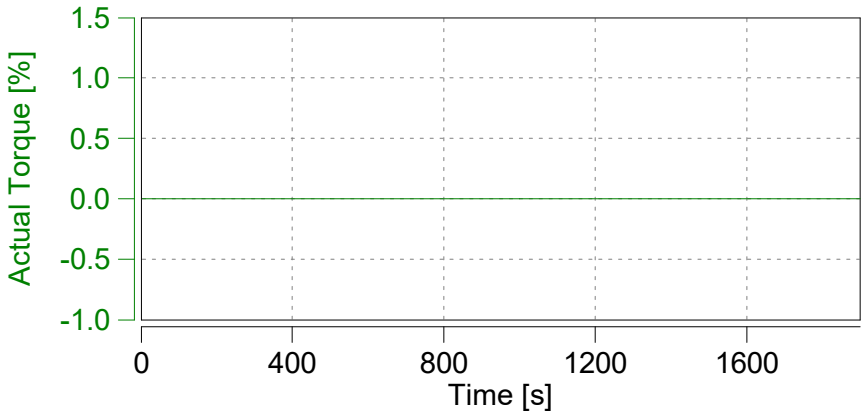
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

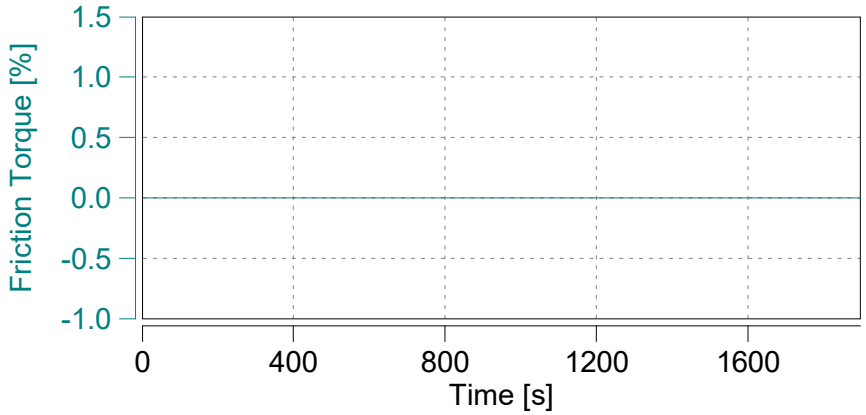
Case: X254-708
Page: Engine (2)

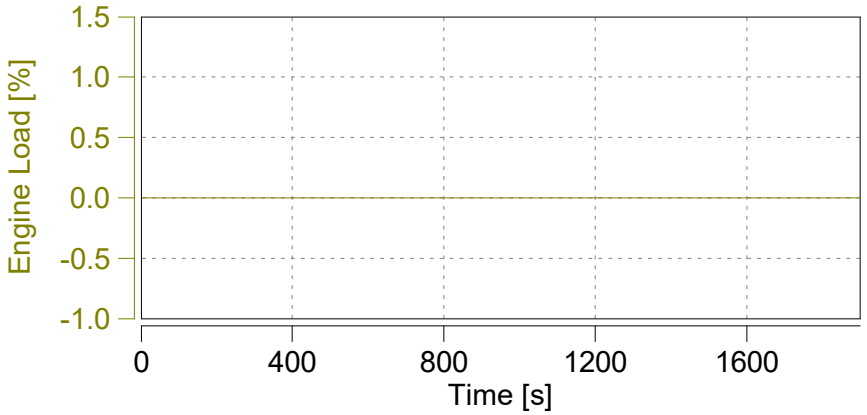
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
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NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
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'X254-708 B1'
Start Date: 10/17/2022
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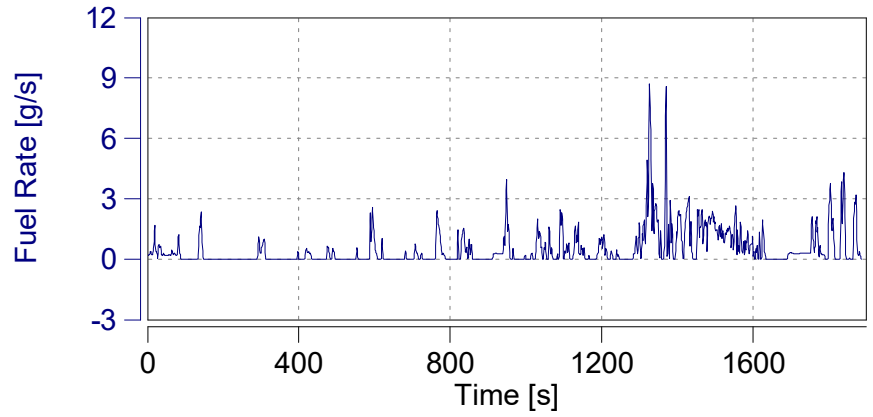
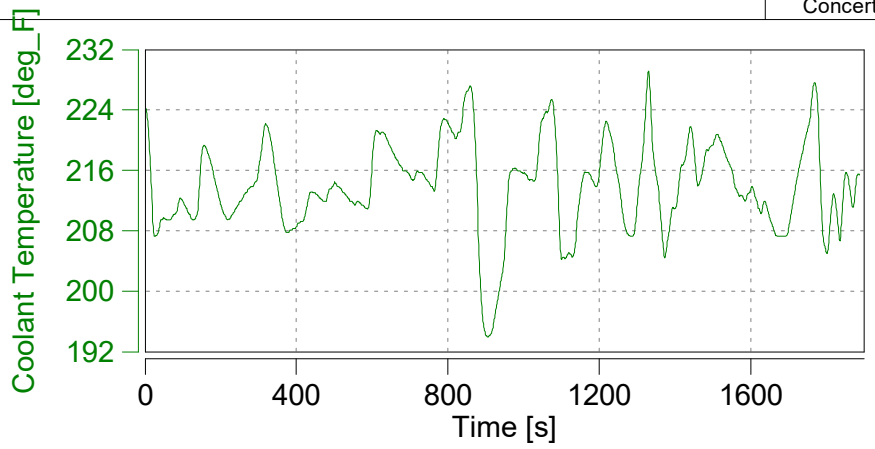
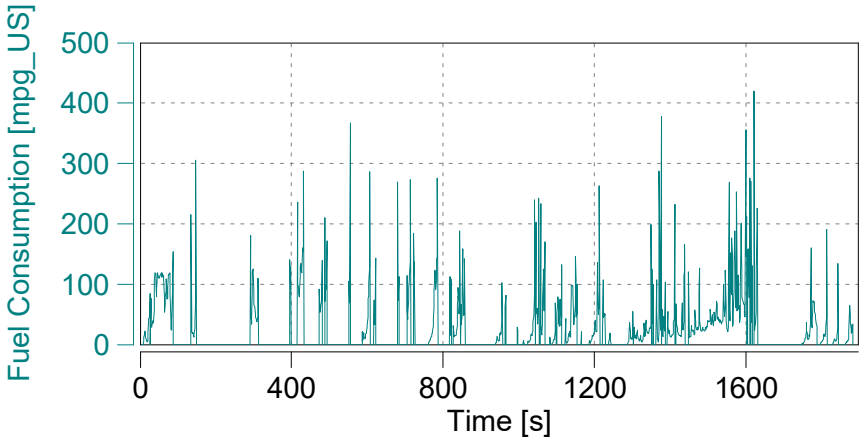
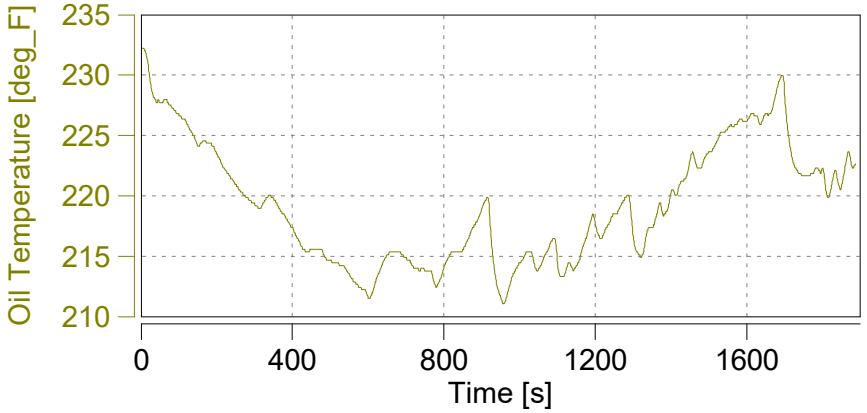
AVL
Concerto M.O.V.E, 2019









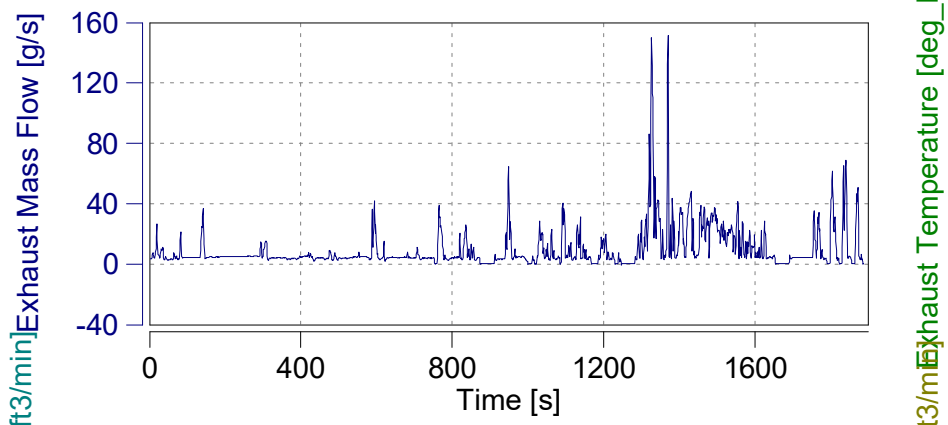
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

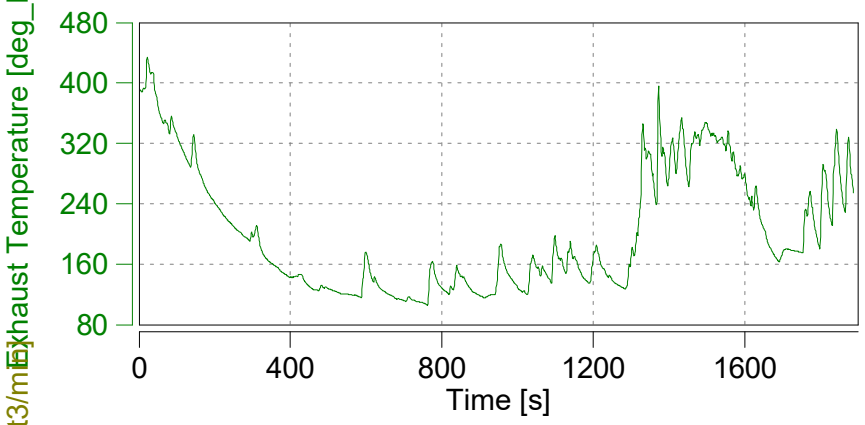
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

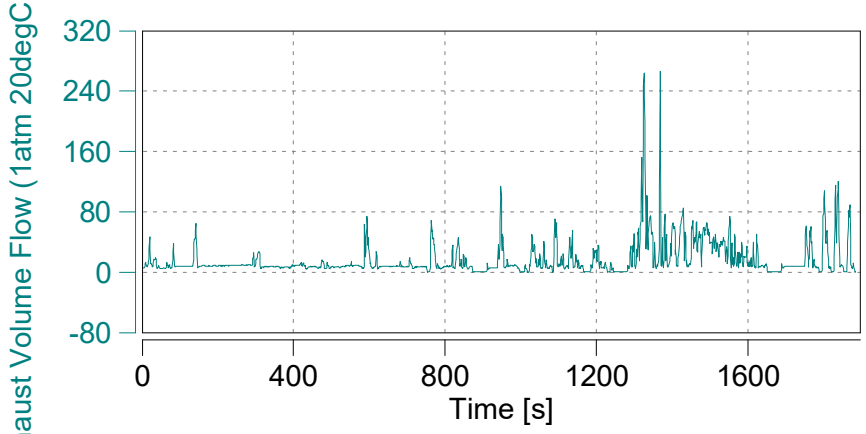
Case: X254-708
Page: Exhaust Flow (1)

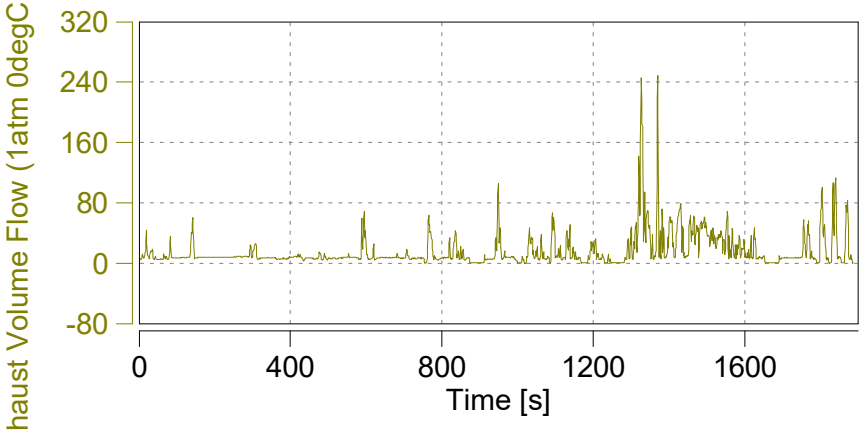
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









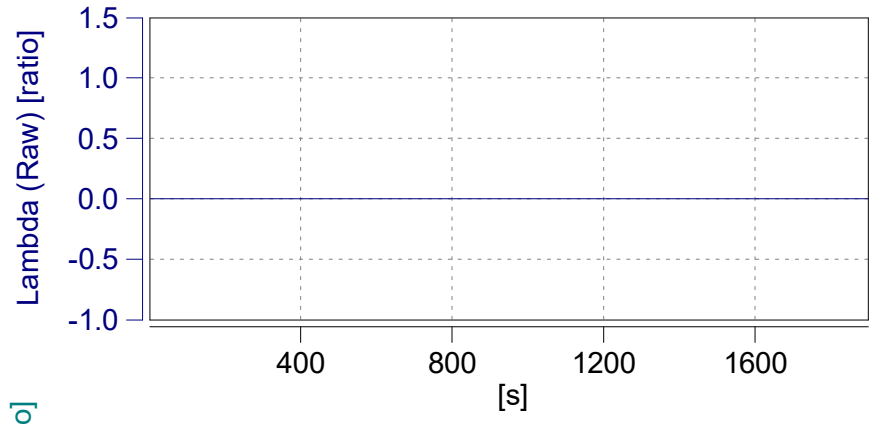
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

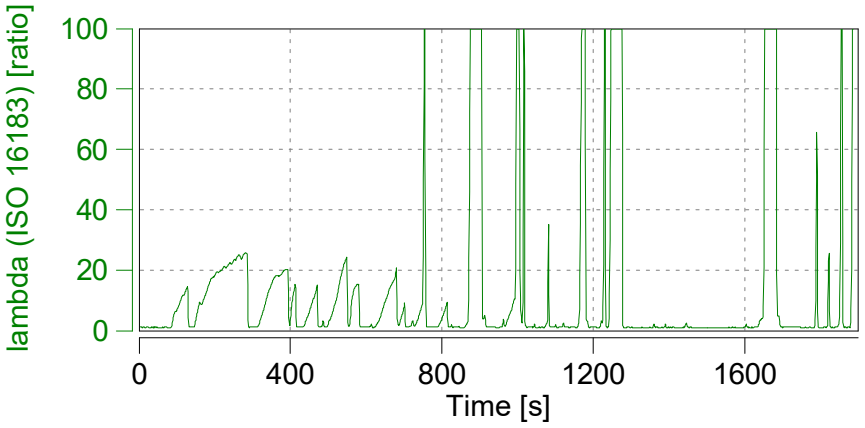
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

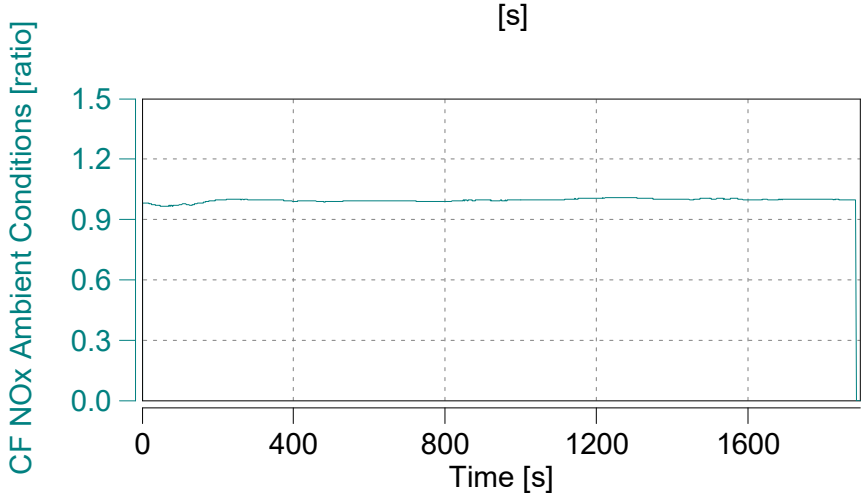
Case: X254-708
Page: Exhaust Flow (2)

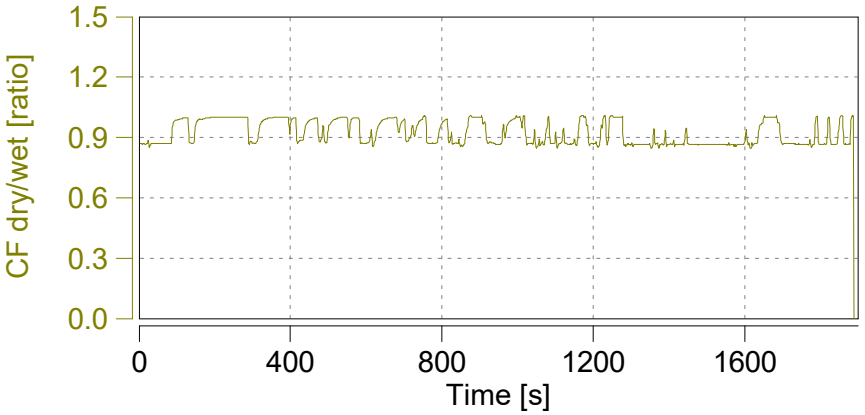
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









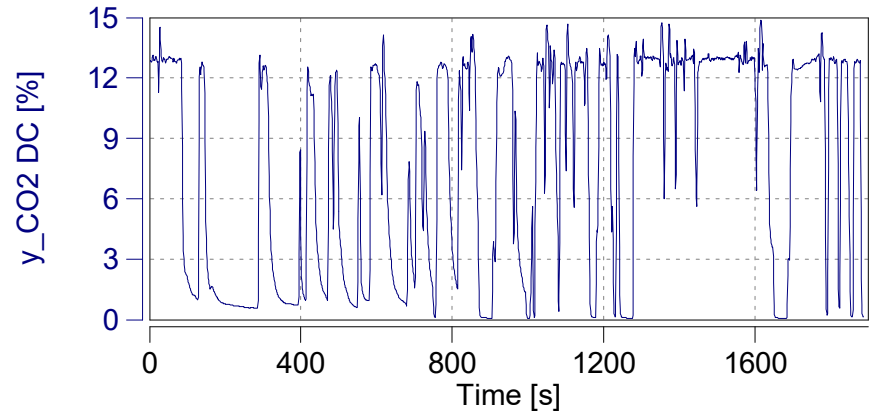
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

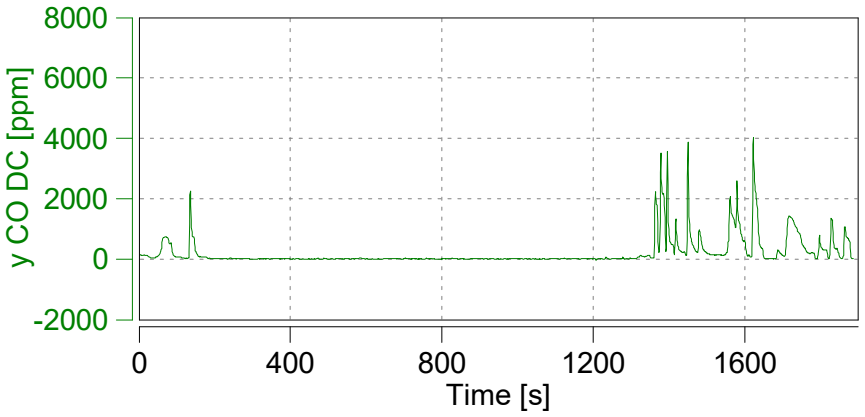
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

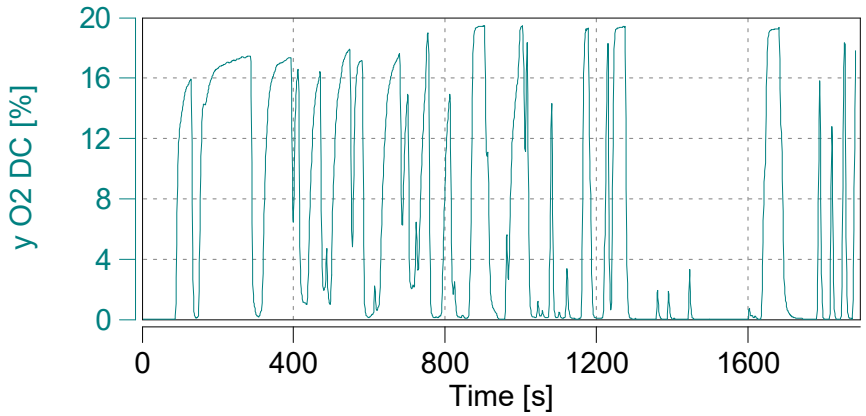
Case: X254-708
Page: Corrected Emissions (1)

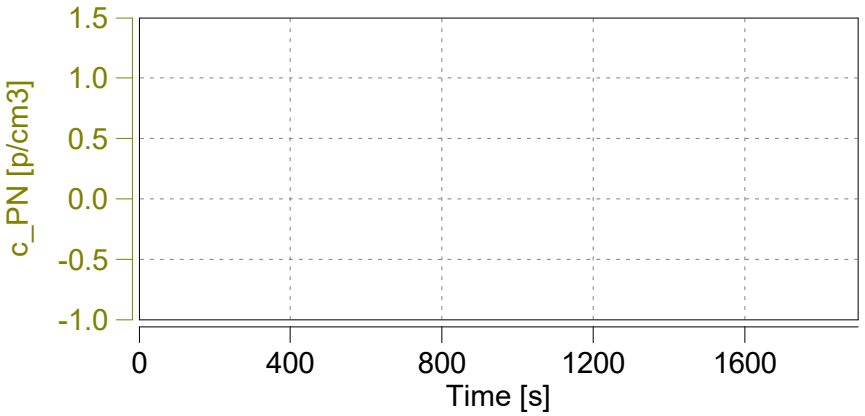
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









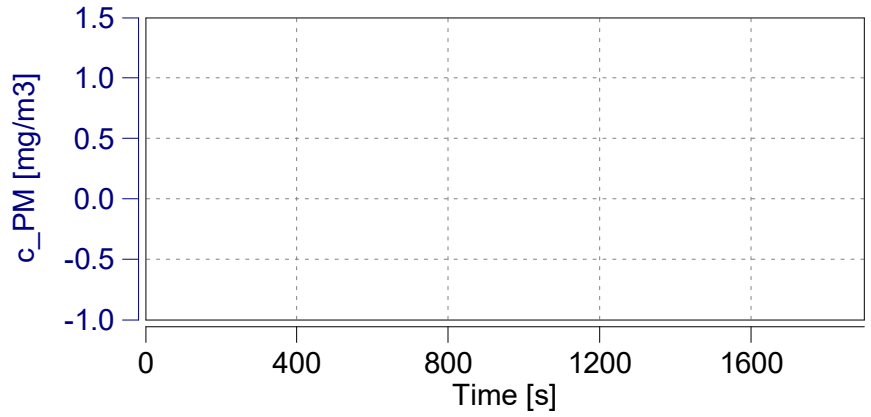
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

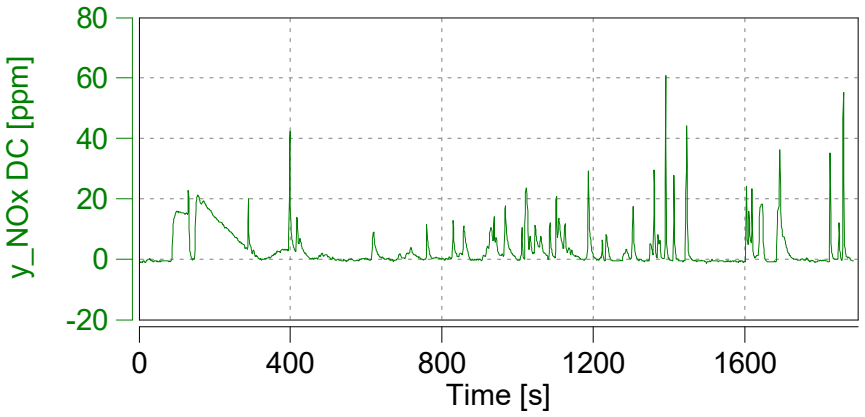
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

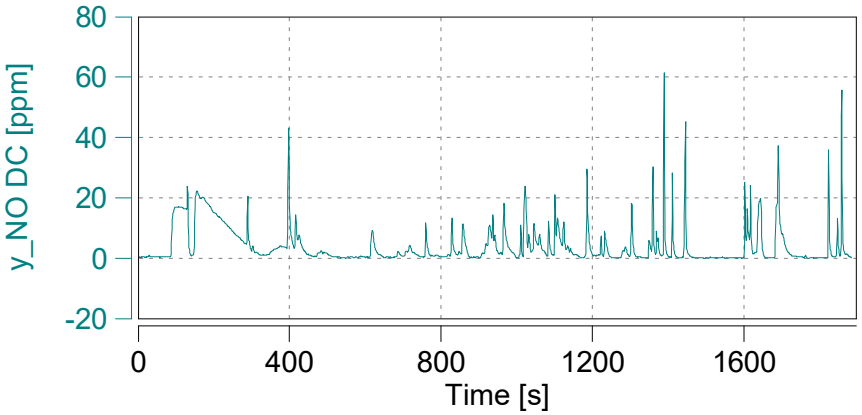
Case: X254-708
Page: Corrected Emissions (2)

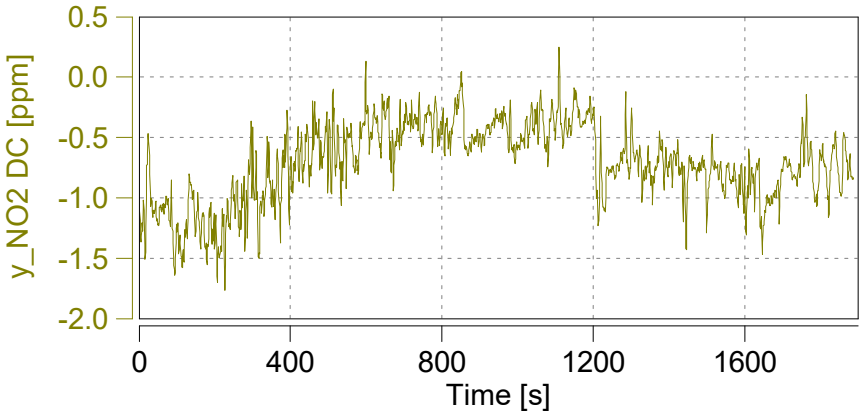
'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









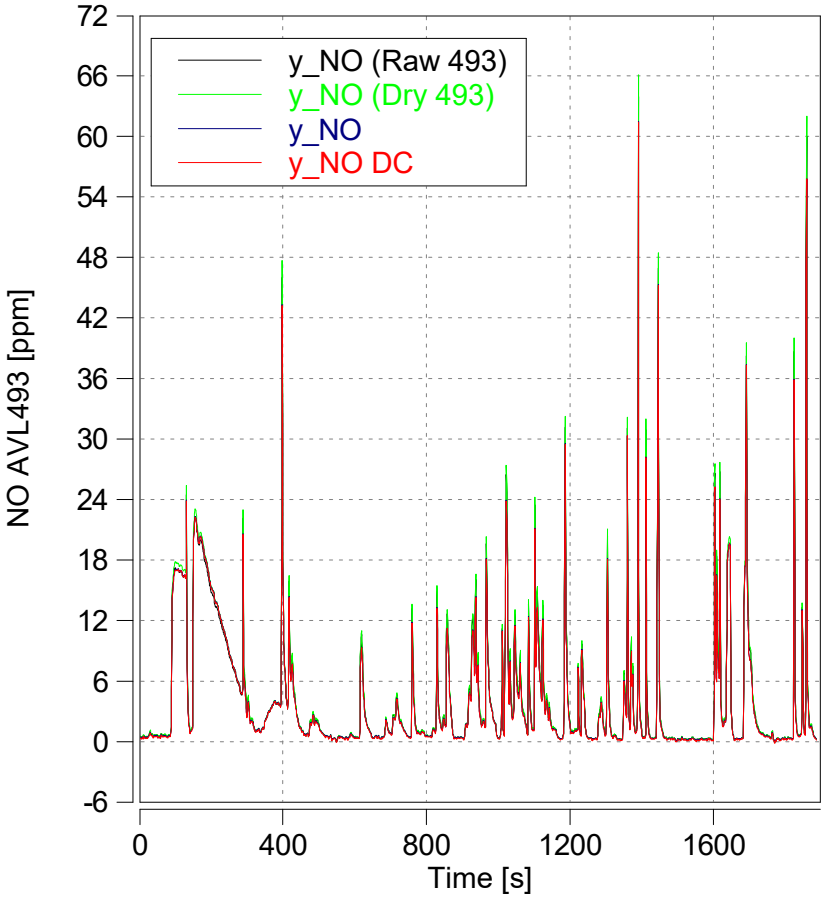
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

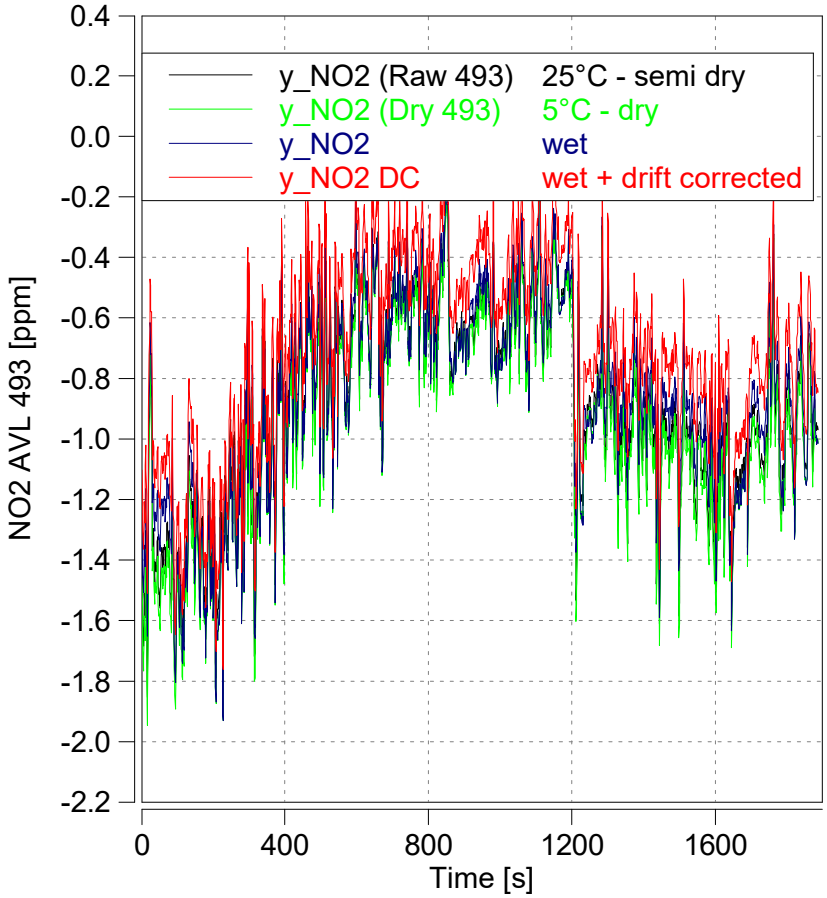
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (3)

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





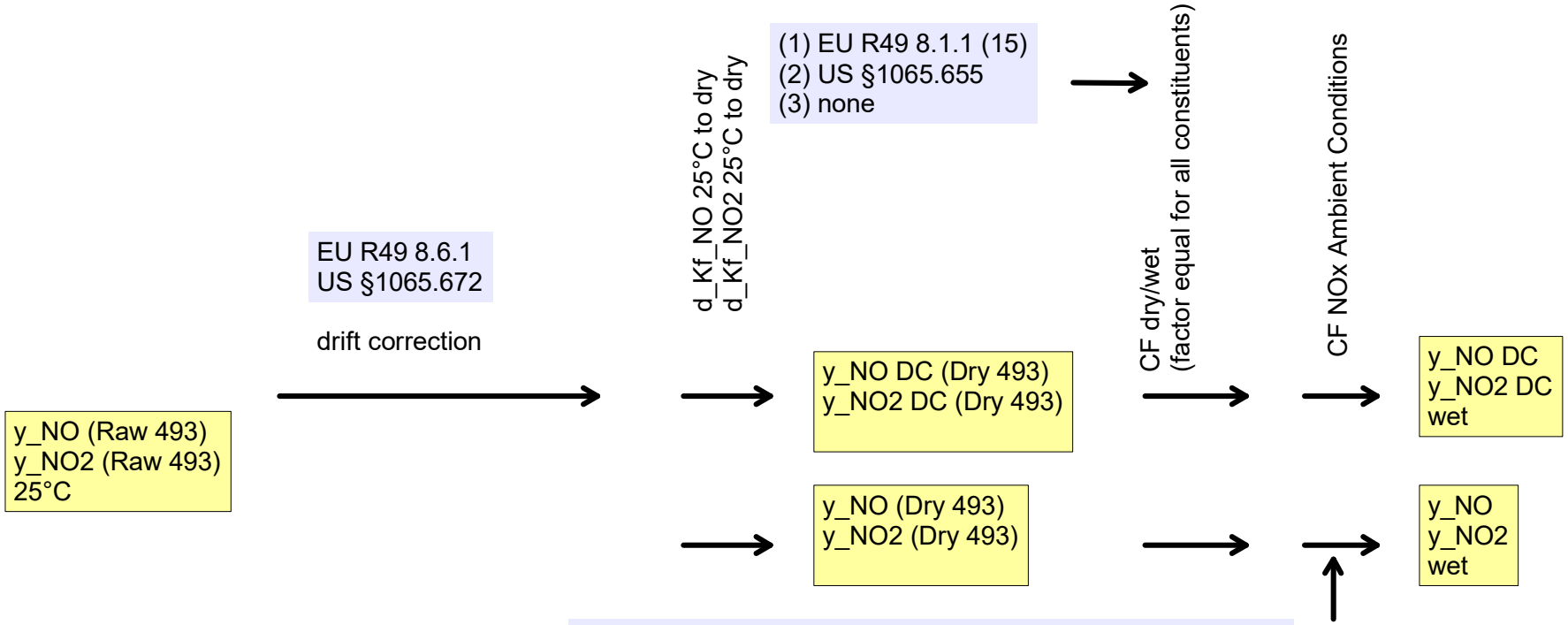
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

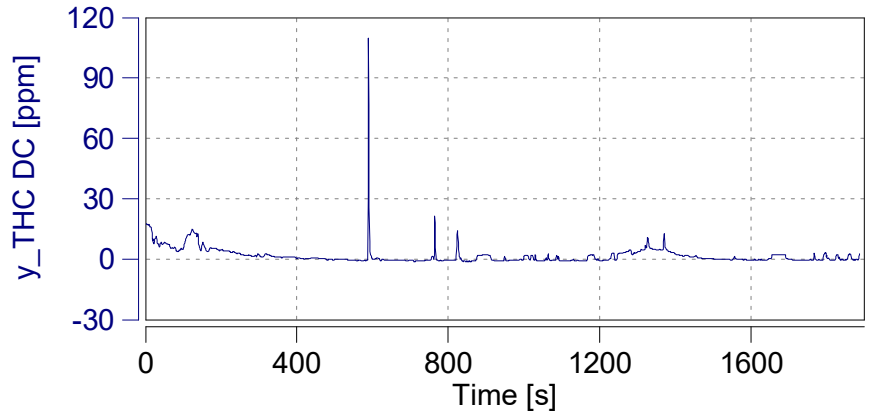
NOx - AVL 493

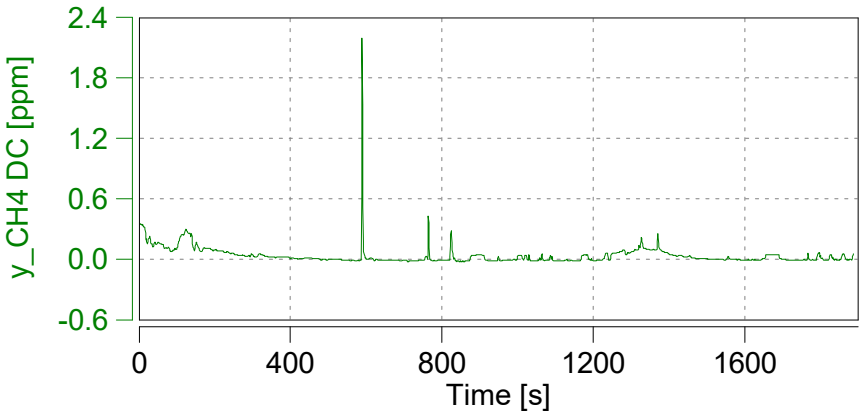


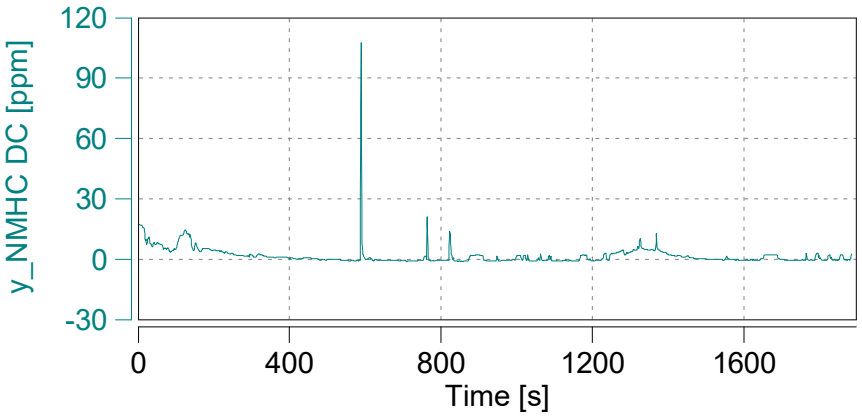
Case: X254-708
Page: Corrected Emissions (5)

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019







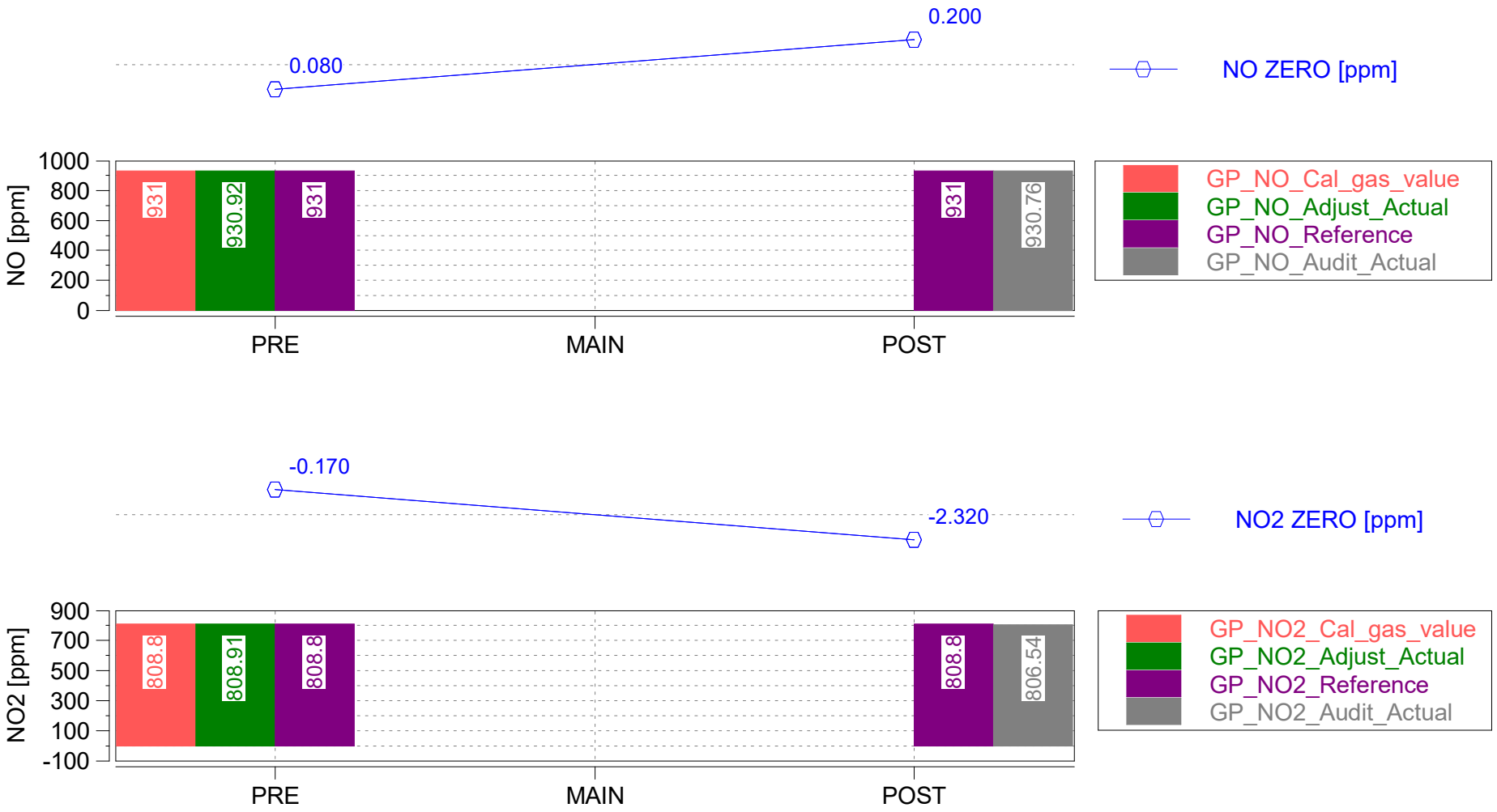
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



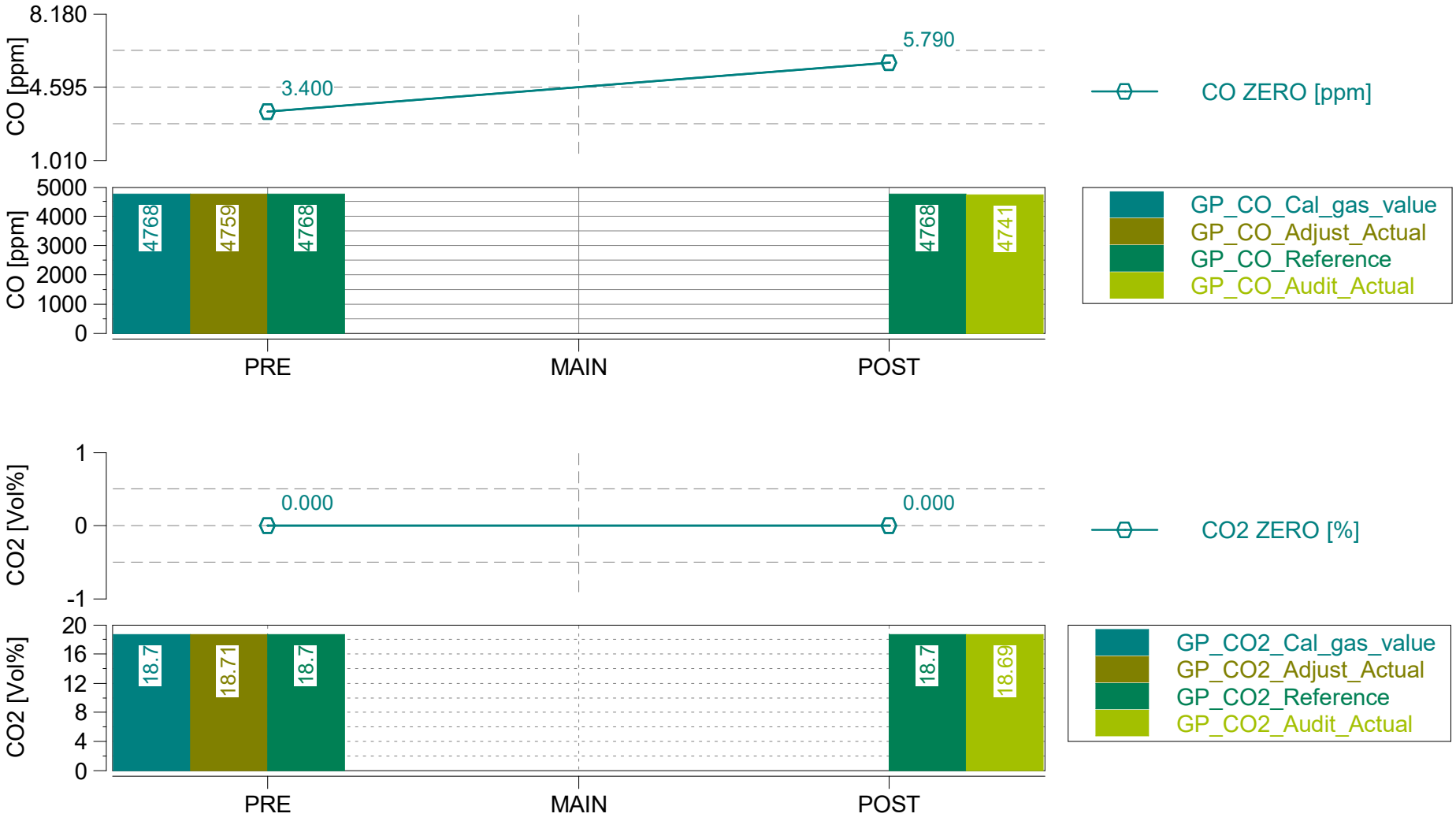
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



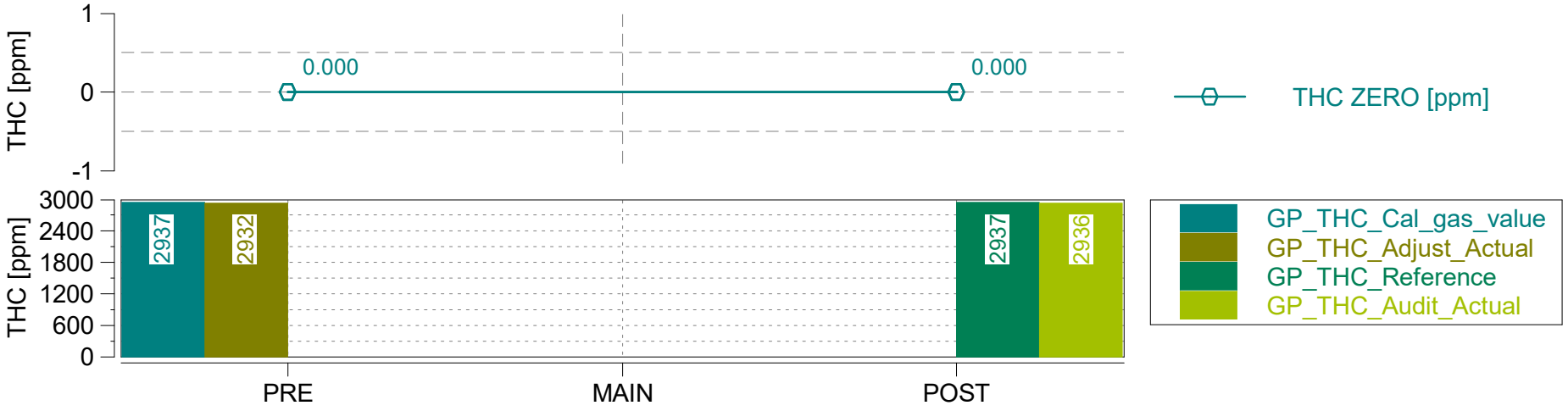
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

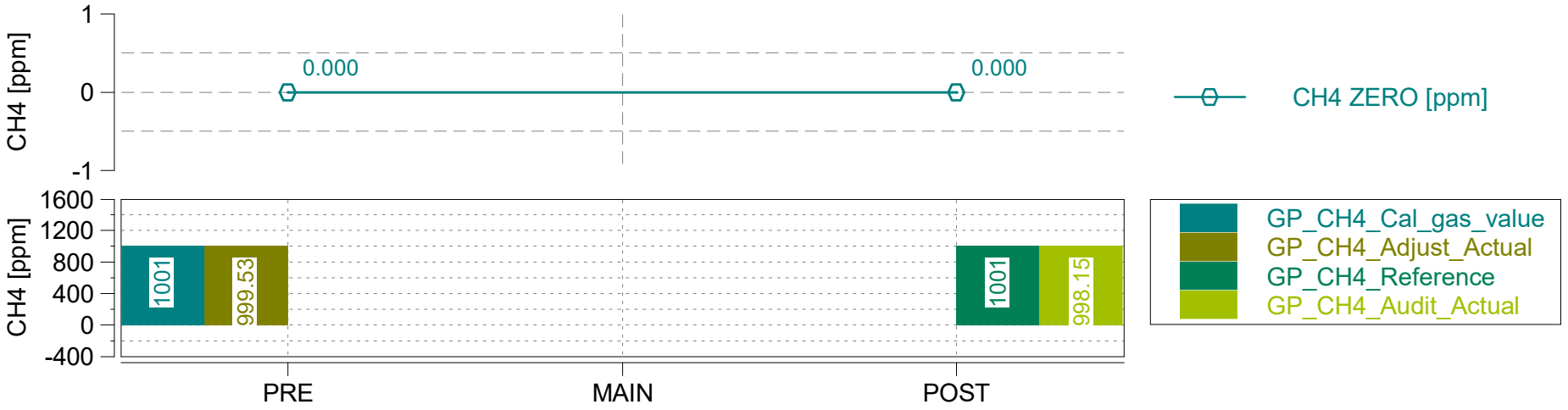
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.18**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-17
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

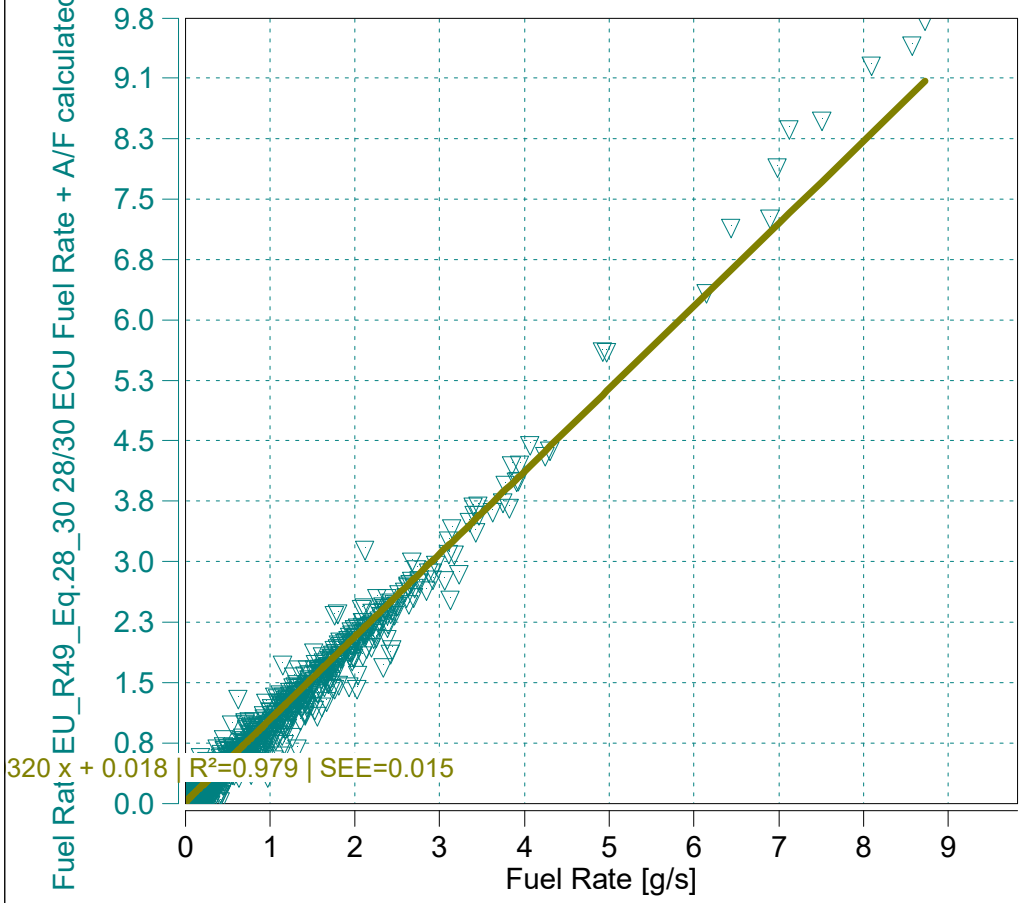
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 B1'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 1.0320 x + 0.018 | R²=0.979 | SEE=0.015
m = 1.03 (0.9 - 1.1 recommended)
R² = 0.98 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1885.00	s
Trip Duration (a)	1885.00	s
Trip Distance	24.25	mi
Trip Distance (a)	24.25	mi
Trip Fuel Cons. (b)	2.29	kg
Trip Fuel Cons. (ab)	2.29	kg
Trip Fuel Cons. EU (ac)	2.36	kg
Trip Fuel Cons. US (ac)	2.34	kg
Trip Fuel Economy (b)	30.02	mpg_US
Trip Fuel Economy (ab)	30.02	mpg_US
Trip Fuel Economy EU (ac)	29.06	mpg_US
Trip Fuel Economy US (ac)	29.36	mpg_US
Trip Fuel Economy GGE (b)	30.02	mpg_US
Trip Fuel Economy GGE (ab)	30.02	mpg_US
Trip Fuel Economy EU GGE (ac)	29.06	mpg_US
Trip Fuel Economy US GGE (ac)	29.36	mpg_US
Trip Av. Eng. Speed	1480.34	rpm
Trip Av. Torque	73.16	lbft
Trip Av. Power	22.71	hp
Trip Work		
Trip Work (a)	11.84	hphr
Trip Exhaust Mass	36.48	kg
Trip Exhaust Mass EU (ac)	35.39	kg
Trip Exhaust Mass US (ac)	35.77	kg
Trip Av. Amb. Temperature	80.64	deg_F
Trip Av. Humidity	46.05	%
Trip Av. GPS Altitude	60.78	m
Fuel Type	Petrol (E10)	

ave THC	18.86067	ppm
ave NMHC	18.48346	ppm
ave CH4	0.37721	ppm
ave CO	557.78015	ppm
ave CO2	12.15411	%
ave NOx	3.03922	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.27602	g
tot NMHC	0.25532	g
tot CH4	0.00612	g
tot CO	19.94585	g
tot CO2	7081.10917	g
tot NO (d)	0.09308	g
tot NO2	0.03402	g
tot NOx	0.12660	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	46.50956	mi/hr
Trip Distance Share Urban	8.91740	% distance
Trip Distance Share Rural	25.74228	% distance
Trip Distance Share Motorway	65.34032	% distance

BS CO2	597.94884	g/hphr
BS CO	1.68428	g/hphr
BS THC	0.02331	g/hphr
BS NMHC	0.02156	g/hphr
BS CH4	0.00052	g/hphr
BS NO (d)	0.00786	g/hphr
BS NO2	0.00287	g/hphr
BS NOx	0.01069	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	292.00971	g/mi
DS CO	0.82252	g/mi
DS THC	0.01138	g/mi
DS NMHC	0.01053	g/mi
DS CH4	0.00025	g/mi
DS NO (d)	0.00384	g/mi
DS NO2	0.00140	g/mi
DS NOx	0.00522	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3097.89012	g/kg
FS CO	8.72604	g/kg
FS THC	0.12076	g/kg
FS NMHC	0.11170	g/kg
FS CH4	0.00268	g/kg
FS NO (d)	0.04072	g/kg
FS NO2	0.01488	g/kg
FS NOx	0.05539	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1885.00	s
Trip Duration (a)	1885.00	s
Trip Distance	24.25	mi
Trip Distance (a)	24.25	mi
Trip Fuel Cons. (b)	2.29	kg
Trip Fuel Cons. (ab)	2.29	kg
Trip Fuel Cons. EU (ac)	2.36	kg
Trip Fuel Cons. US (ac)	2.34	kg
Trip Fuel Economy (b)	30.02	mpg_US
Trip Fuel Economy (ab)	30.02	mpg_US
Trip Fuel Economy EU (ac)	29.06	mpg_US
Trip Fuel Economy US (ac)	29.36	mpg_US
Trip Fuel Economy GGE (b)	30.02	mpg_US
Trip Fuel Economy GGE (ab)	30.02	mpg_US
Trip Fuel Economy EU GGE (ac)	29.06	mpg_US
Trip Fuel Economy US GGE (ac)	29.36	mpg_US
Trip Av. Eng. Speed	1480.34	rpm
Trip Av. Torque	73.16	lbft
Trip Av. Power	22.71	hp
Trip Work		
Trip Work (a)	11.84	hphr
Trip Exhaust Mass	36.48	kg
Trip Exhaust Mass EU (ac)	35.39	kg
Trip Exhaust Mass US (ac)	35.77	kg
Trip Av. Amb. Temperature	80.64	deg_F
Trip Av. Humidity	46.05	%
Trip Av. GPS Altitude	60.78	m
Fuel Type	Petrol (E10)	

ave THC DC	18.88536	ppm
ave NMHC DC	18.50765	ppm
ave CH4 DC	0.37771	ppm
ave CO DC	557.23992	ppm
ave CO2 DC	12.15411	%
ave NOx DC	3.11891	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.27638	g
tot NMHC DC	0.25566	g
tot CH4 DC	0.00613	g
tot CO DC	19.92890	g
tot CO2 DC	7081.10917	g
tot NO DC (d)	0.08954	g
tot NO2 DC	0.04255	g
tot NOx DC	0.13115	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	46.50956	mi/hr
Trip Distance Share Urban	8.91740	% distance
Trip Distance Share Rural	25.74228	% distance
Trip Distance Share Motorway	65.34032	% distance

BS CO2 DC	597.94884	g/hphr
BS CO DC	1.68285	g/hphr
BS THC DC	0.02334	g/hphr
BS NMHC DC	0.02159	g/hphr
BS CH4 DC	0.00052	g/hphr
BS NO DC (d)	0.00756	g/hphr
BS NO2 DC	0.00359	g/hphr
BS NOx DC	0.01107	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	292.00971	g/mi
DS CO DC	0.82183	g/mi
DS THC DC	0.01140	g/mi
DS NMHC DC	0.01054	g/mi
DS CH4 DC	0.00025	g/mi
DS NO DC (d)	0.00369	g/mi
DS NO2 DC	0.00175	g/mi
DS NOx DC	0.00541	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3097.89012	g/kg
FS CO DC	8.71863	g/kg
FS THC DC	0.12091	g/kg
FS NMHC DC	0.11185	g/kg
FS CH4 DC	0.00268	g/kg
FS NO DC (d)	0.03917	g/kg
FS NO2 DC	0.01862	g/kg
FS NOx DC	0.05738	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

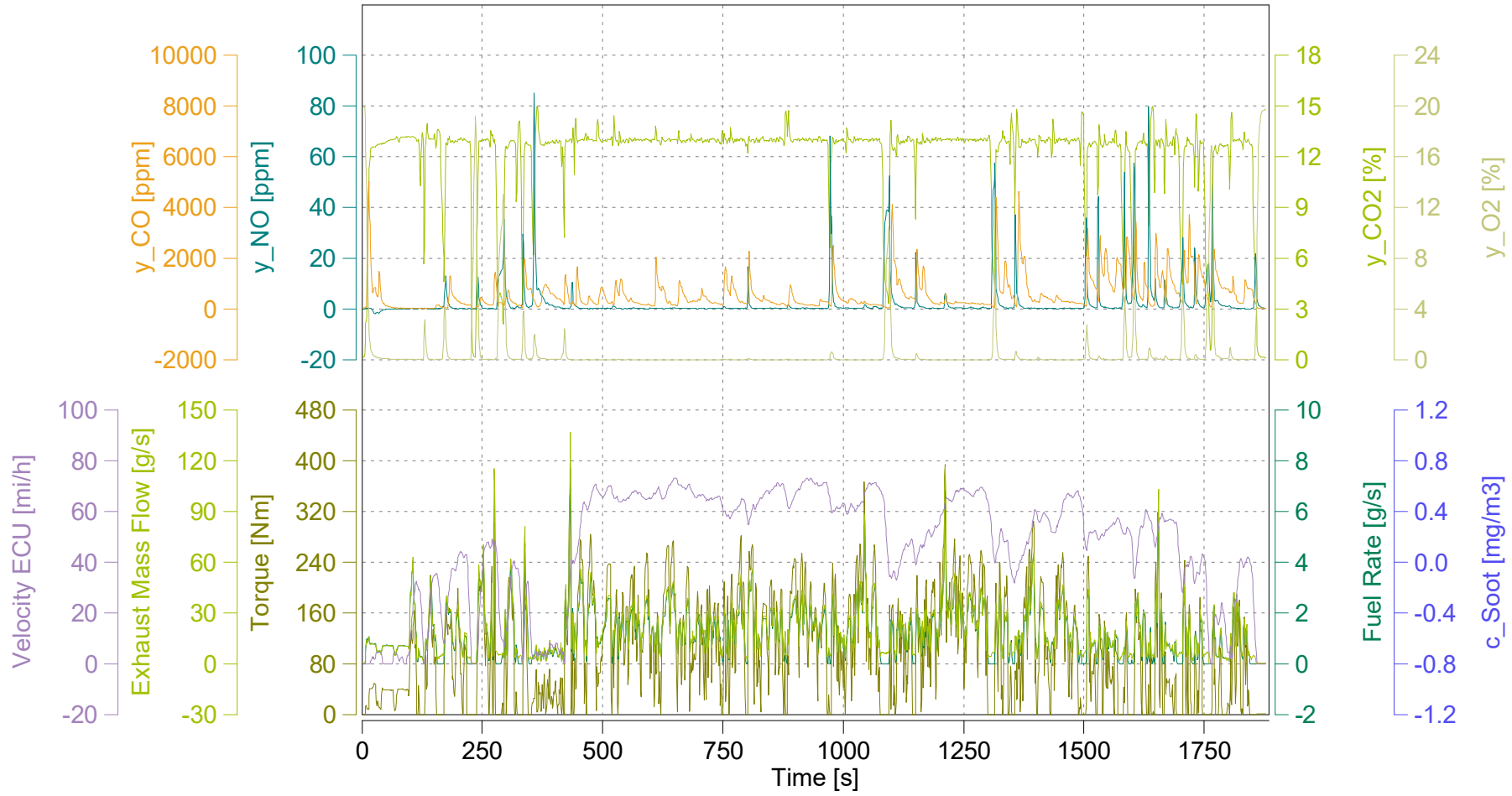
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NC
CO/CC
O2
Appl

Alignme
Reset
Re
Appl

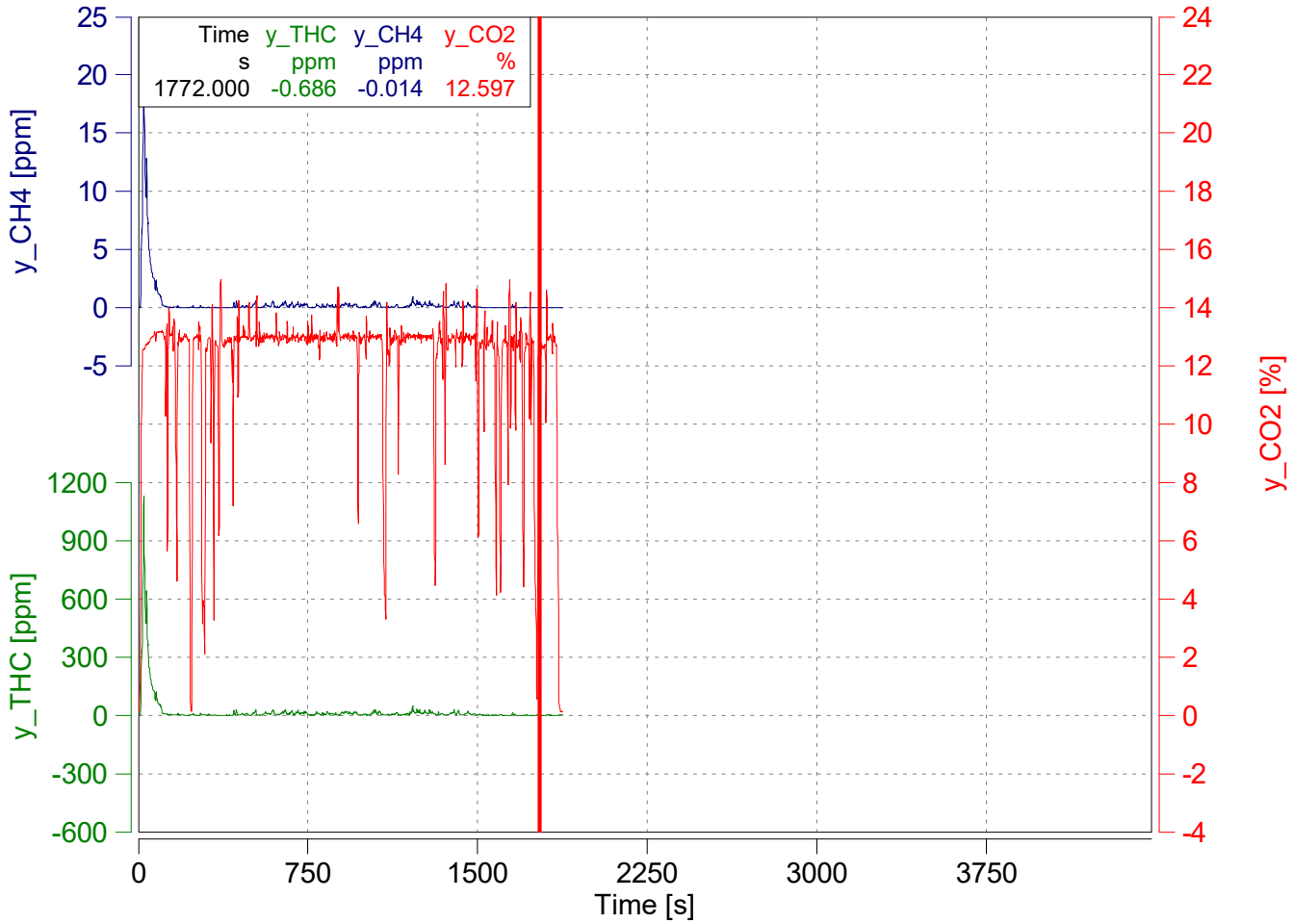
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

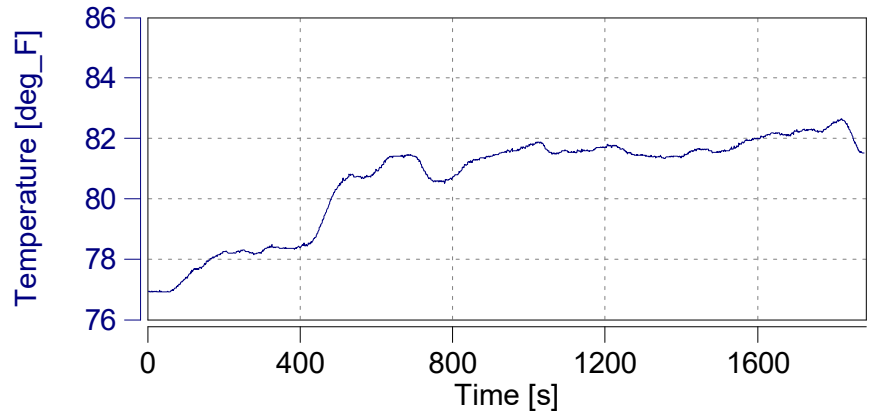
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

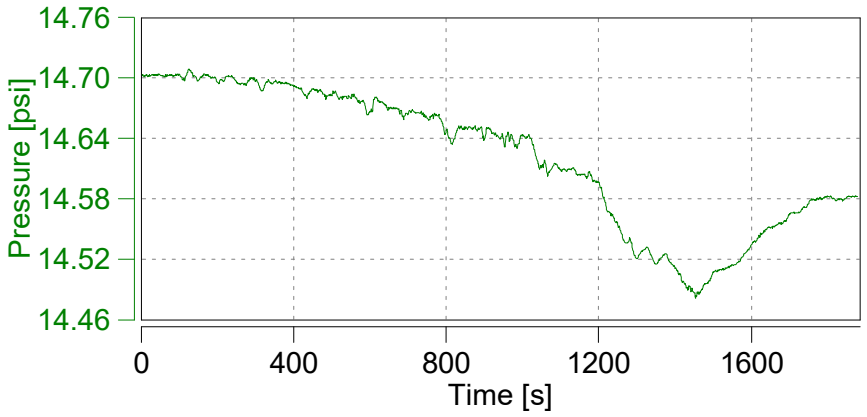
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

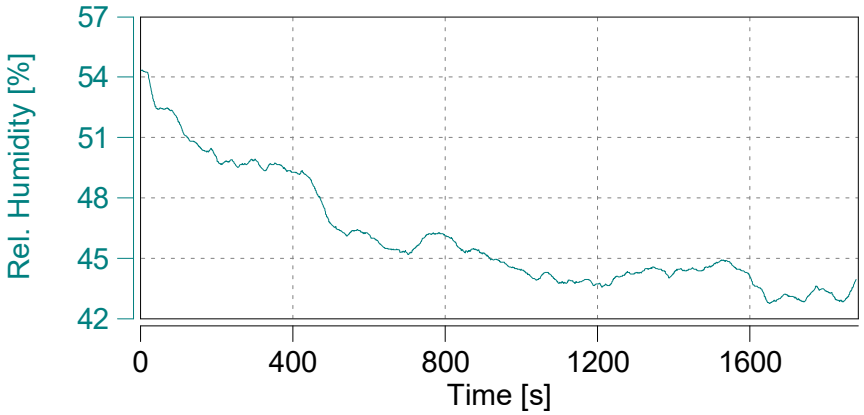
Case: X254-708
Page: Ambient Conditions

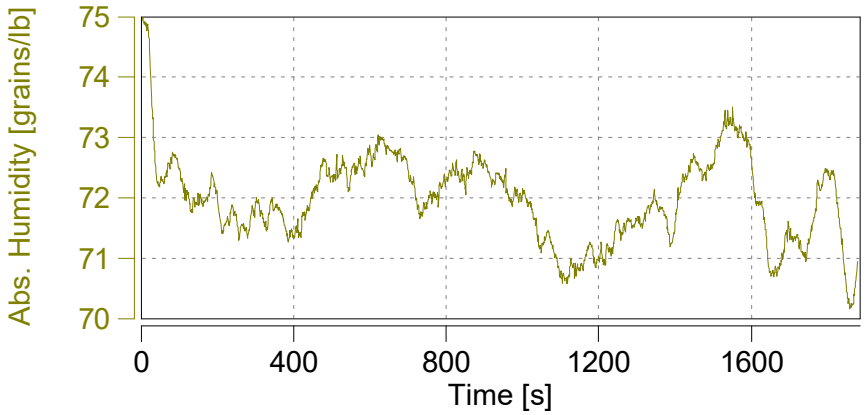
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









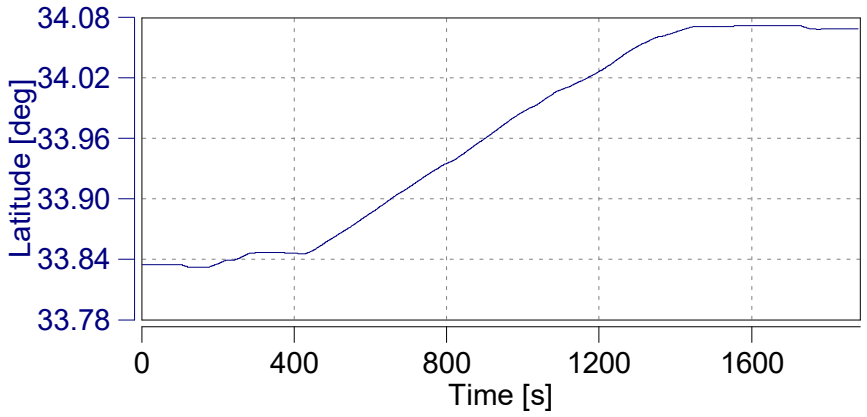
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

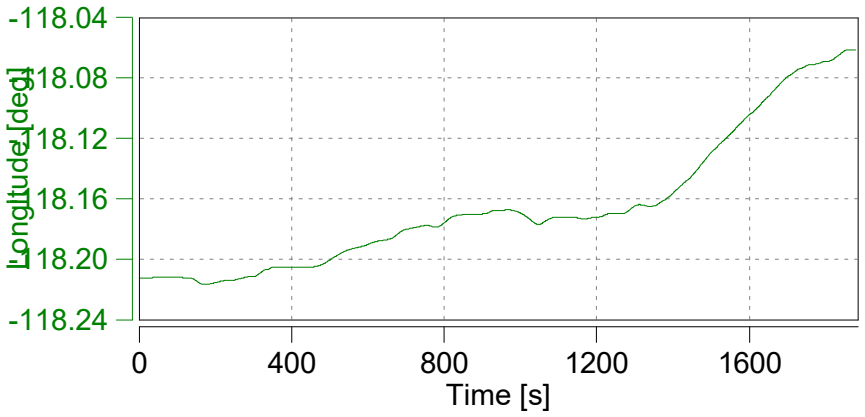
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

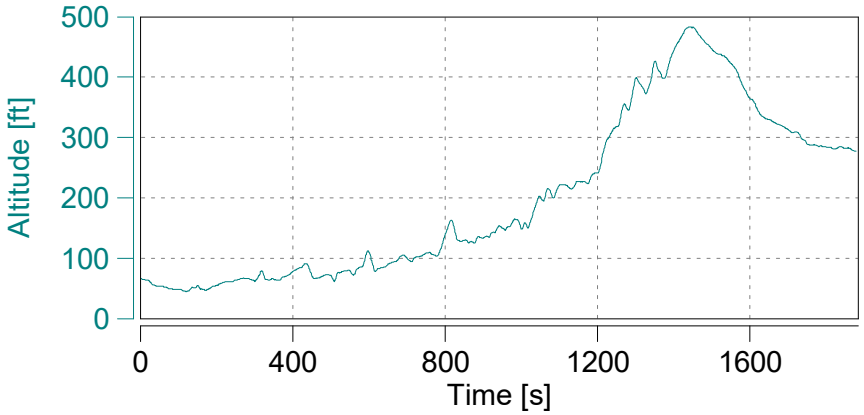
Case: X254-708
Page: GPS

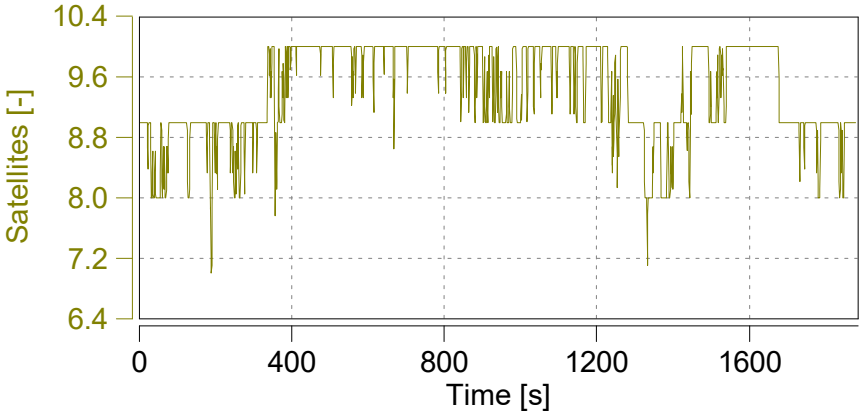
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









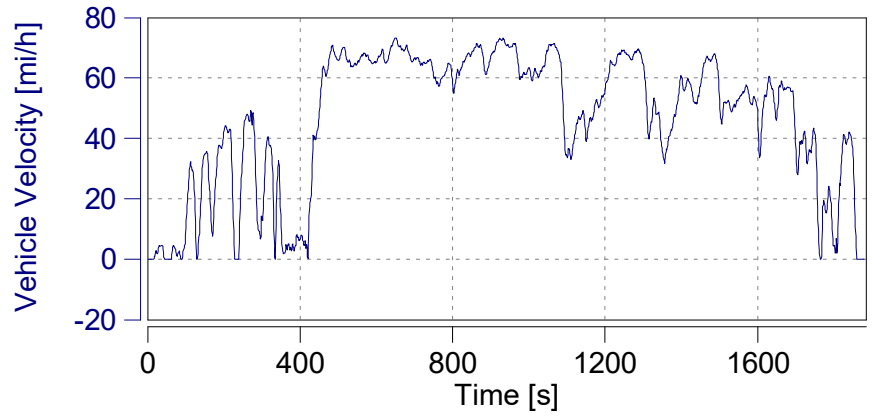
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

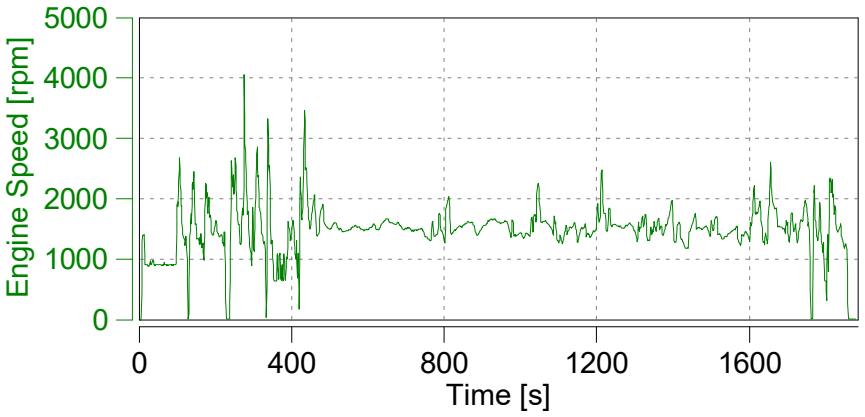
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

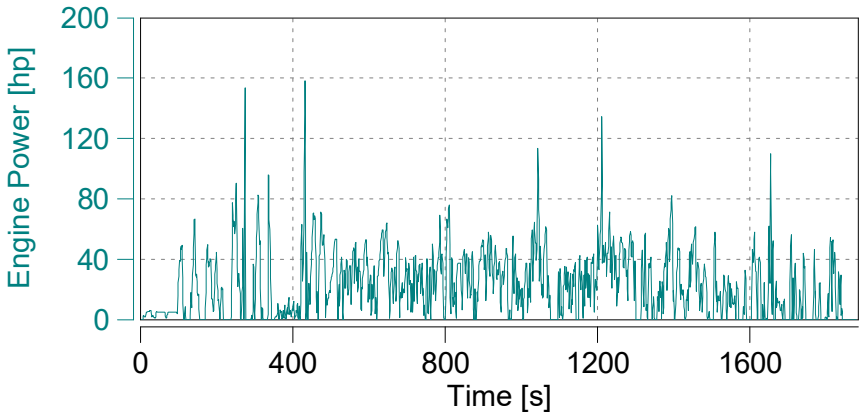
Case: X254-708
Page: Engine (1)

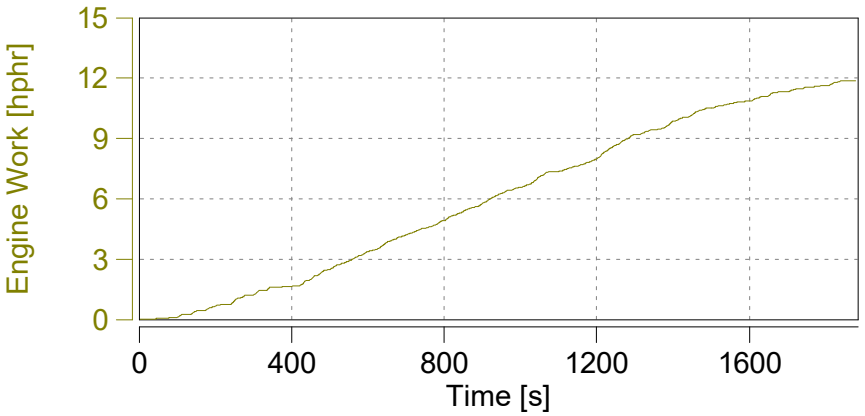
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









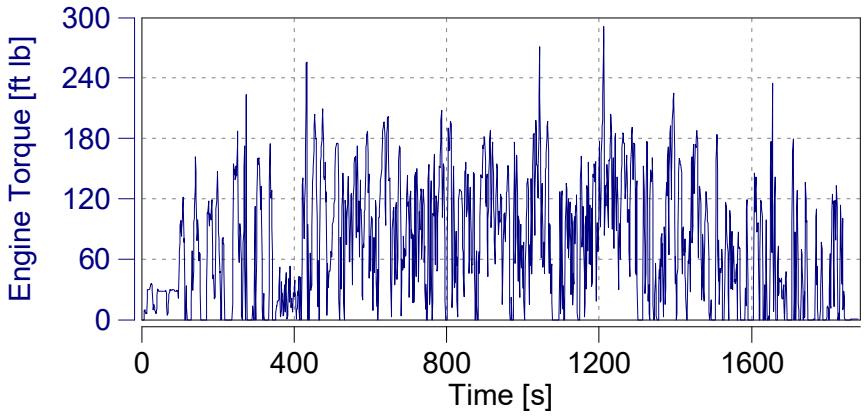
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

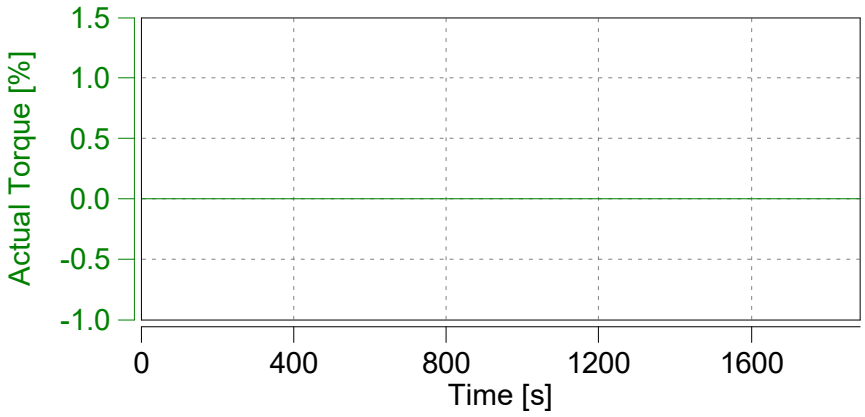
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

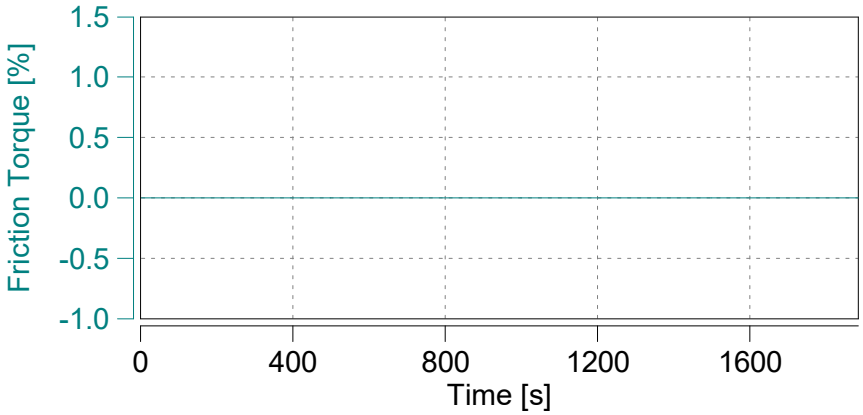
Case: X254-708
Page: Engine (2)

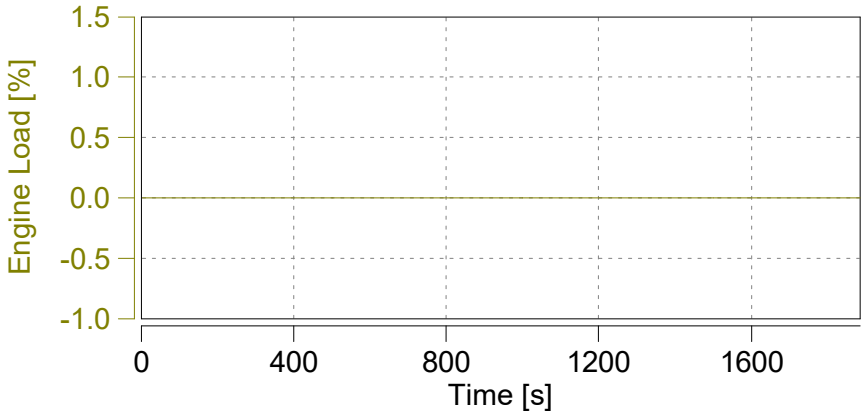
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









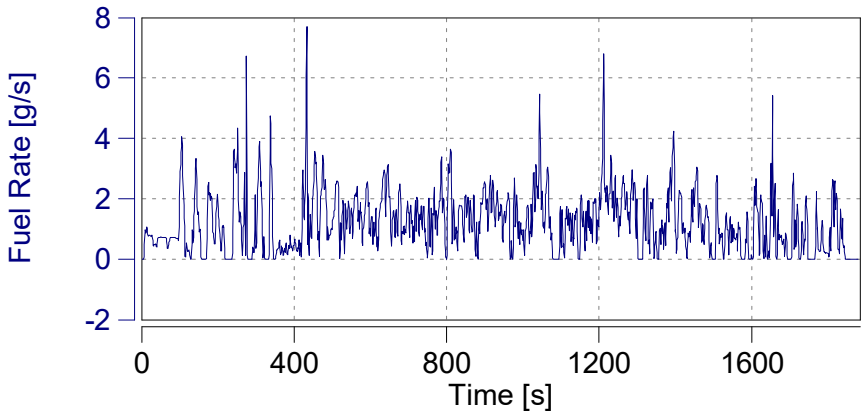
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

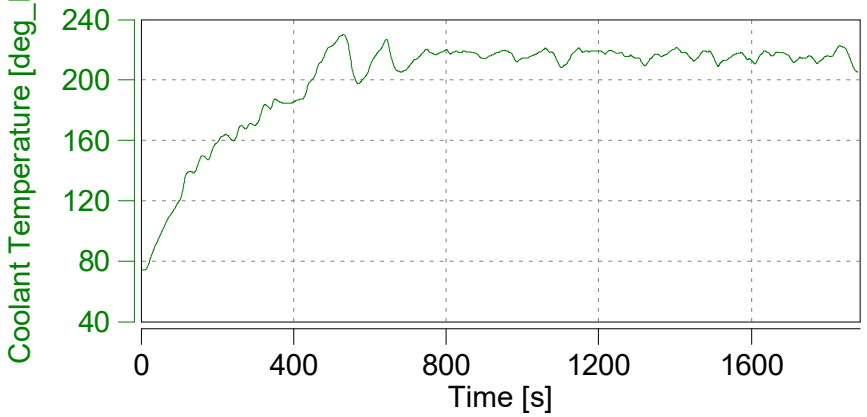
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

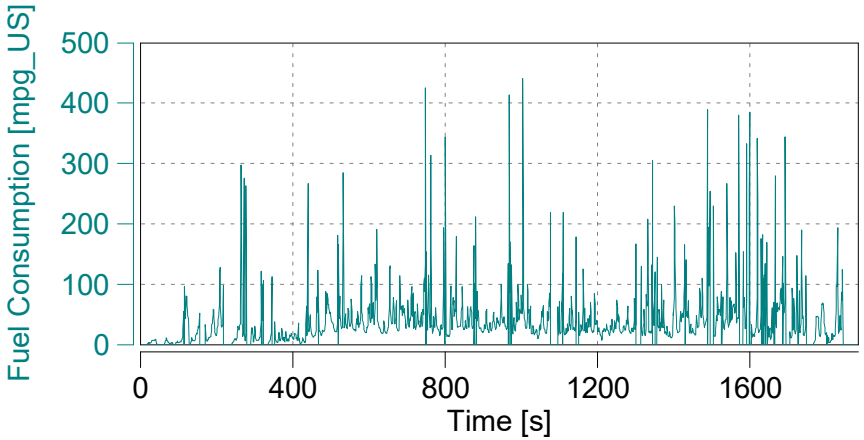
Case: X254-708
Page: Engine (3)

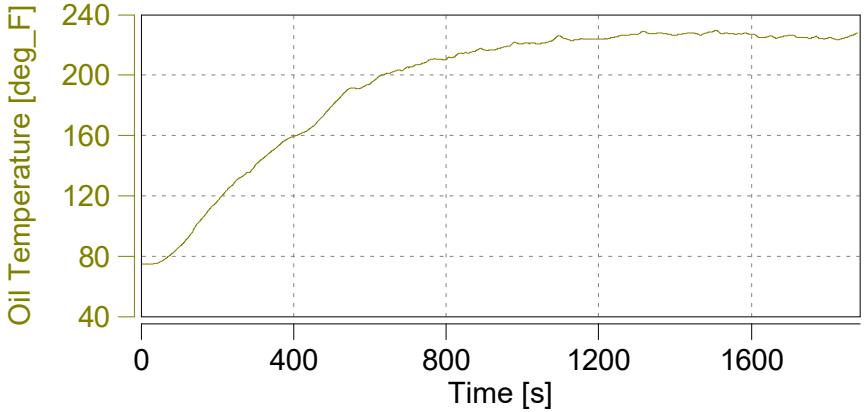
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









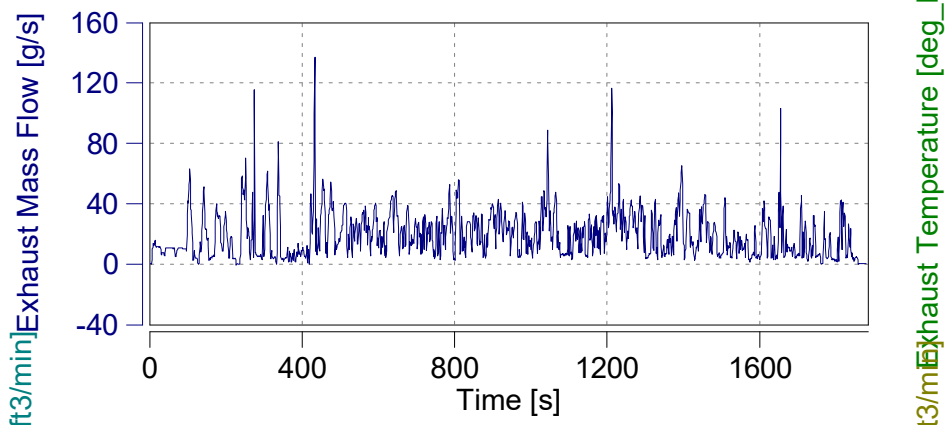
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

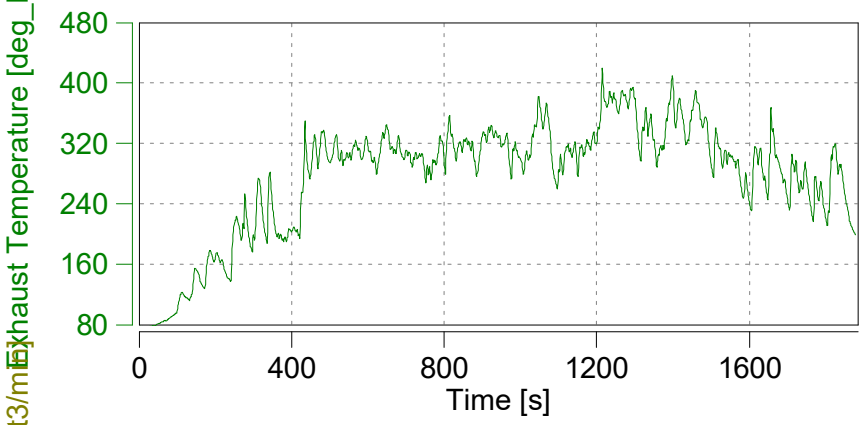
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

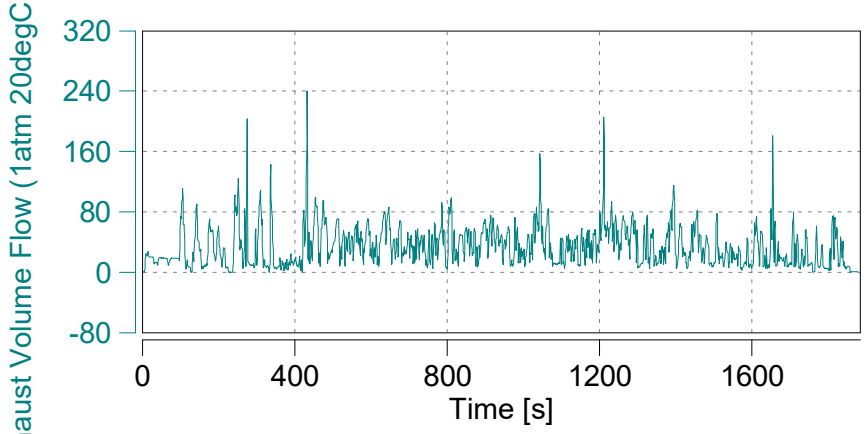
Case: X254-708
Page: Exhaust Flow (1)

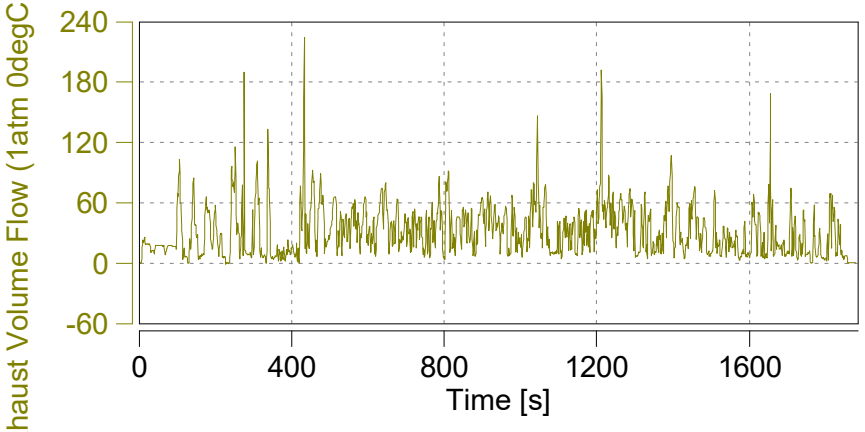
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









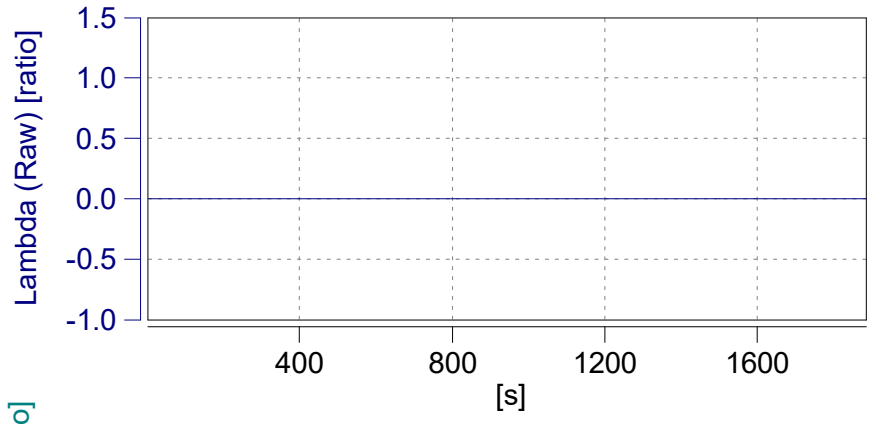
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

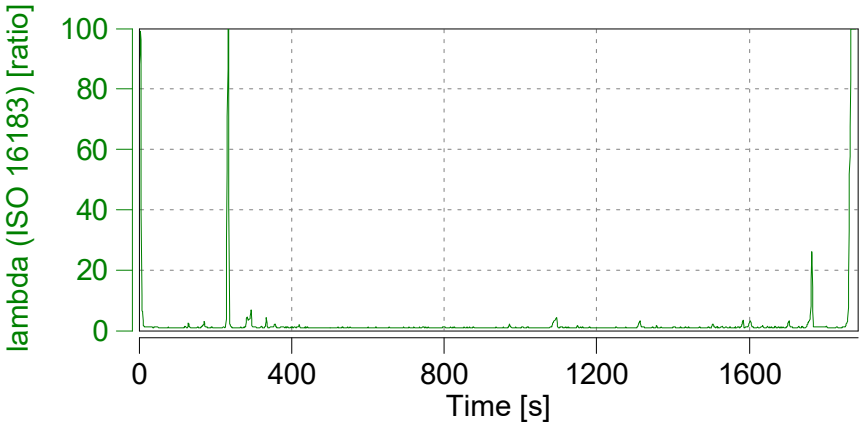
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

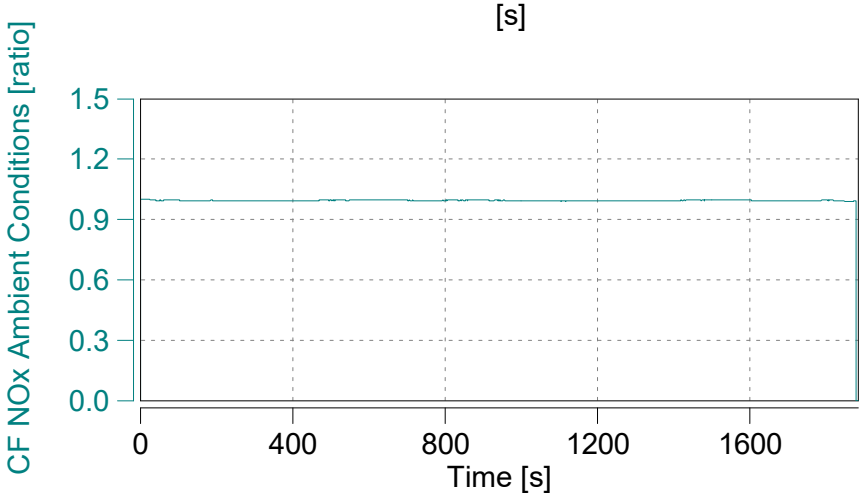
Case: X254-708
Page: Exhaust Flow (2)

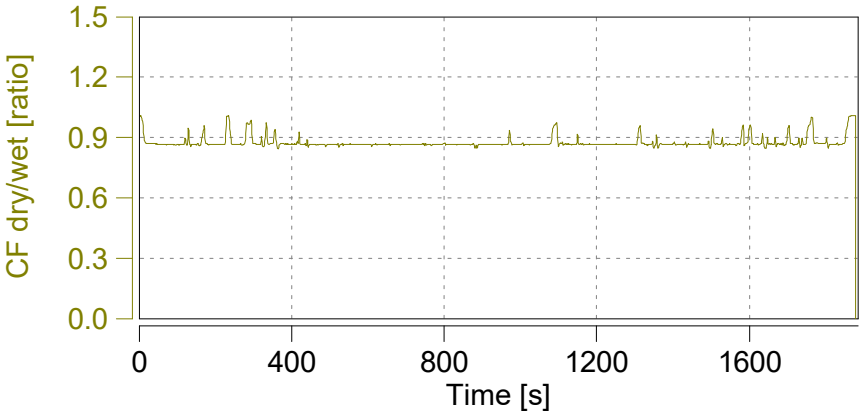
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









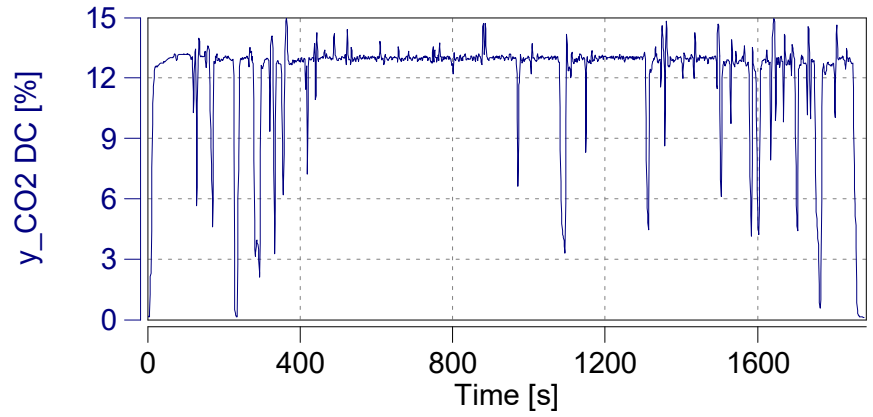
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

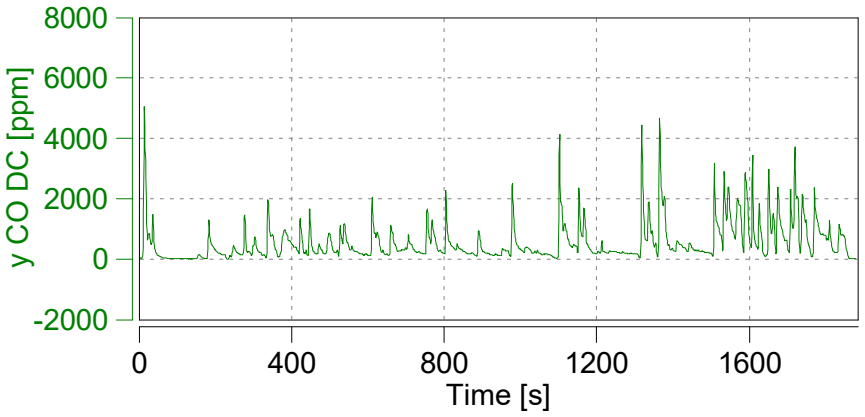
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

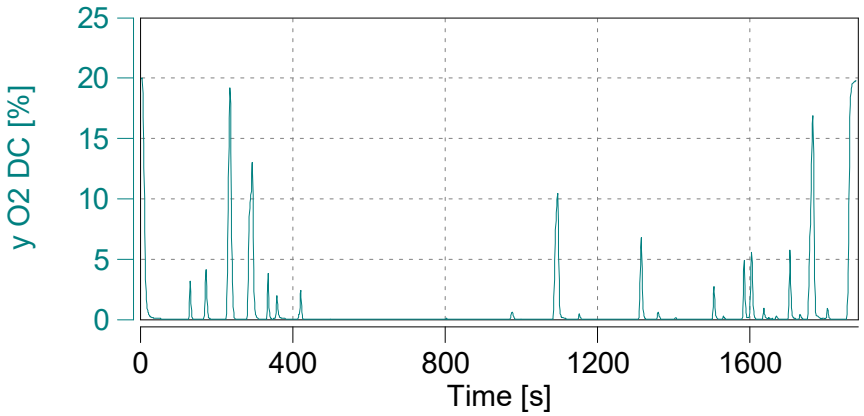
Case: X254-708
Page: Corrected Emissions (1)

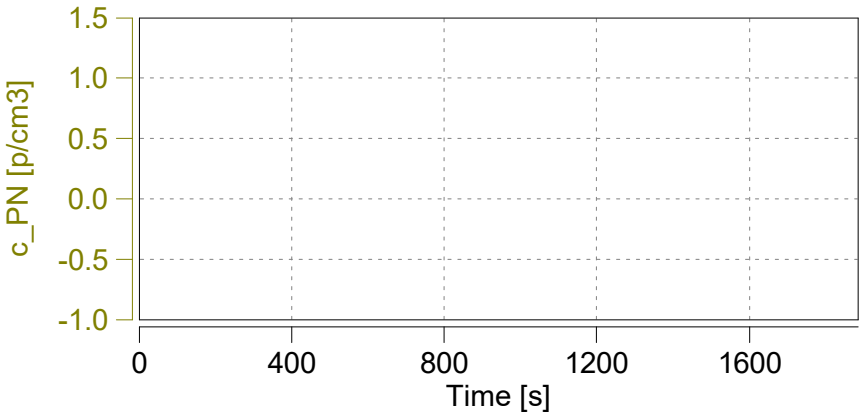
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









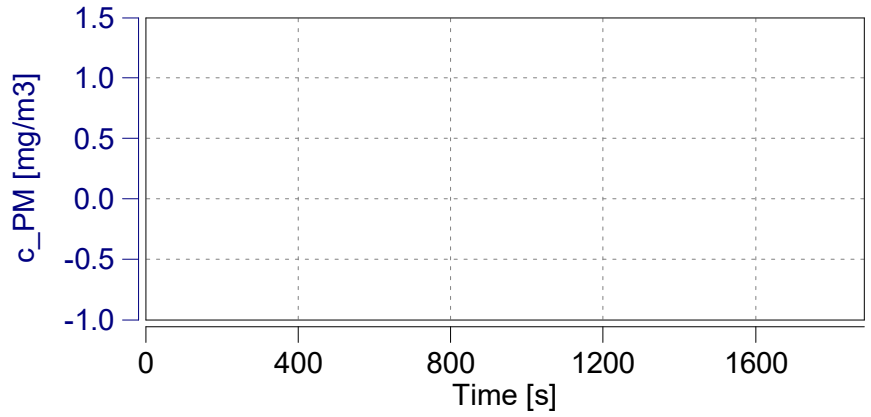
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

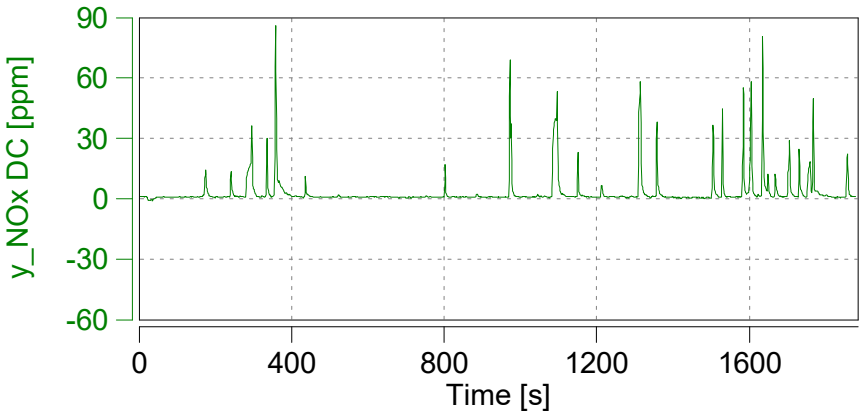
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

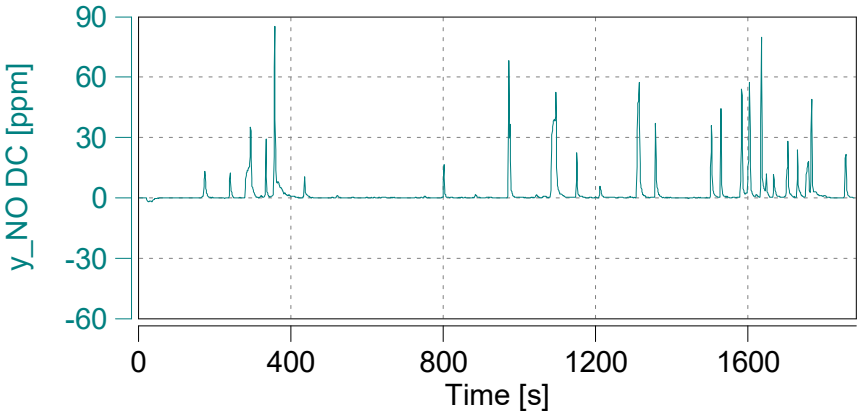
Case: X254-708
Page: Corrected Emissions (2)

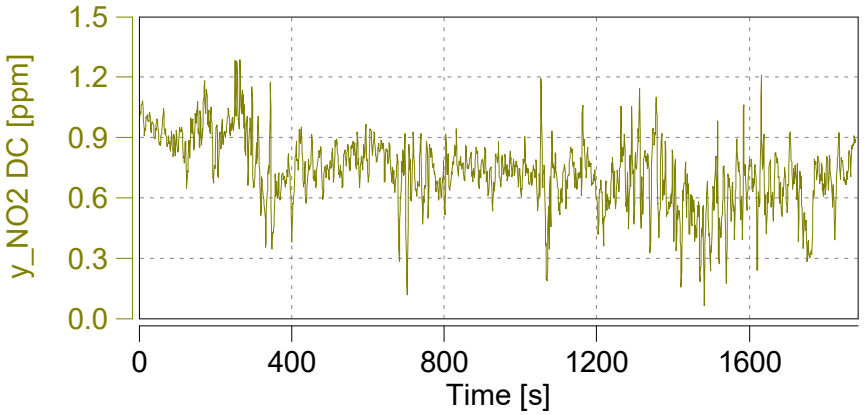
'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019









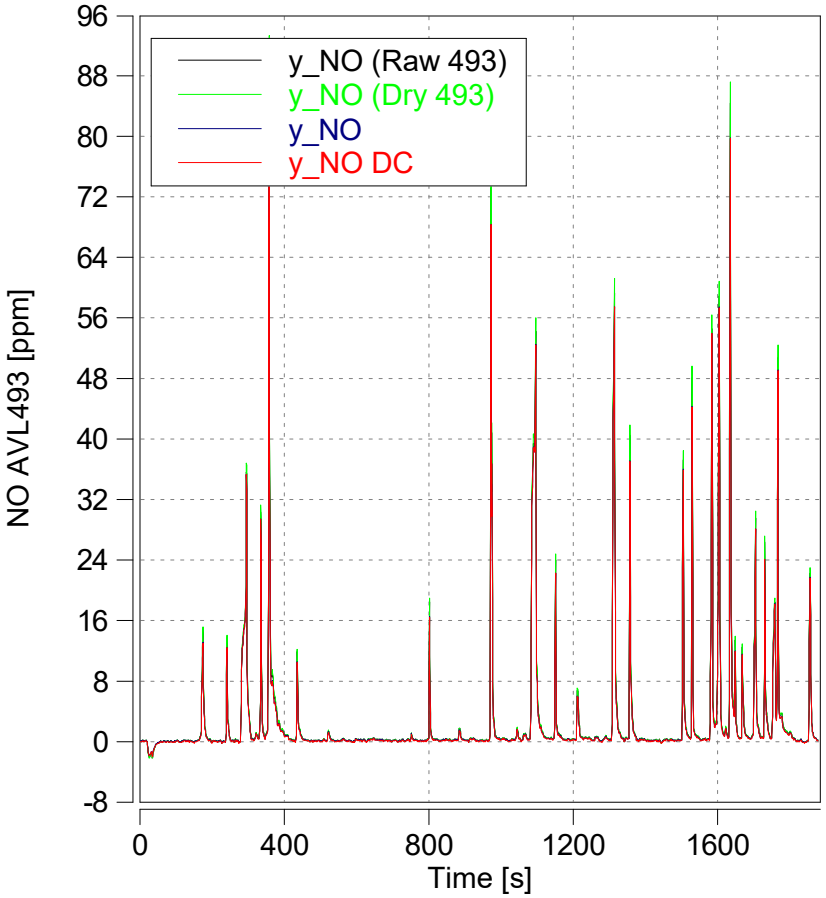
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

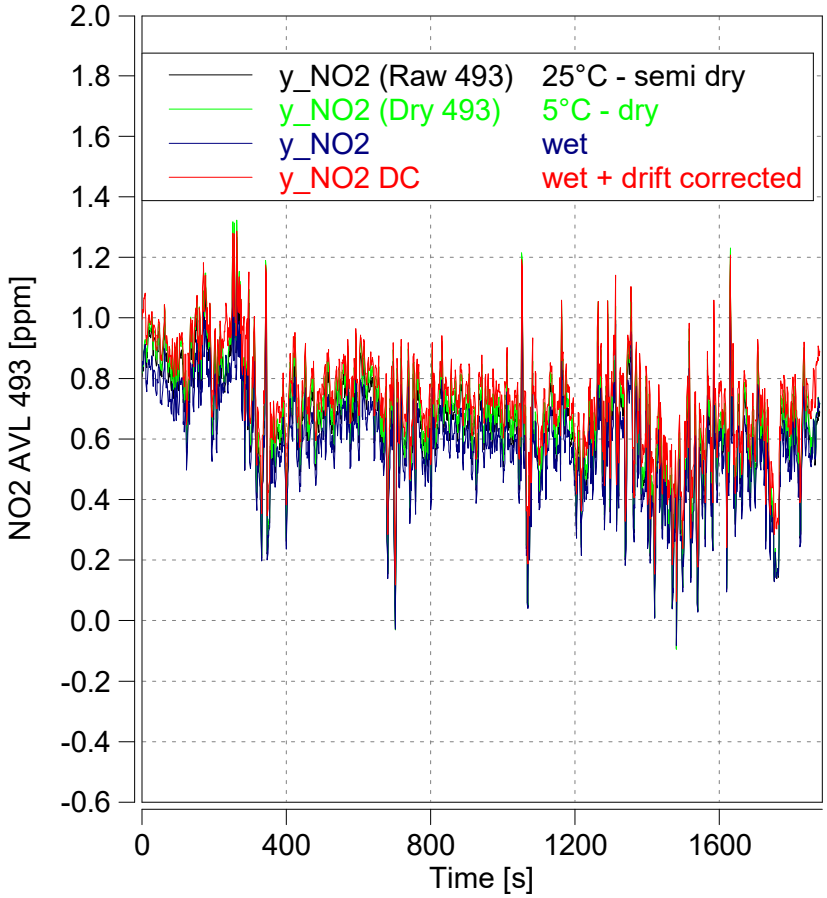
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Corrected Emissions (3)

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





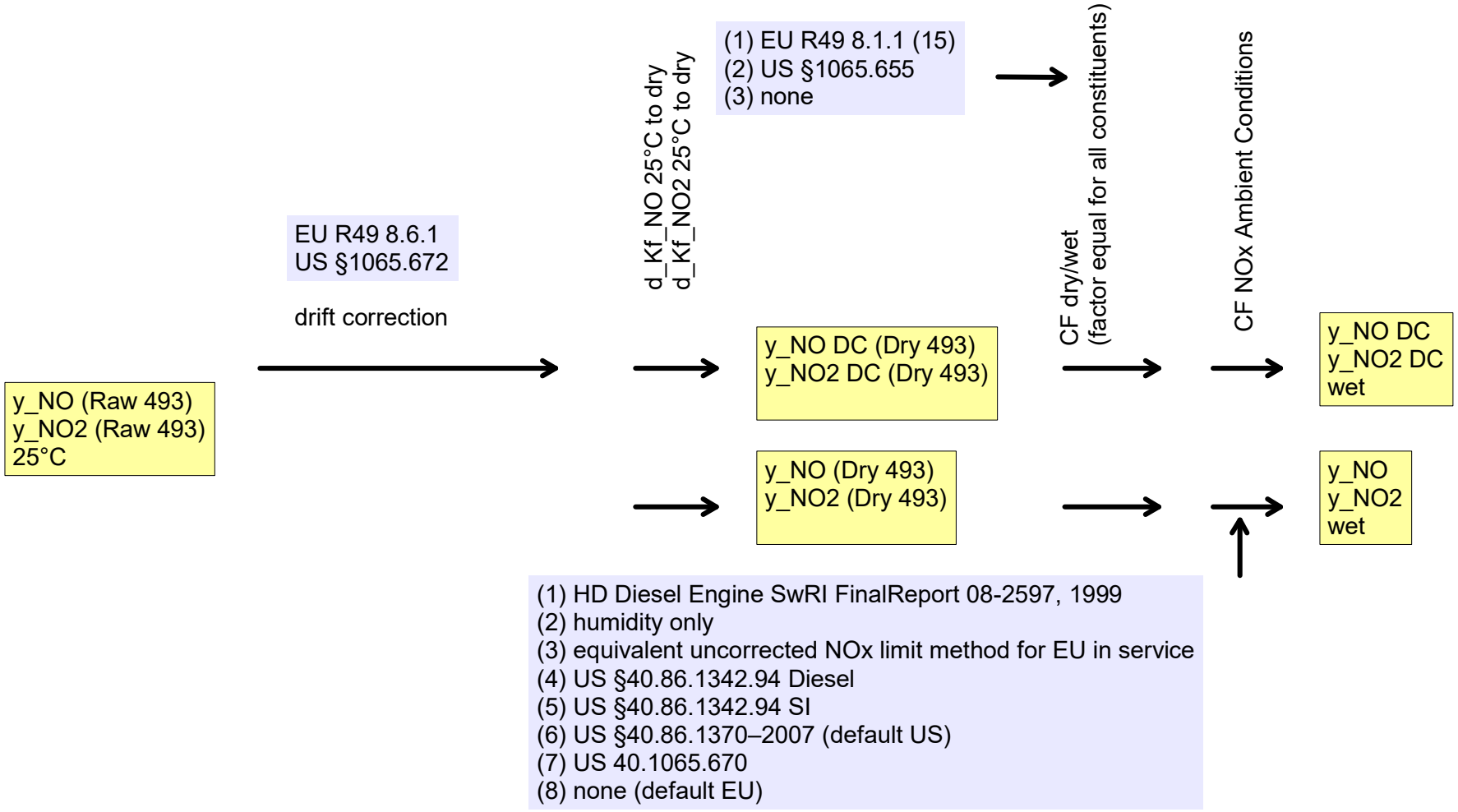
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

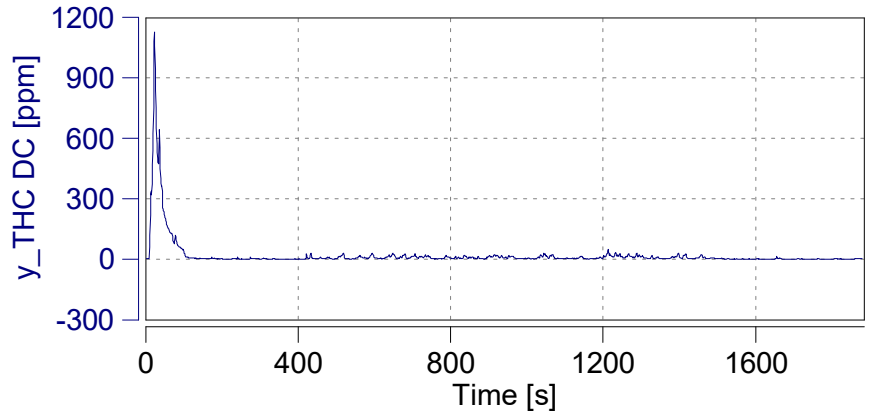
Concerto M.O.V.E, 2019

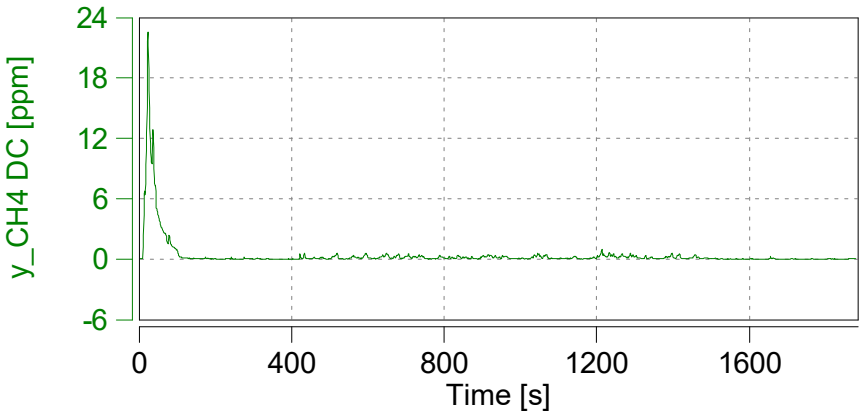
NOx - AVL 493

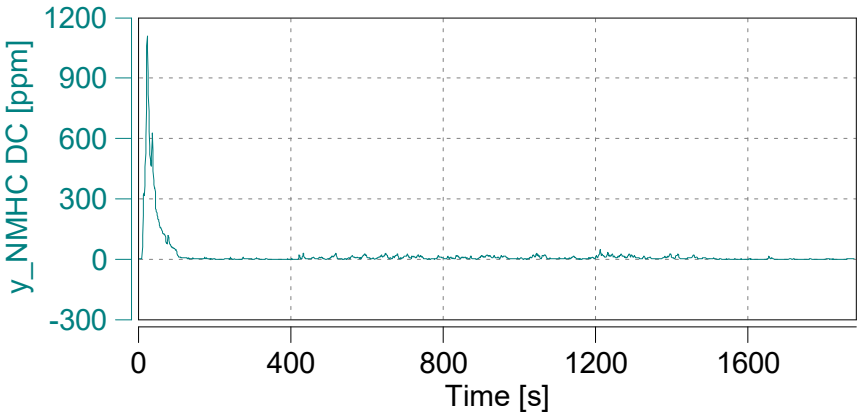


'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

Concerto M.O.V.E, 2019



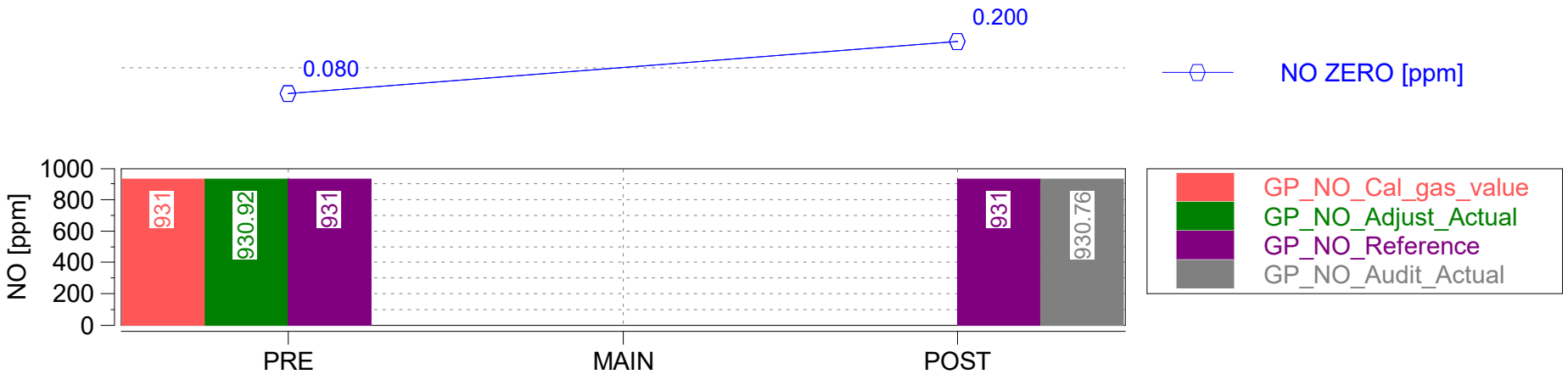


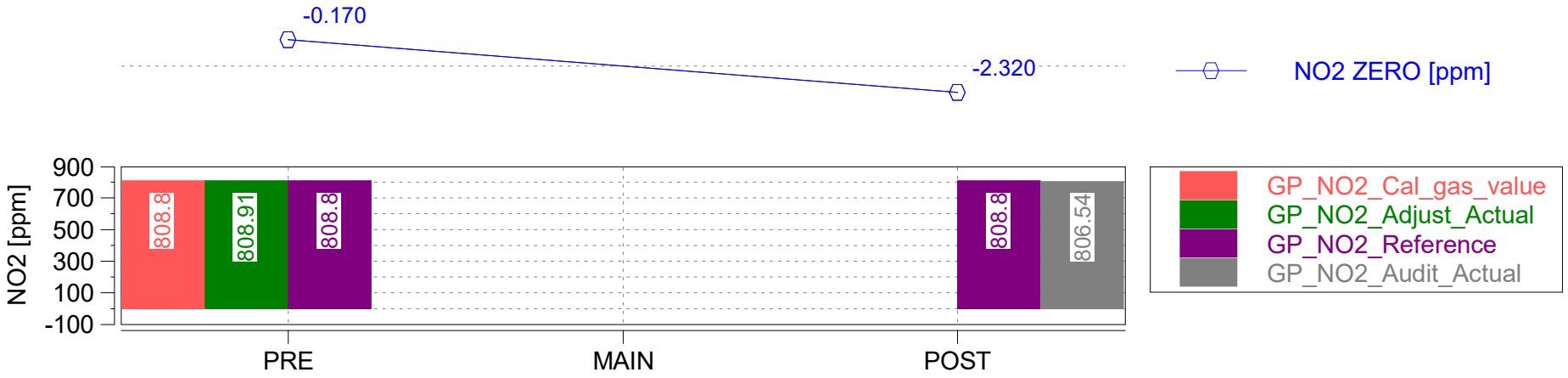


Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019





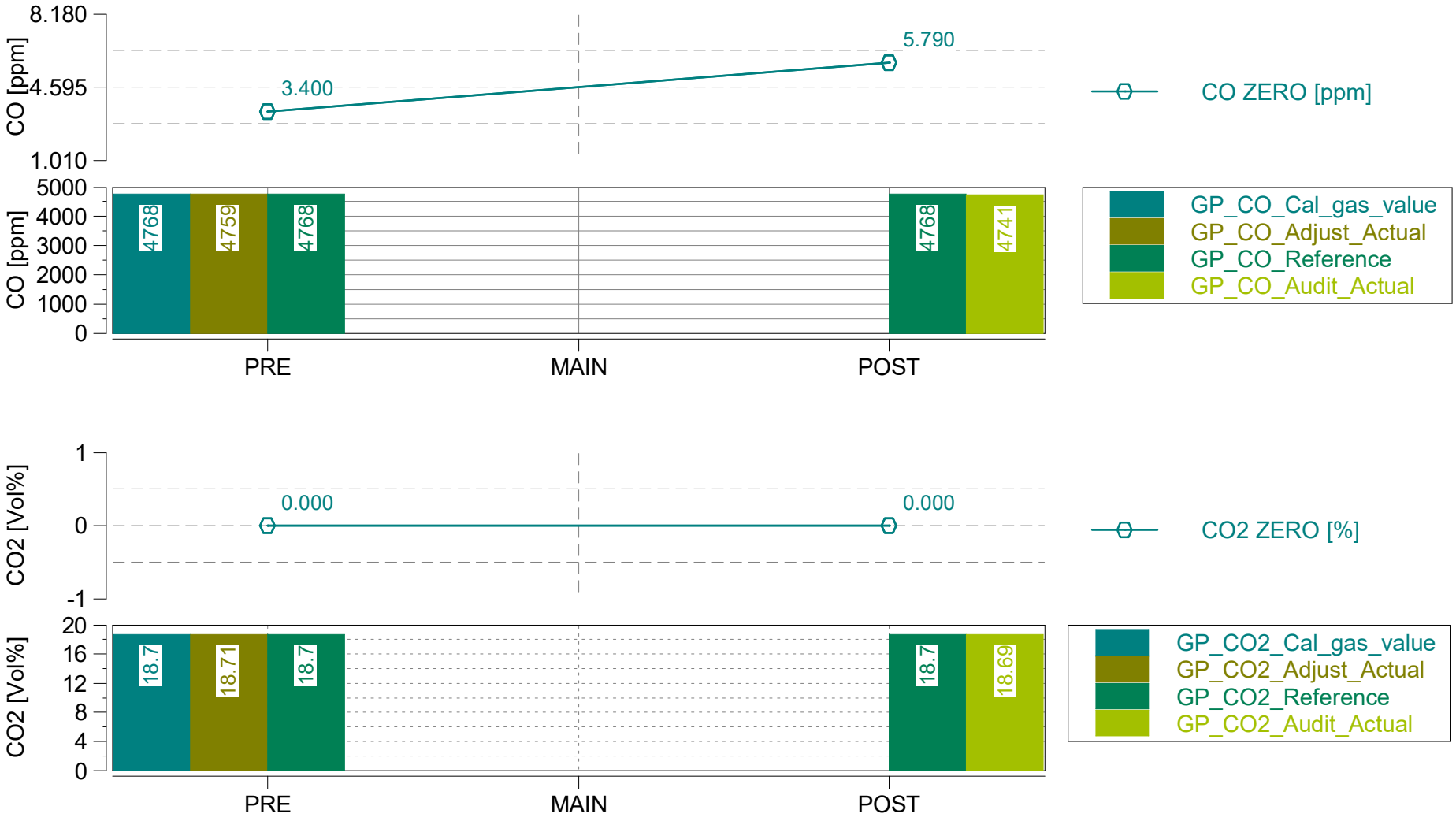
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



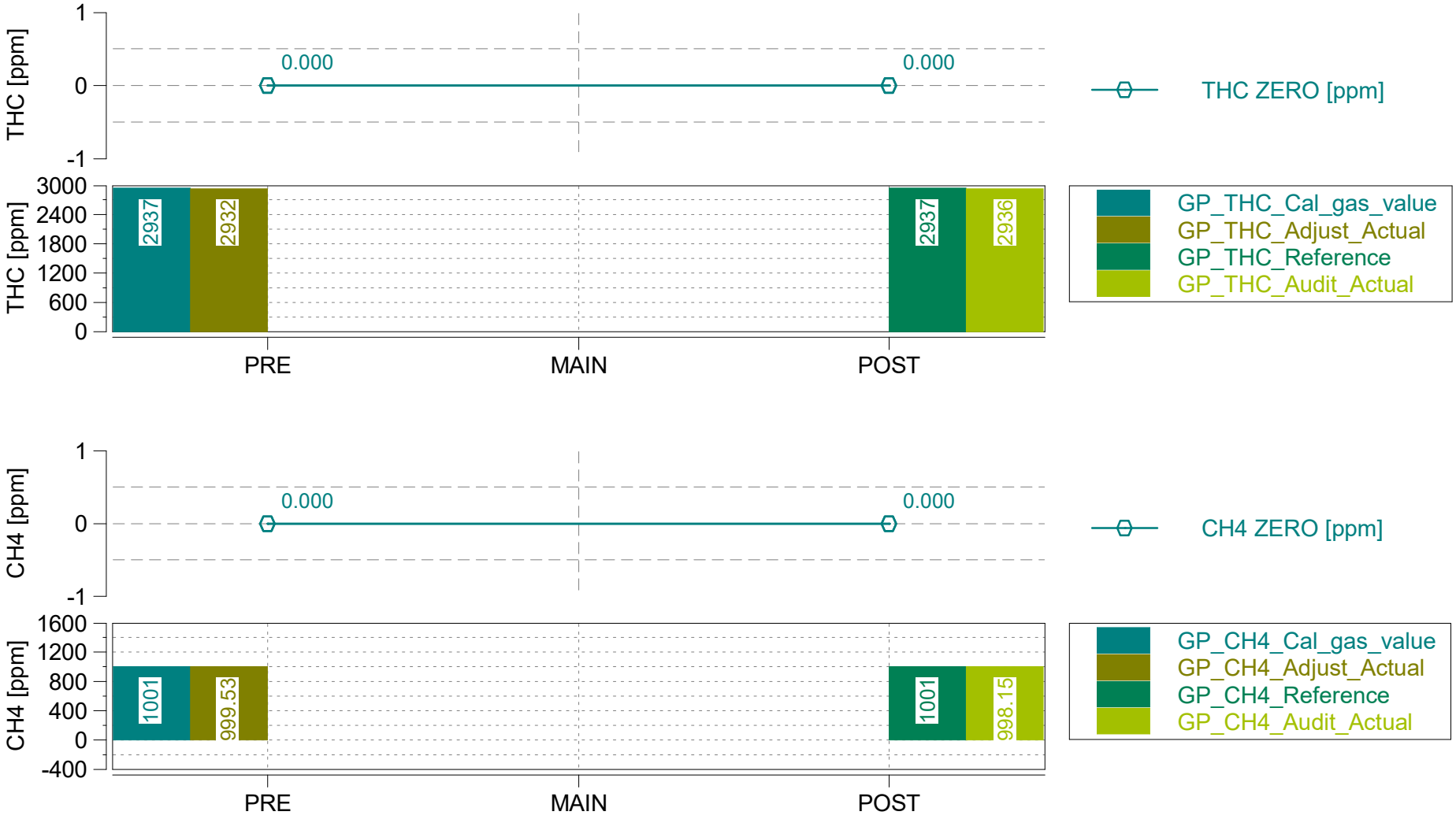
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.18**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-17
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

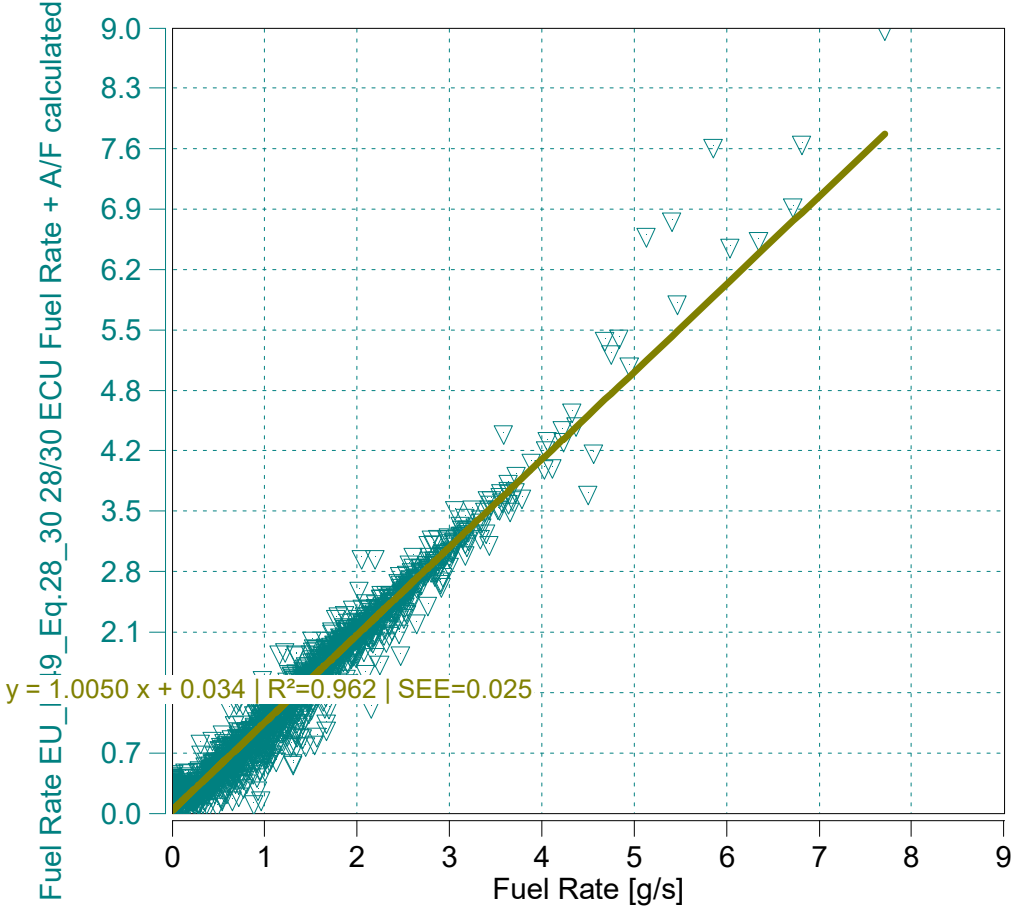
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 A0'
Start Date: 10/17/2022
Start Time: 11:16:26.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 1.0050 x + 0.034 | R²=0.962 | SEE=0.025
m = 1.00 (0.9 - 1.1 recommended)
R² = 0.96 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	3356.00	s
Trip Duration (a)	3356.00	s
Trip Distance	16.02	mi
Trip Distance (a)	16.02	mi
Trip Fuel Cons. (b)	2.18	kg
Trip Fuel Cons. (ab)	2.18	kg
Trip Fuel Cons. EU (ac)	2.27	kg
Trip Fuel Cons. US (ac)	2.25	kg
Trip Fuel Economy (b)	20.83	mpg_US
Trip Fuel Economy (ab)	20.82	mpg_US
Trip Fuel Economy EU (ac)	20.00	mpg_US
Trip Fuel Economy US (ac)	20.10	mpg_US
Trip Fuel Economy GGE (b)	20.83	mpg_US
Trip Fuel Economy GGE (ab)	20.82	mpg_US
Trip Fuel Economy EU GGE (ac)	20.00	mpg_US
Trip Fuel Economy US GGE (ac)	20.10	mpg_US
Trip Av. Eng. Speed	1117.21	rpm
Trip Av. Torque	31.35	lbft
Trip Av. Power	11.22	hp
Trip Work		
Trip Work (a)	10.43	hphr
Trip Exhaust Mass	35.61	kg
Trip Exhaust Mass EU (ac)	34.43	kg
Trip Exhaust Mass US (ac)	34.71	kg
Trip Av. Amb. Temperature	87.09	deg_F
Trip Av. Humidity	24.49	%
Trip Av. GPS Altitude	68.78	m
Fuel Type	Petrol (E10)	

ave THC	-3.87508	ppm
ave NMHC	-3.79757	ppm
ave CH4	-0.07750	ppm
ave CO	542.00753	ppm
ave CO2	9.07579	%
ave NOx	3.19860	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.00809	g
tot NMHC	0.00748	g
tot CH4	0.00018	g
tot CO	31.52973	g
tot CO2	6810.72948	g
tot NO (d)	0.14813	g
tot NO2	0.02496	g
tot NOx	0.17104	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	17.22811	mi/hr
Trip Distance Share Urban	69.42968	% distance
Trip Distance Share Rural	18.71711	% distance
Trip Distance Share Motorway	11.85322	% distance

BS CO2	652.71182	g/hphr
BS CO	3.02168	g/hphr
BS THC	0.00078	g/hphr
BS NMHC	0.00072	g/hphr
BS CH4	0.00002	g/hphr
BS NO (d)	0.01420	g/hphr
BS NO2	0.00239	g/hphr
BS NOx	0.01639	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	425.21271	g/mi
DS CO	1.96849	g/mi
DS THC	0.00050	g/mi
DS NMHC	0.00047	g/mi
DS CH4	0.00001	g/mi
DS NO (d)	0.00925	g/mi
DS NO2	0.00156	g/mi
DS NOx	0.01068	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3128.51411	g/kg
FS CO	14.48321	g/kg
FS THC	0.00371	g/kg
FS NMHC	0.00344	g/kg
FS CH4	0.00008	g/kg
FS NO (d)	0.06805	g/kg
FS NO2	0.01146	g/kg
FS NOx	0.07857	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN	n/a	#/kg

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Trip Summary Drift Corrected

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	3356.00	s
Trip Duration (a)	3356.00	s
Trip Distance	16.02	mi
Trip Distance (a)	16.02	mi
Trip Fuel Cons. (b)	2.18	kg
Trip Fuel Cons. (ab)	2.18	kg
Trip Fuel Cons. EU (ac)	2.27	kg
Trip Fuel Cons. US (ac)	2.25	kg
Trip Fuel Economy (b)	20.83	mpg_US
Trip Fuel Economy (ab)	20.82	mpg_US
Trip Fuel Economy EU (ac)	20.00	mpg_US
Trip Fuel Economy US (ac)	20.10	mpg_US
Trip Fuel Economy GGE (b)	20.83	mpg_US
Trip Fuel Economy GGE (ab)	20.82	mpg_US
Trip Fuel Economy EU GGE (ac)	20.00	mpg_US
Trip Fuel Economy US GGE (ac)	20.10	mpg_US
Trip Av. Eng. Speed	1117.21	rpm
Trip Av. Torque	31.35	lbft
Trip Av. Power	11.22	hp
Trip Work		
Trip Work (a)	10.43	hphr
Trip Exhaust Mass	35.61	kg
Trip Exhaust Mass EU (ac)	34.43	kg
Trip Exhaust Mass US (ac)	34.71	kg
Trip Av. Amb. Temperature	87.09	deg_F
Trip Av. Humidity	24.49	%
Trip Av. GPS Altitude	68.78	m
Fuel Type	Petrol (E10)	

ave THC DC	-3.87684	ppm
ave NMHC DC	-3.79930	ppm
ave CH4 DC	-0.07754	ppm
ave CO DC	542.11305	ppm
ave CO2 DC	9.07822	%
ave NOx DC	3.36184	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.00809	g
tot NMHC DC	0.00748	g
tot CH4 DC	0.00018	g
tot CO DC	31.60570	g
tot CO2 DC	6812.55102	g
tot NO DC (d)	0.14882	g
tot NO2 DC	0.03276	g
tot NOx DC	0.17974	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC		
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	17.22811	mi/hr
Trip Distance Share Urban	69.42968	% distance
Trip Distance Share Rural	18.71711	% distance
Trip Distance Share Motorway	11.85322	% distance

BS CO2 DC	652.88639	g/hphr
BS CO DC	3.02896	g/hphr
BS THC DC	0.00078	g/hphr
BS NMHC DC	0.00072	g/hphr
BS CH4 DC	0.00002	g/hphr
BS NO DC (d)	0.01426	g/hphr
BS NO2 DC	0.00314	g/hphr
BS NOx DC	0.01723	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	425.32644	g/mi
DS CO DC	1.97323	g/mi
DS THC DC	0.00051	g/mi
DS NMHC DC	0.00047	g/mi
DS CH4 DC	0.00001	g/mi
DS NO DC (d)	0.00929	g/mi
DS NO2 DC	0.00205	g/mi
DS NOx DC	0.01122	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC		
FS CO2 DC	3129.35083	g/kg
FS CO DC	14.51810	g/kg
FS THC DC	0.00372	g/kg
FS NMHC DC	0.00344	g/kg
FS CH4 DC	0.00008	g/kg
FS NO DC (d)	0.06836	g/kg
FS NO2 DC	0.01505	g/kg
FS NOx DC	0.08256	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

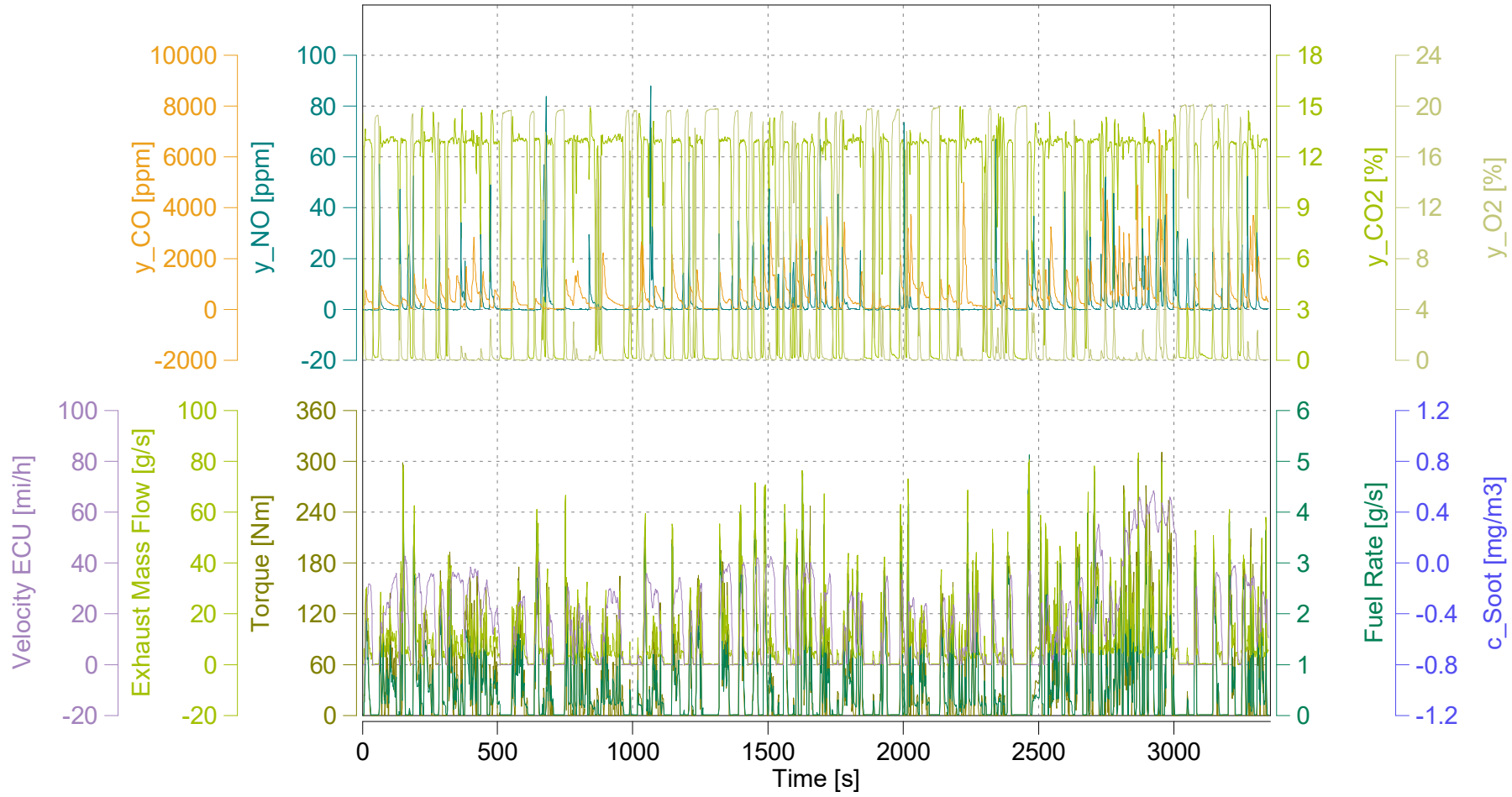
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment Check

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E



Absolute
y_THC
y_NO
y_CO2
y_O2
c_Soot
Fuel Rat
Exhaust
Torque
Velocity

AVL 492
THC
NO/NO
CO/CO
O2
Appl

Alignme
Reset
Re
Appl

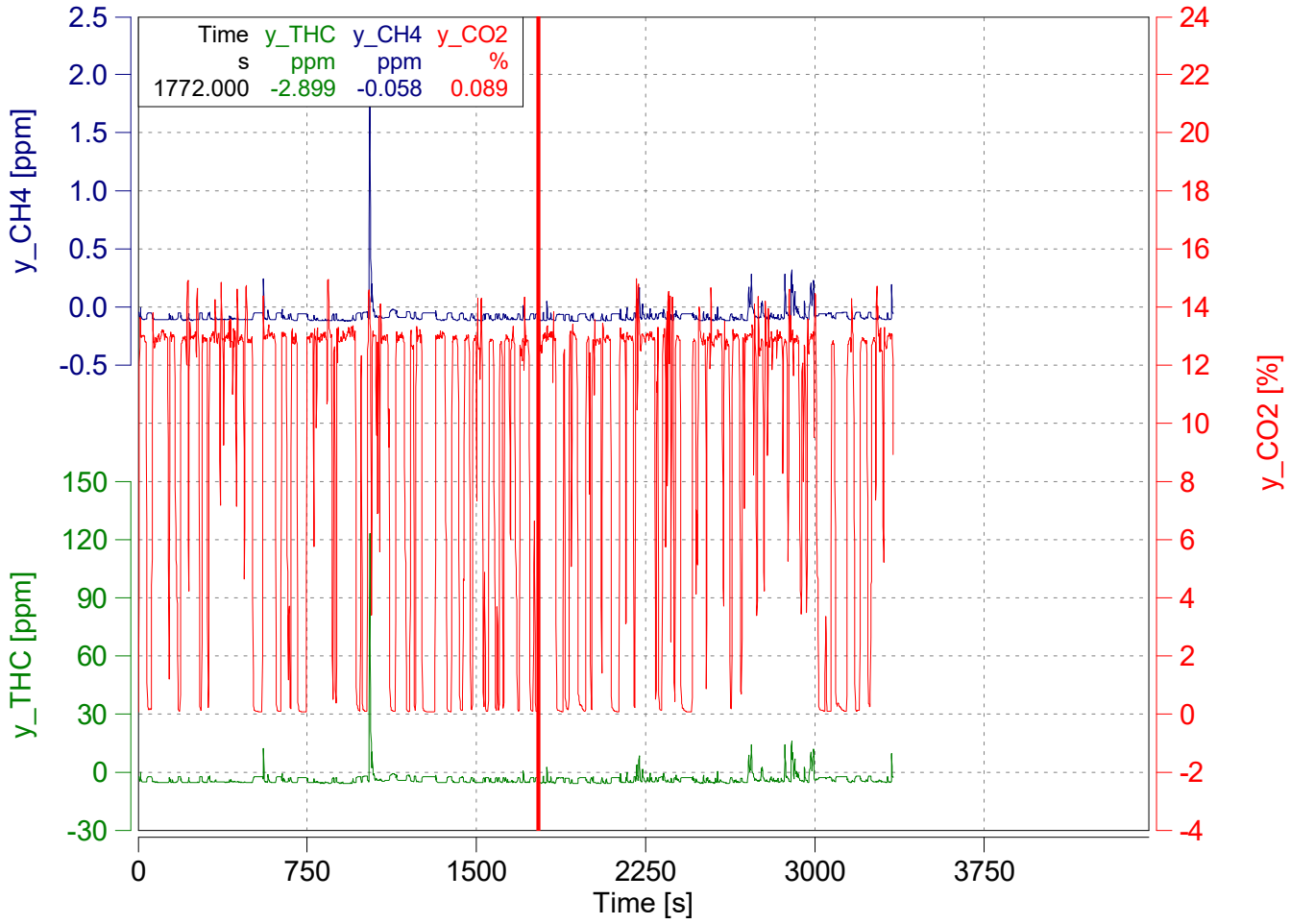
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: Time Alignment of Gas Concentrations

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

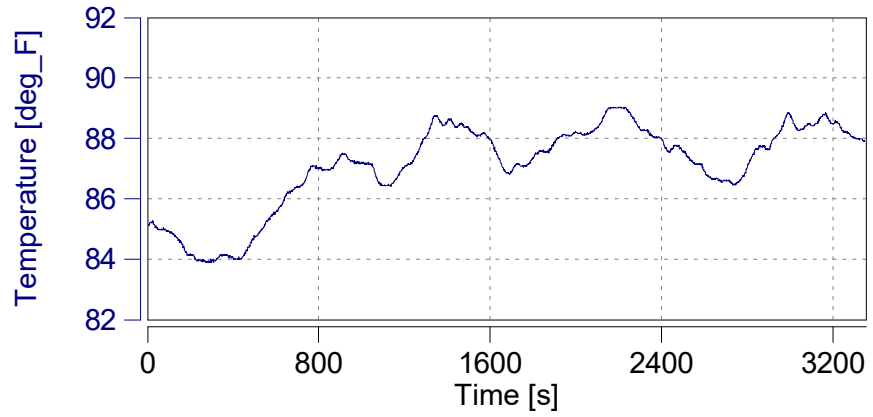
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

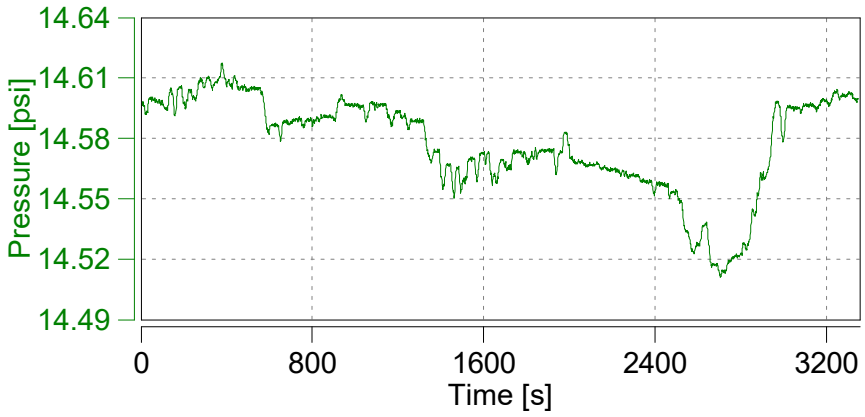
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

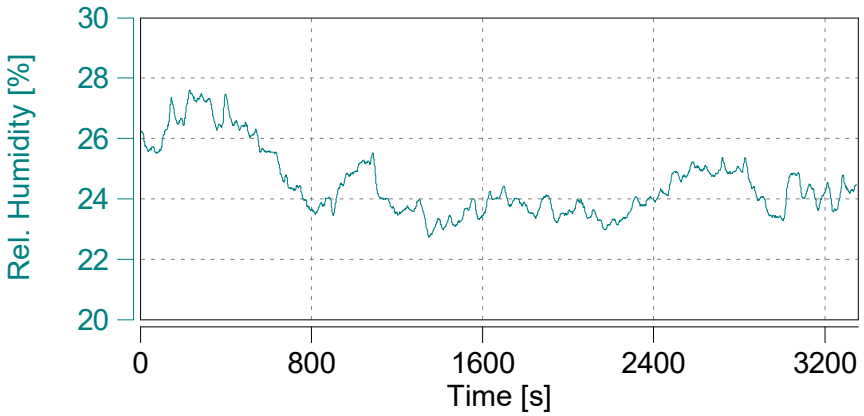
Case: X254-708
Page: Ambient Conditions

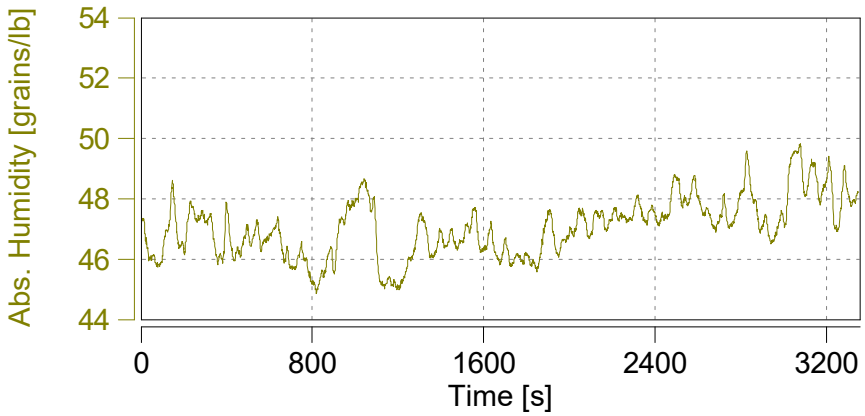
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









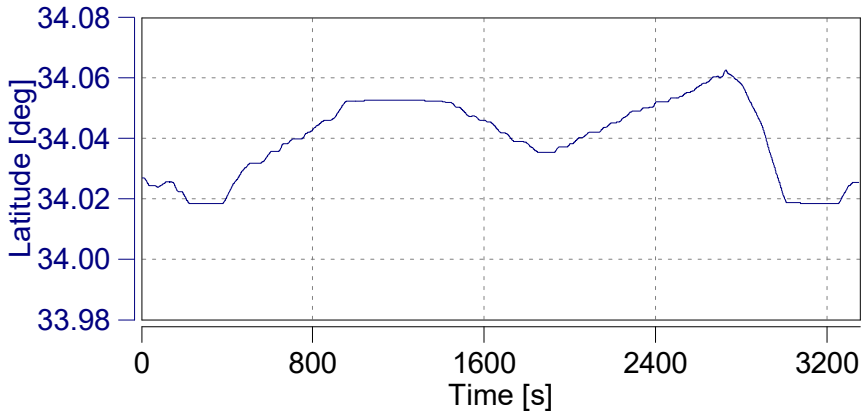
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

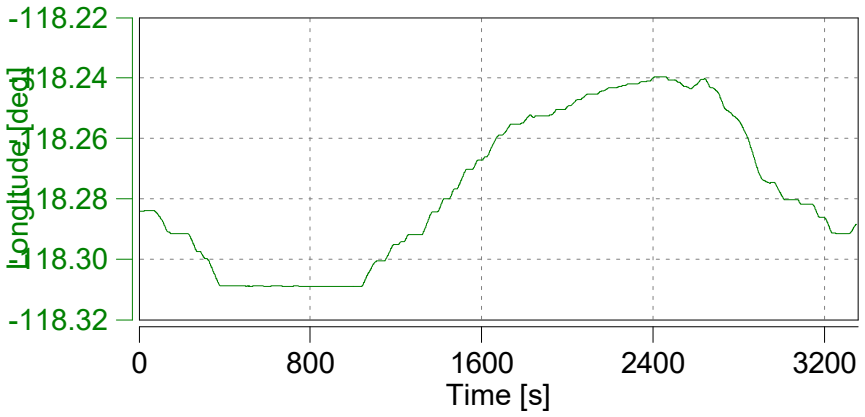
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

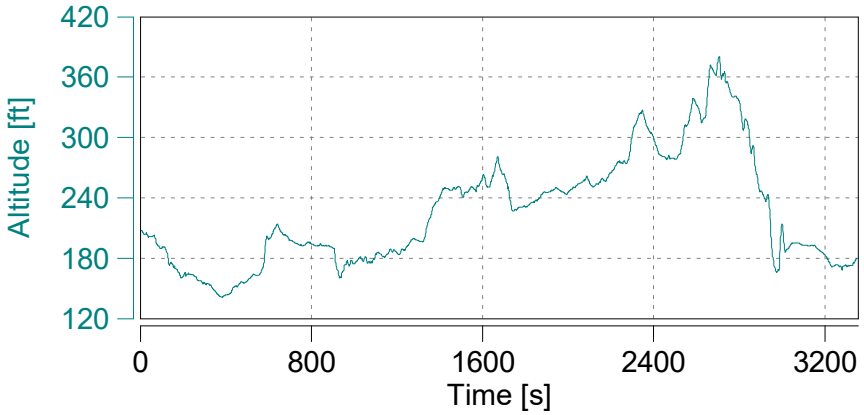
Case: X254-708
Page: GPS

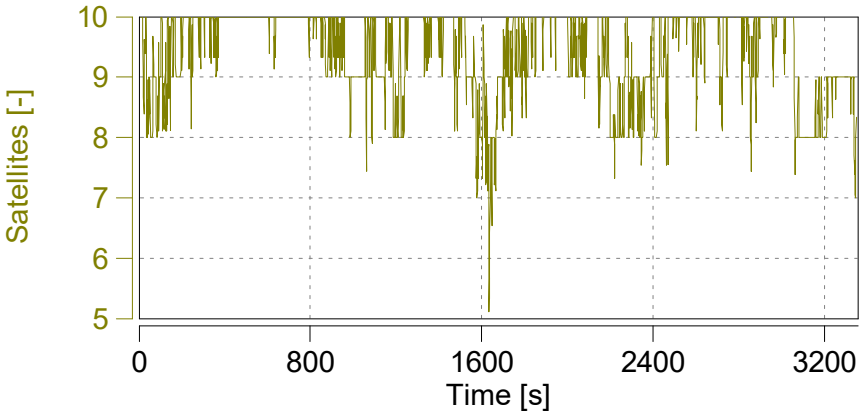
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
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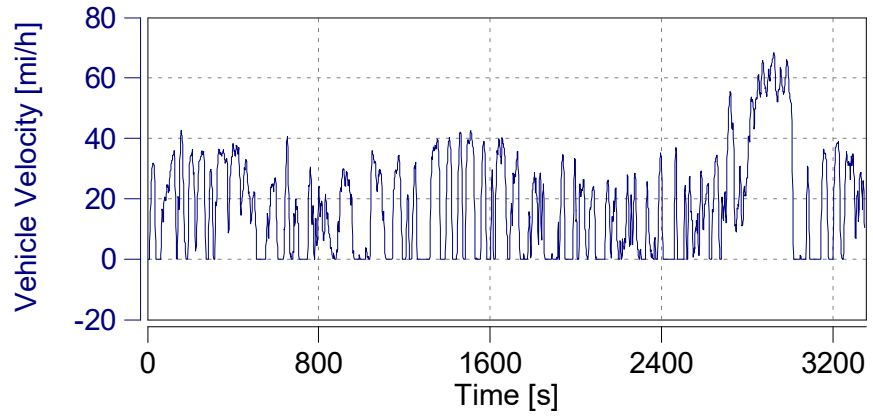
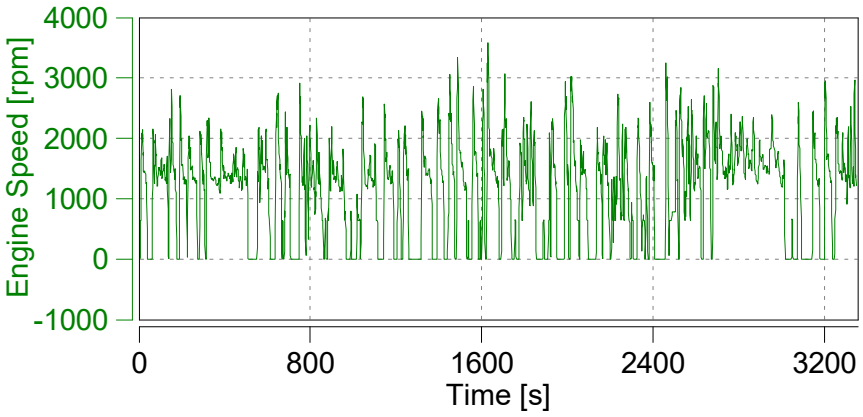
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

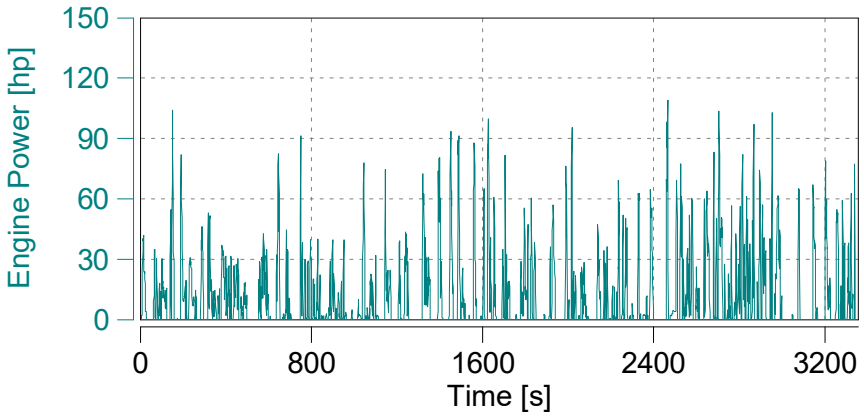
Case: X254-708
Page: Engine (1)

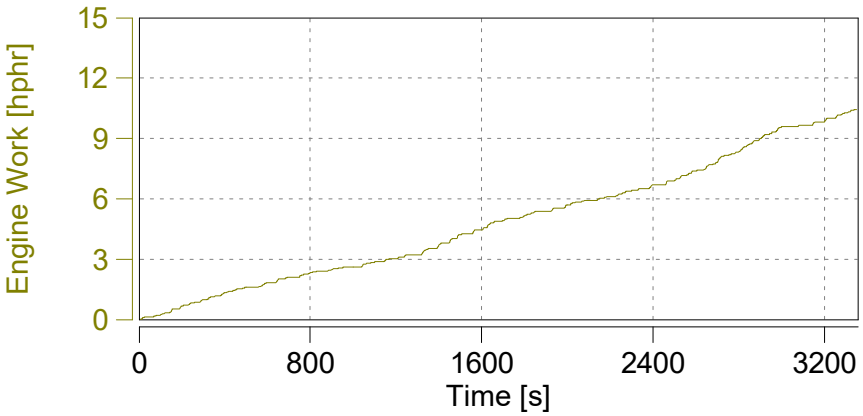
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









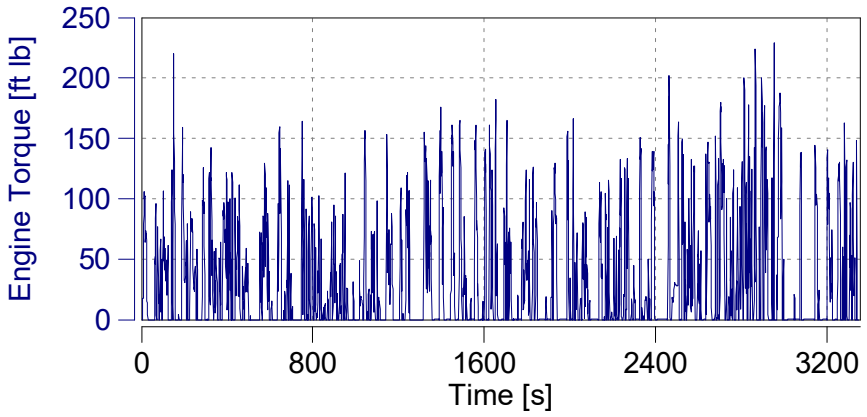
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

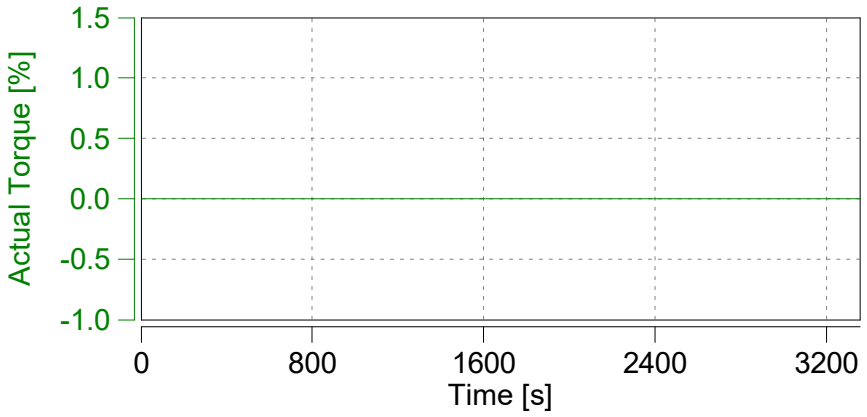
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

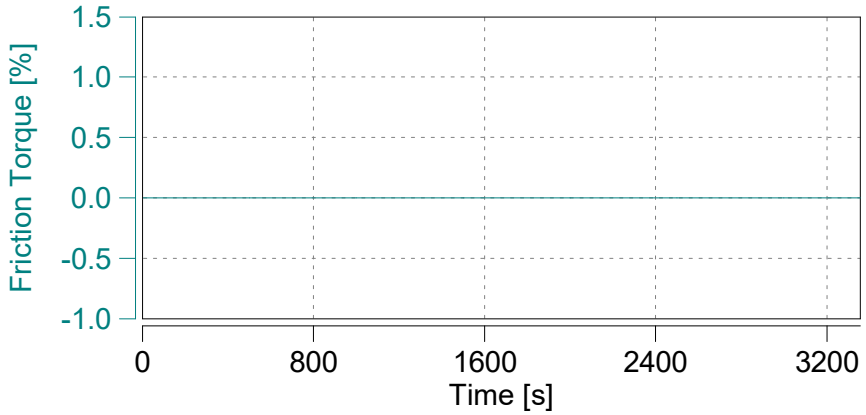
Case: X254-708
Page: Engine (2)

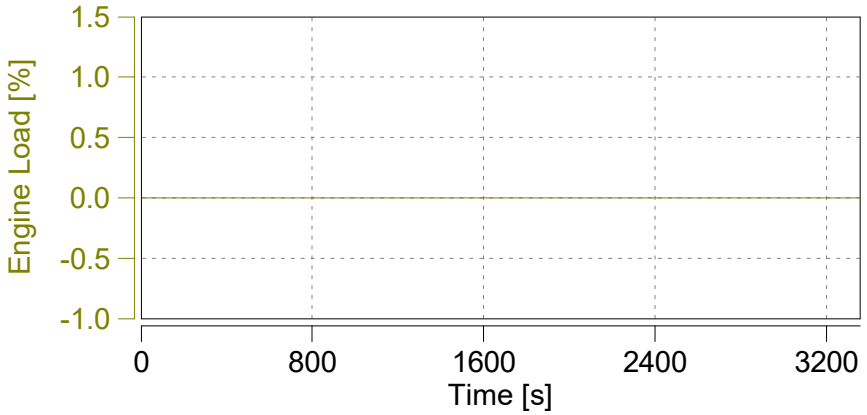
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









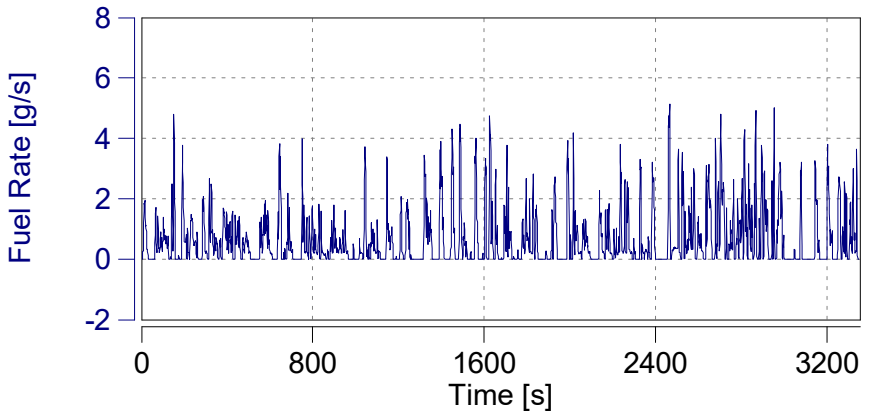
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

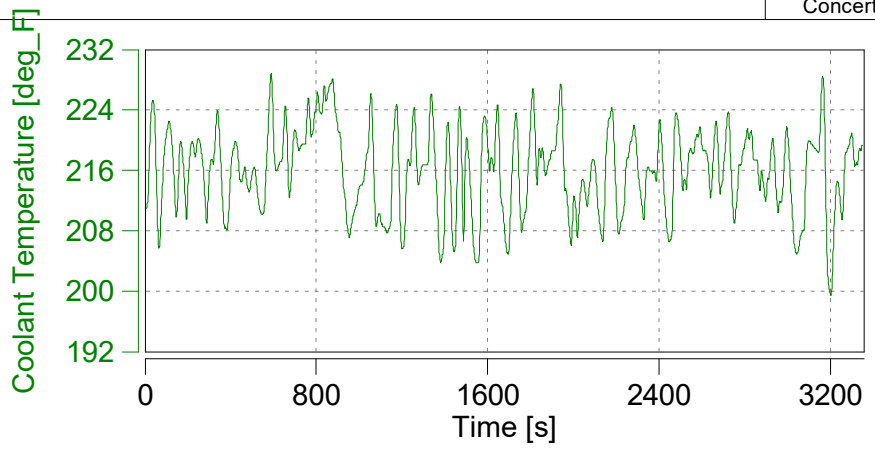
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

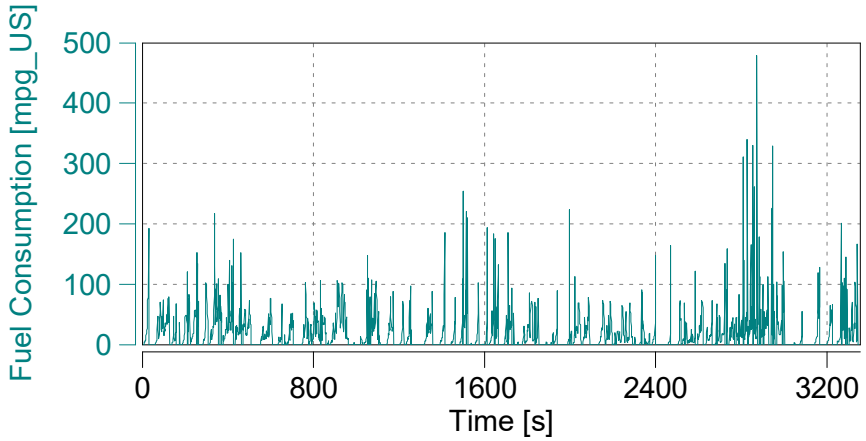
Case: X254-708
Page: Engine (3)

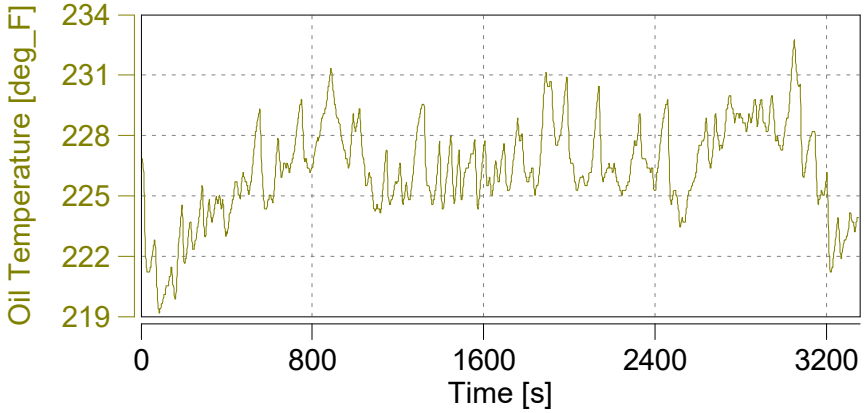
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









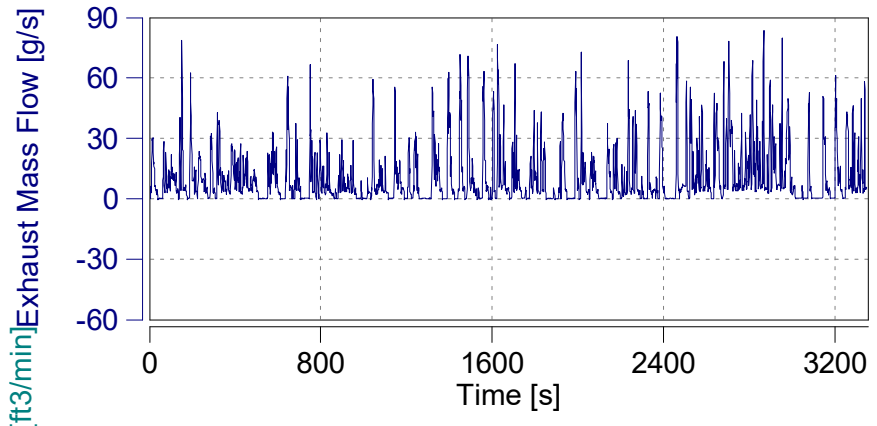
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

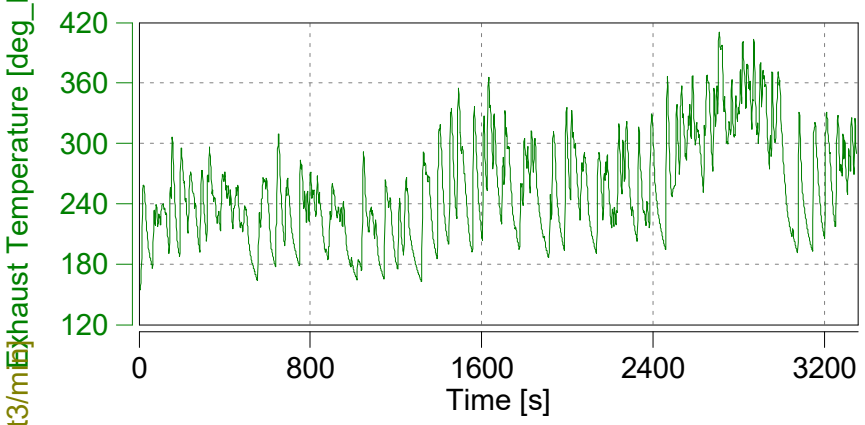
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

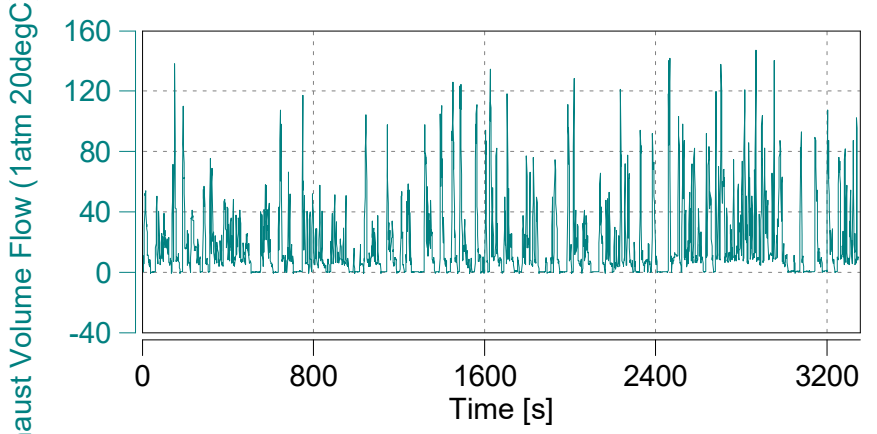
Case: X254-708
Page: Exhaust Flow (1)

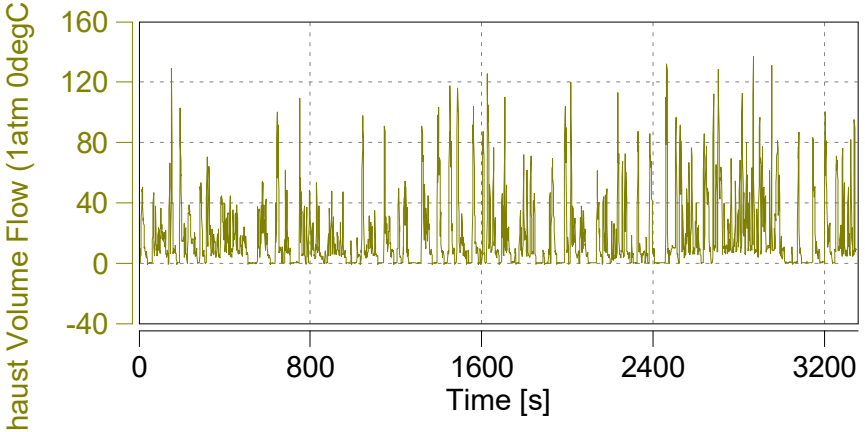
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









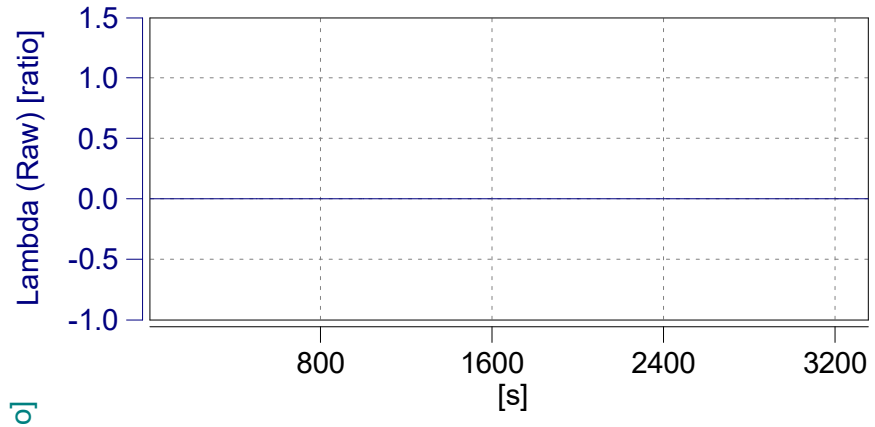
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

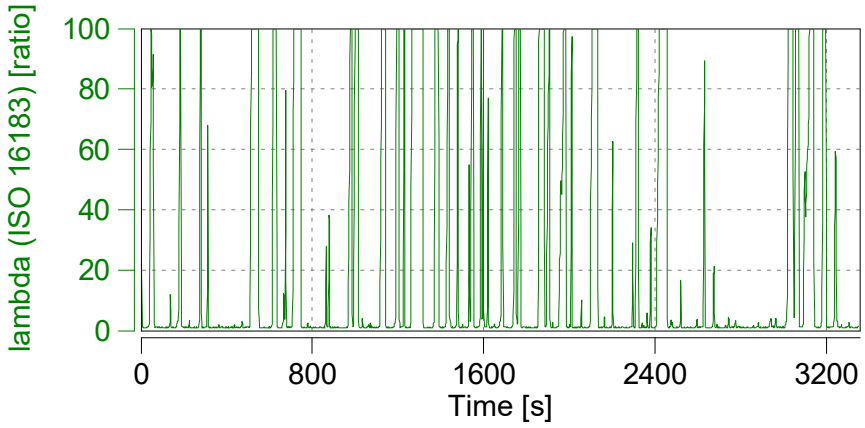
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

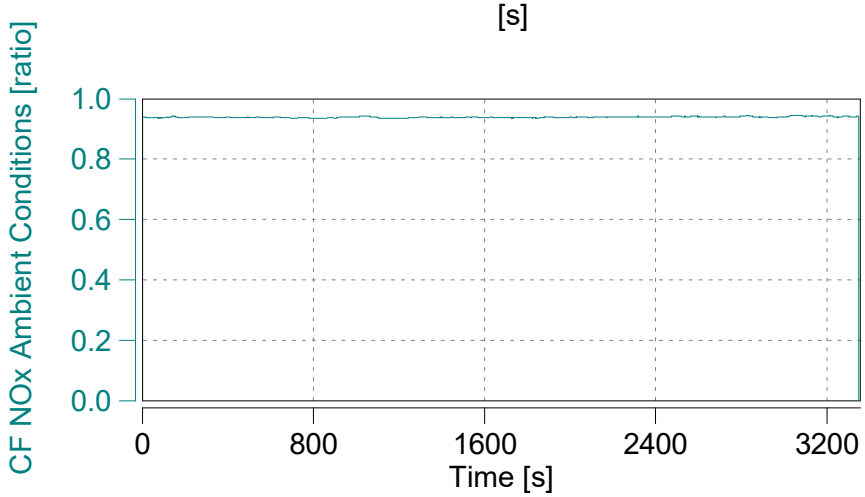
Case: X254-708
Page: Exhaust Flow (2)

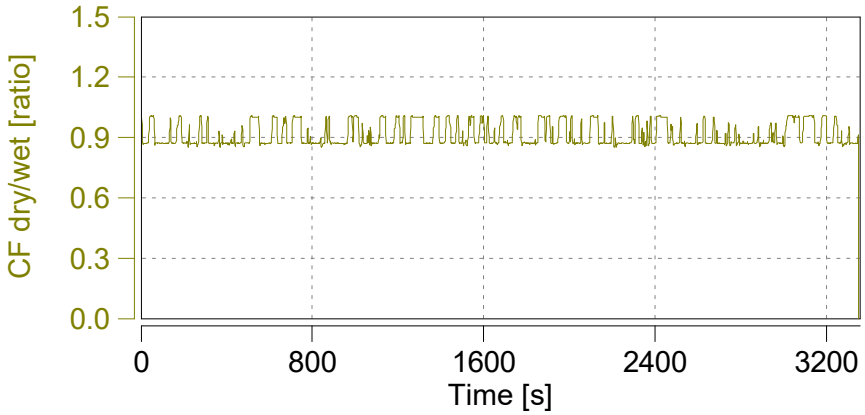
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









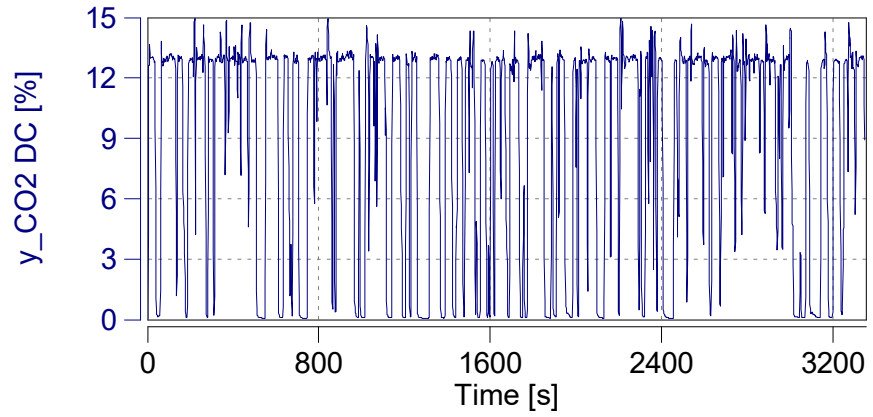
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

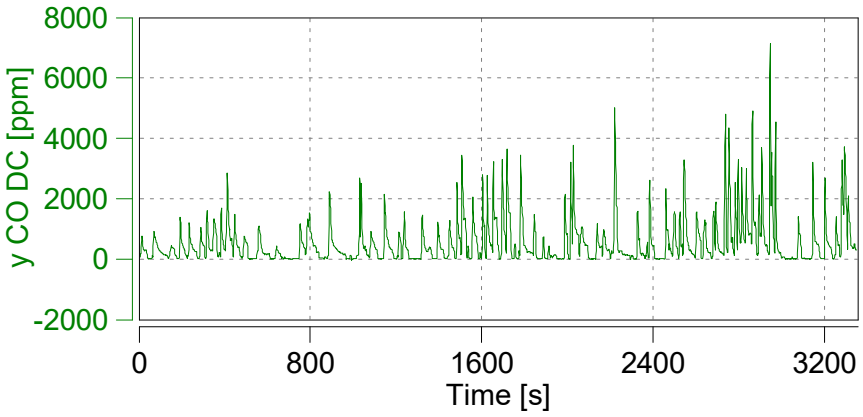
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

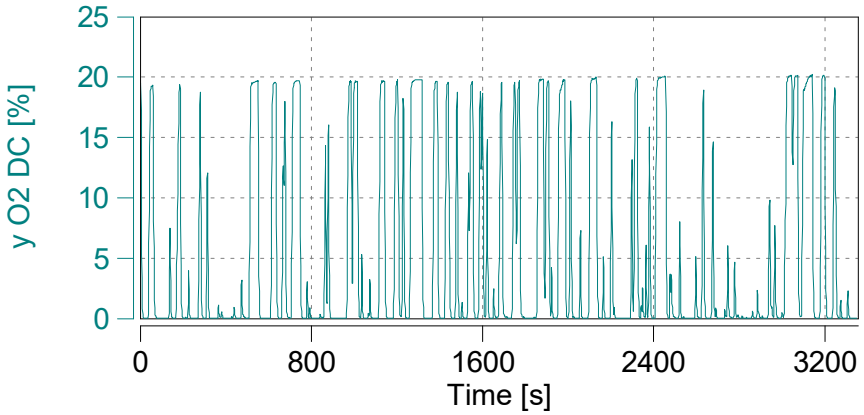
Case: X254-708
Page: Corrected Emissions (1)

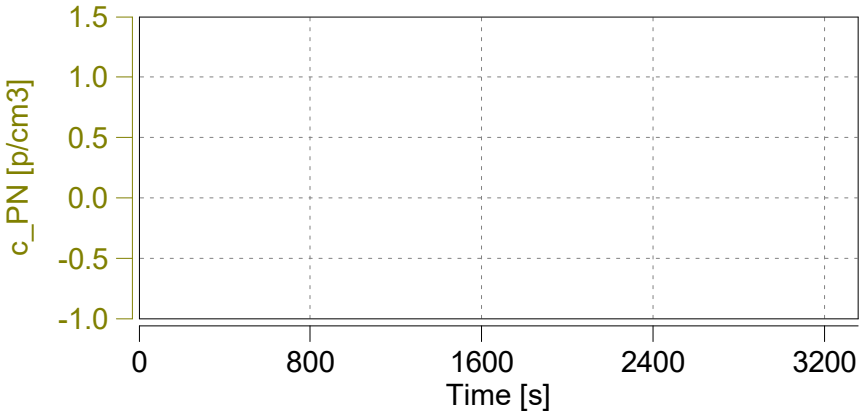
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









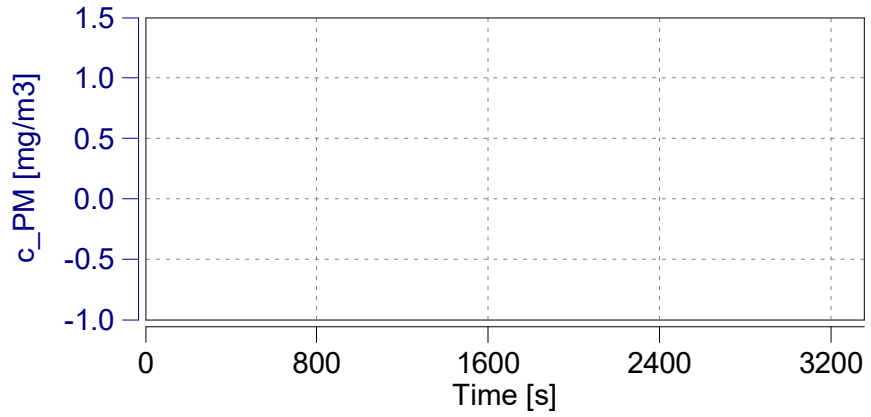
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

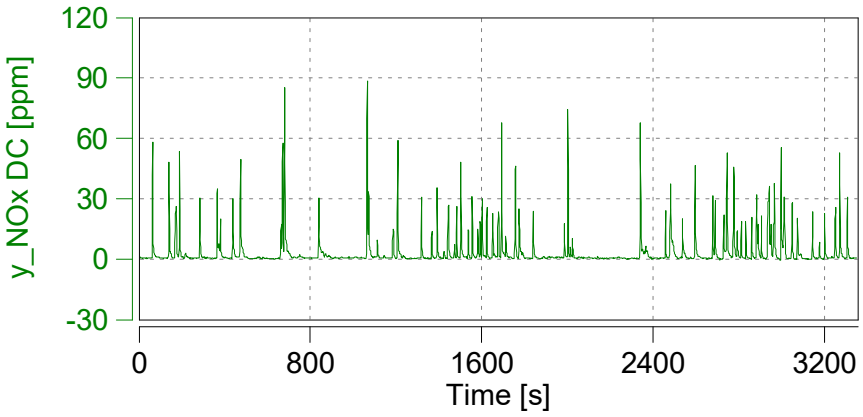
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

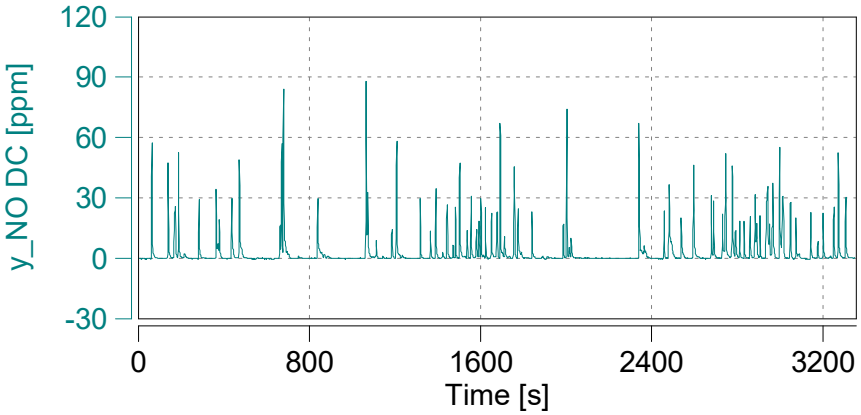
Case: X254-708
Page: Corrected Emissions (2)

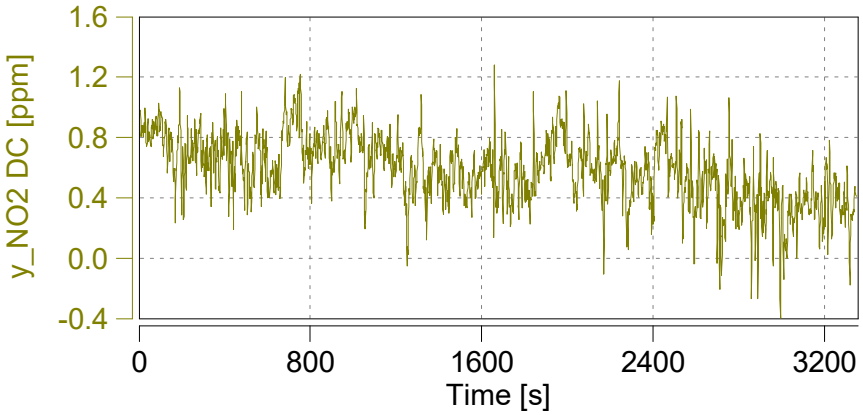
'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

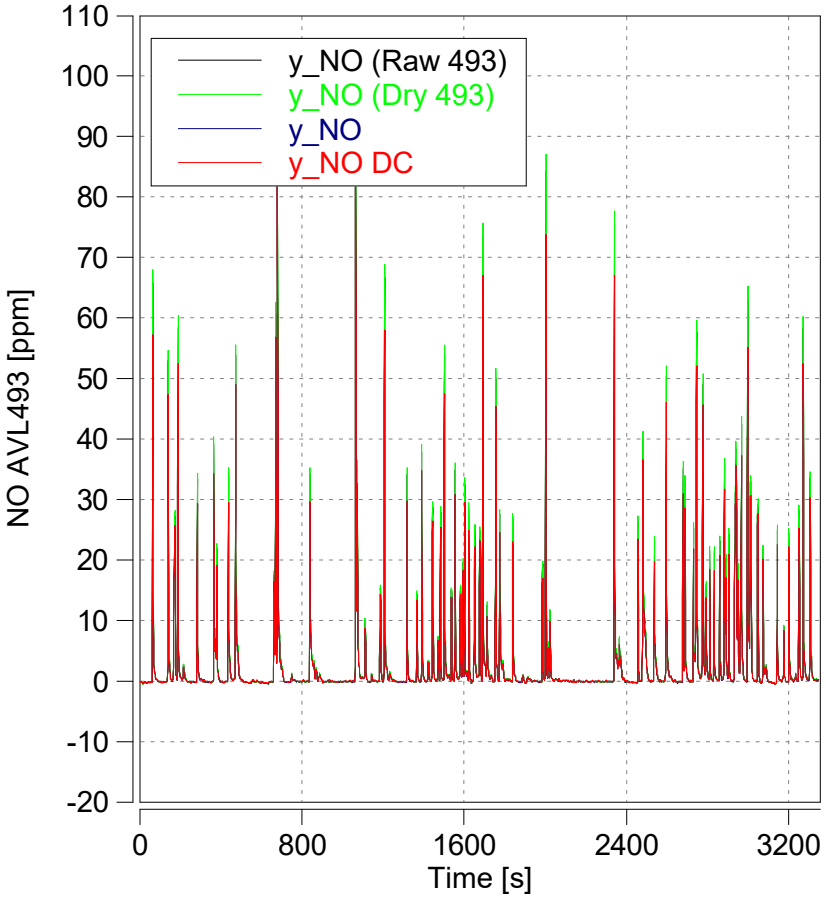
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

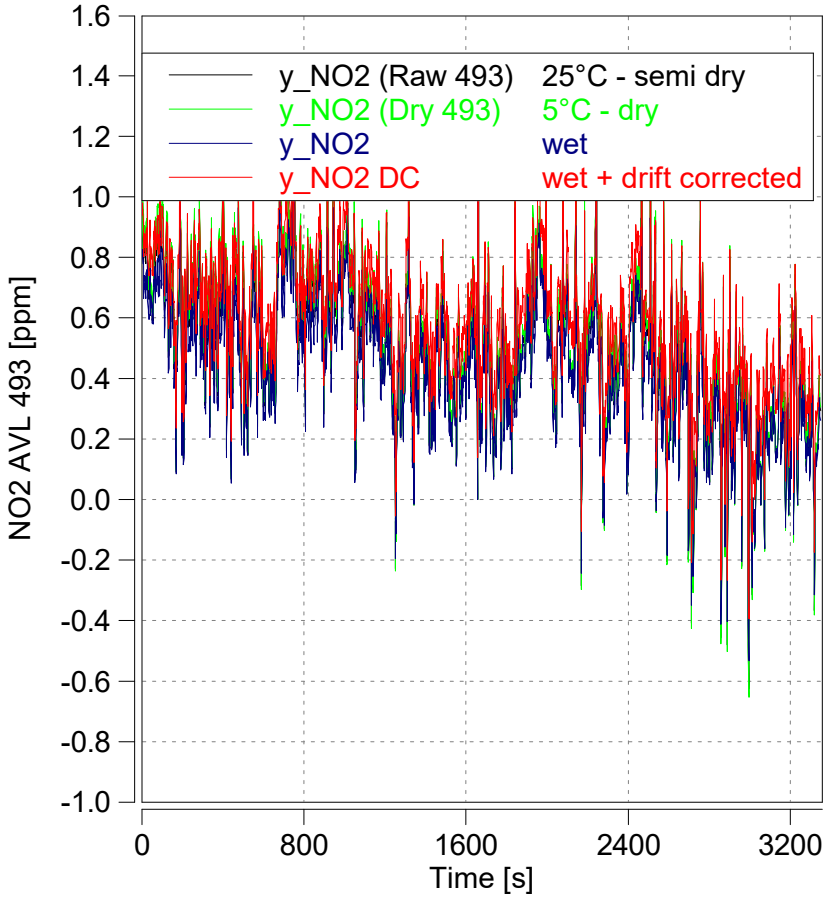
Case: X254-708
Page: Corrected Emissions (3)

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL

Concerto M.O.V.E, 2019





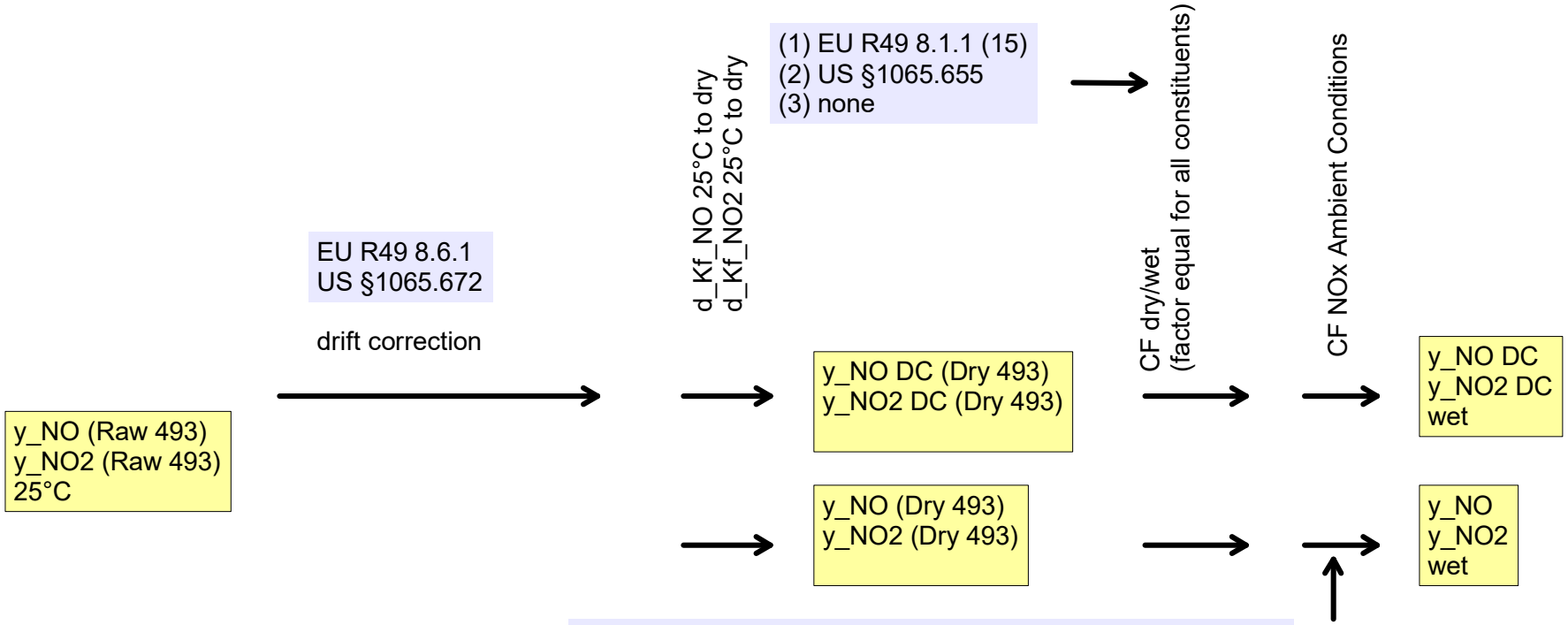
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

Concerto M.O.V.E, 2019

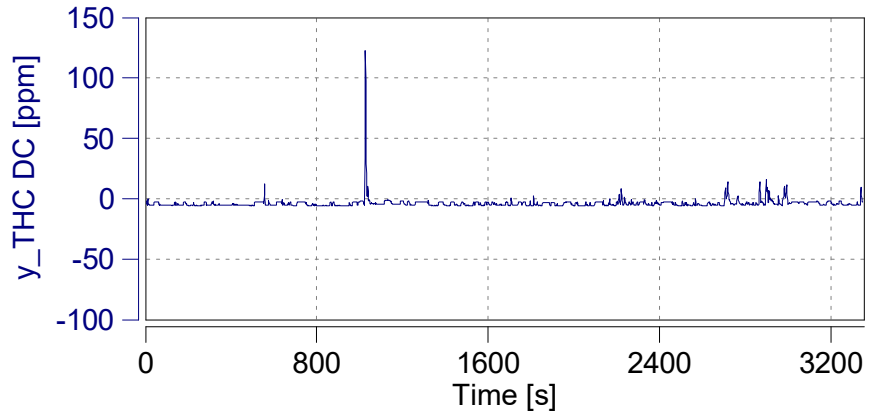
NOx - AVL 493

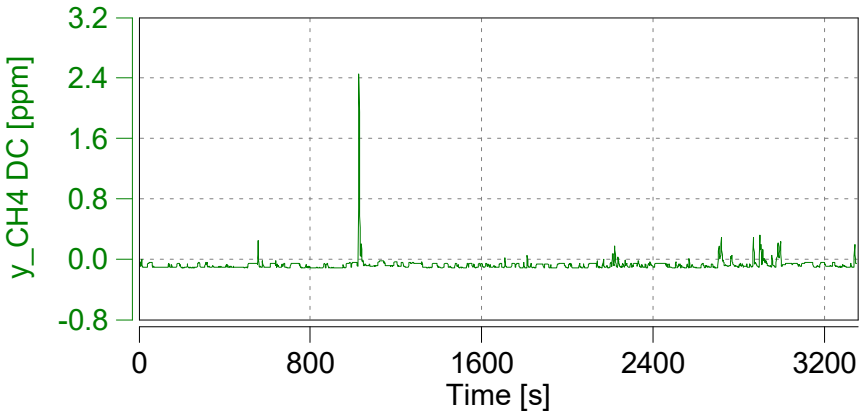


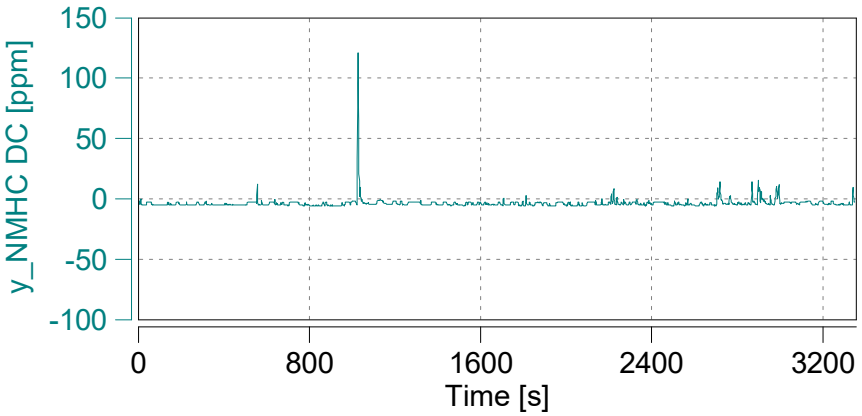
Case: X254-708
Page: Corrected Emissions (5)

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019







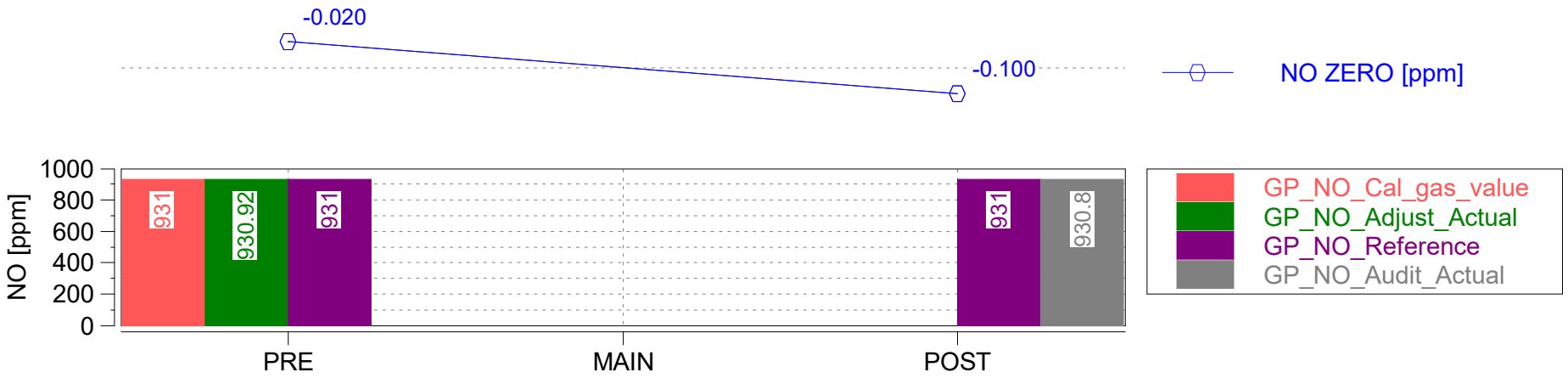
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

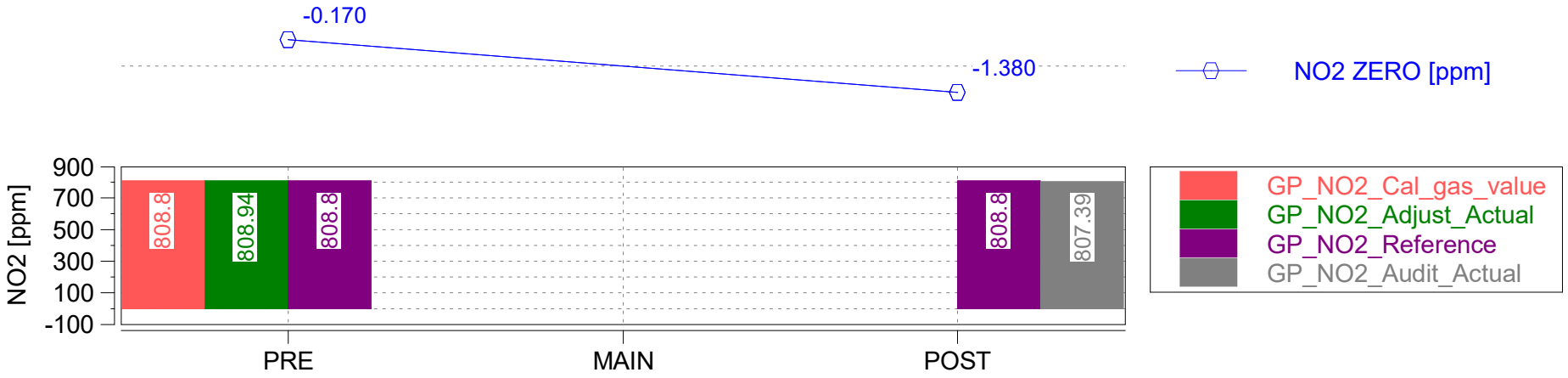
Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: NO/NO2/NOx Zero - Span

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019





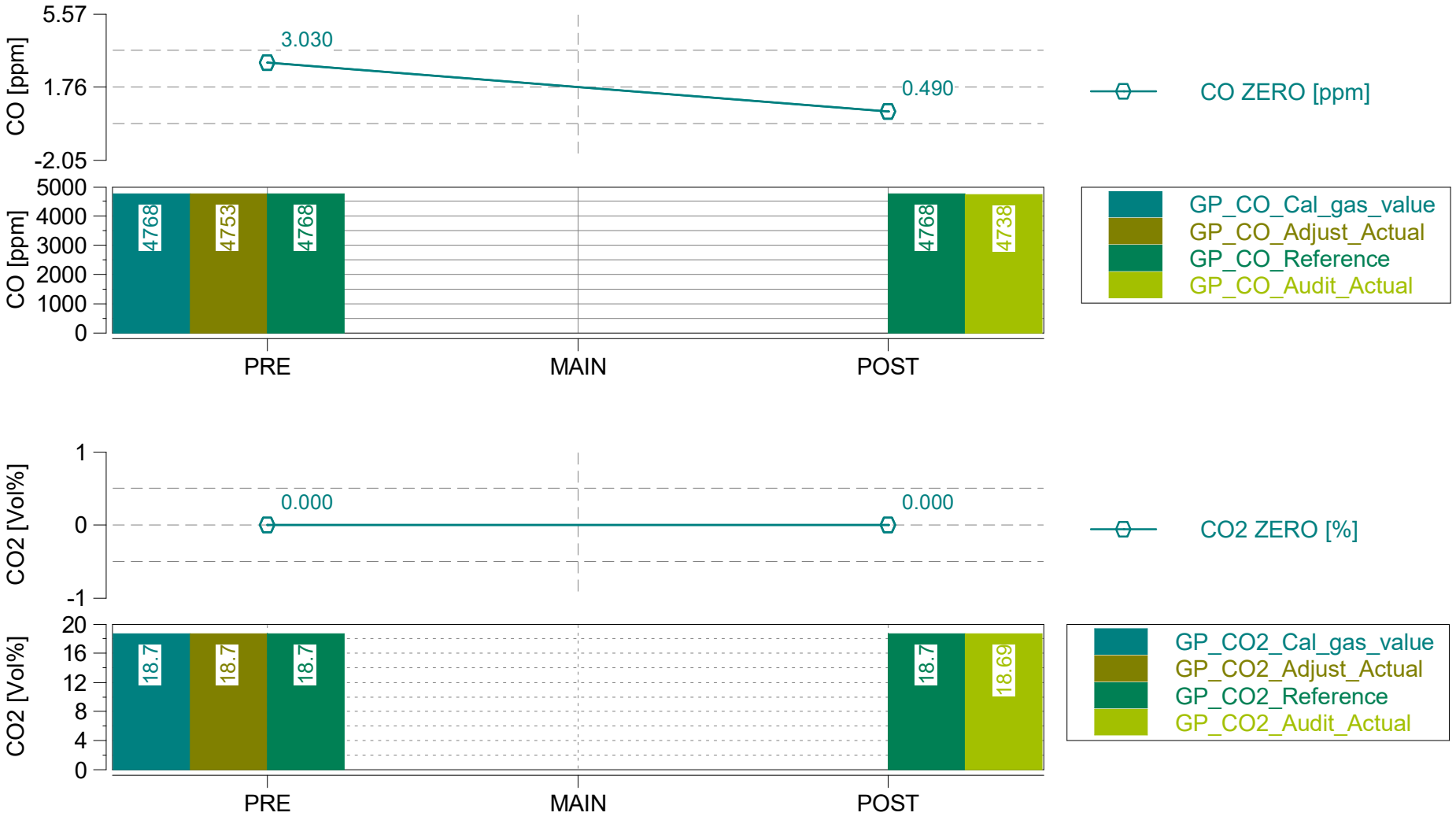
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: CO/CO2 Zero - Span

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019



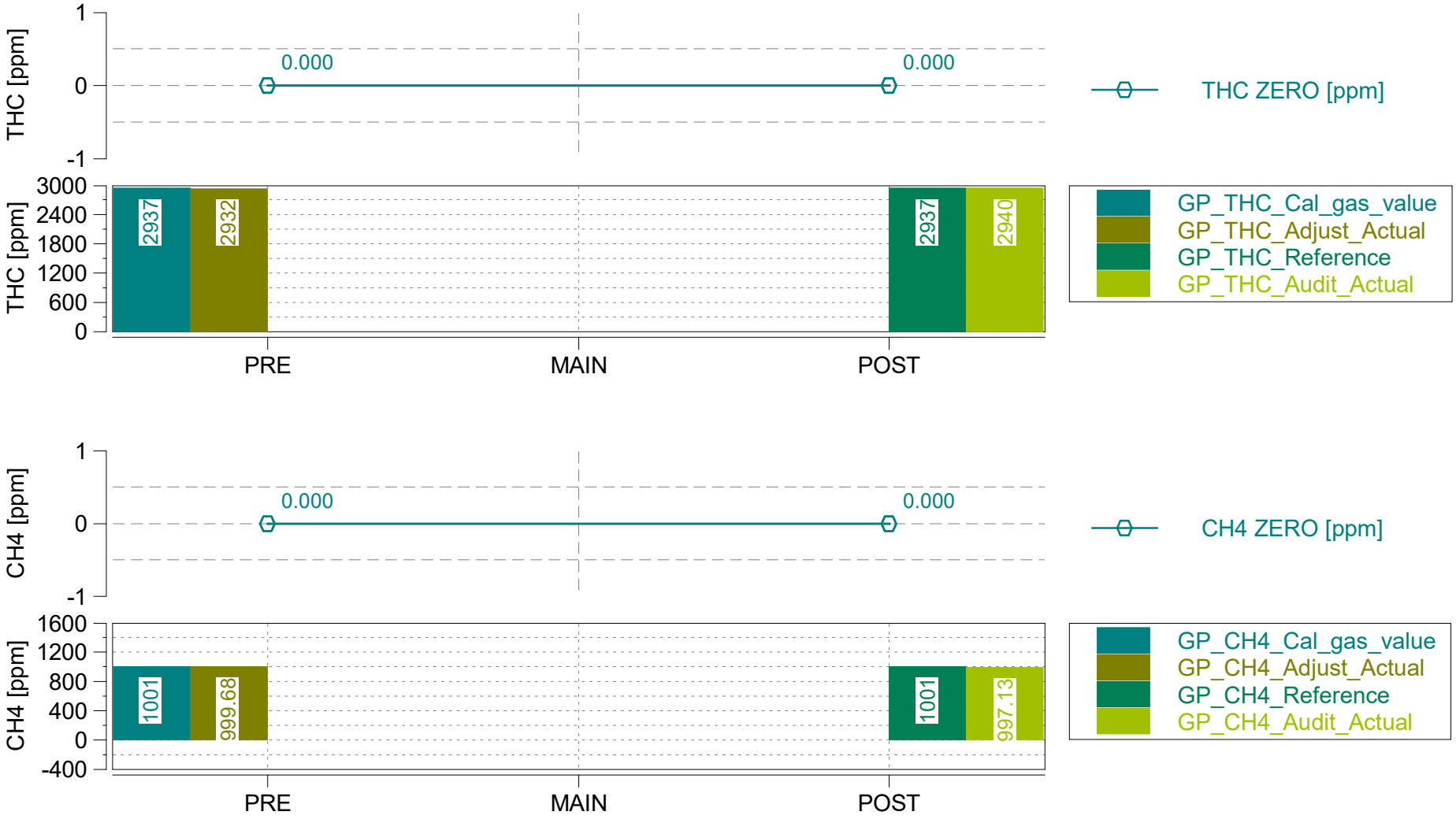
Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X254-708
Page: THC/CH4 Zero - Span

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

§	criterium	condition	value	unit	pass/fail
GAS Leak Check	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	**0.11**	**%**	pass
PN Leak Check	n/a	n/a	**n/a**	**n/a**	n/a
PM Leak Check	n/a	n/a	**n/a**	**n/a**	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0698
Firmware Version	V1.18
Main Test Date	2022-10-20
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00915
Serial Number Tube	01115
Firmware Version	V1.18

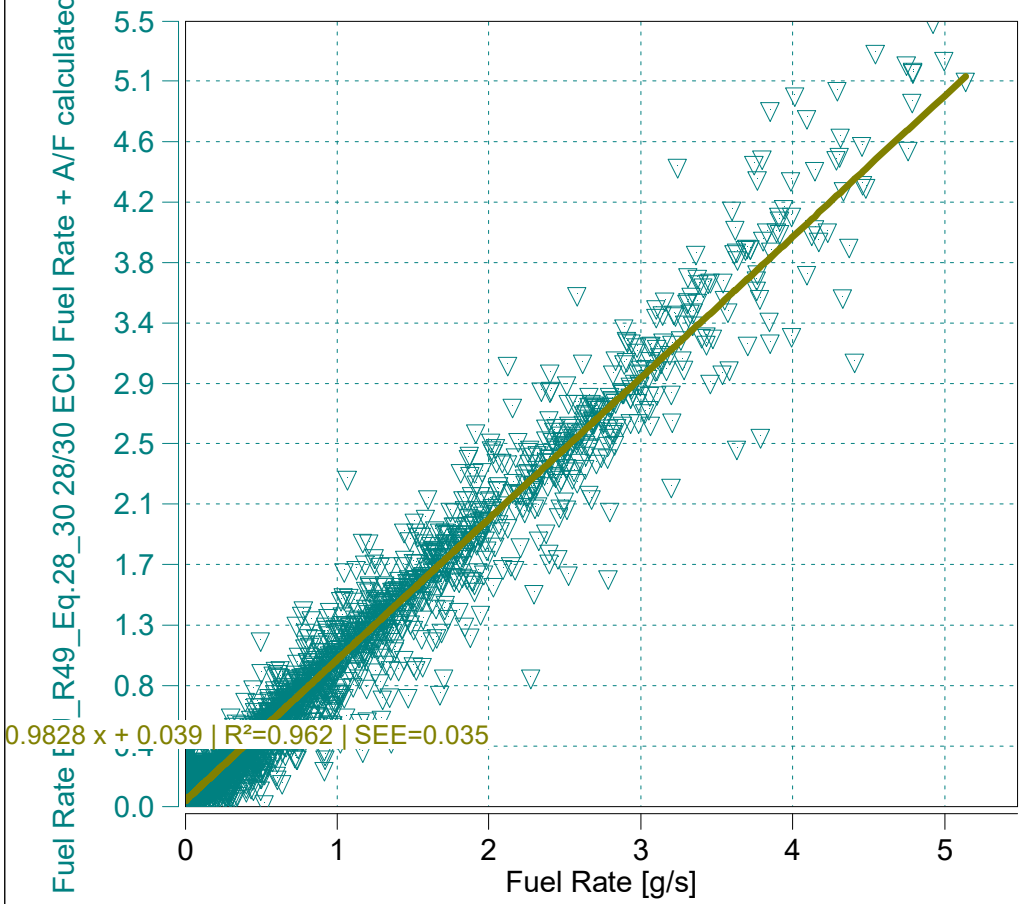
System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151

Case: X254-708
Page: Fuel Rate ECU vs. Calculated

'X254-708 LA City'
Start Date: 10/20/2022
Start Time: 09:08:14.0

AVL
Concerto M.O.V.E, 2019



EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated

y = 0.9828 x + 0.039 | R²=0.962 | SEE=0.035
m = 0.98 (0.9 - 1.1 recommended)
R² = 0.96 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 | 100

Concerto Version: 504 Build 119, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.1_B340
Legislation:

Vehicle: X254 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90