Mercedes-Benz MY2024 CLA250 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 MY2024 CLA250 4MATIC from Test Group RMBXJ02.0HY2, which is the highest volume Test Group applicable for MY2024 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

MY2024 vehicle with the specifications listed in Table 1 was tested in June 2023. 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
CLA250 4M	ULEV50	AWD	221	258	8 Automatic	TWC	Gasoline	509

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**
CLA250 4M	233.60	0.24803	0.00998	0.00539	0.00951	190.34	0.27381	0.00000	0.00565	0.00000

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**
CLA250 4M	428.88	0.47199	0.00734	0.00705	0.00699	160.35	0.14230	0.00138	0.00665	0.00131

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**
CLA250 4M	236.44	0.30878	0.00993	0.00657	0.01011	326.42	0.28643	0.00002	0.01356	0.00002

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)
0:31:59	27.85	15.82	52.24	10.11	1.82	43.83	44.24	419.32	71.37

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)
0:31:03	28.51	14.95	55.09	8.53	1.45	46.97	43.05	205.01	77.4

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)
0:32:55	17.19	14.72	31.33	17.17	1.32	43.19	38.33	998.41	69.25

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)
0:38:11	17.99	14.62	28.27	19.77	0.65	42.21	37.36	98.18	71.14

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)
0:31:28	24.22	15.12	46.18	6.46	1.06	50.95	41.53	226.05	73.17

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)
0:56:18	16.01	12.29	17.06	29.84	0.24	36.59	33.33	219.46	66.74

‡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	126	46	70	30
A1	28	32 min	283	52	83	17
A2	17	33 min	964	31	00	100
B1	18	38 min	996	28	16	84
B2	29	31 min	284	55	93	07
LA City	16	56 min	70	17	13	87

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

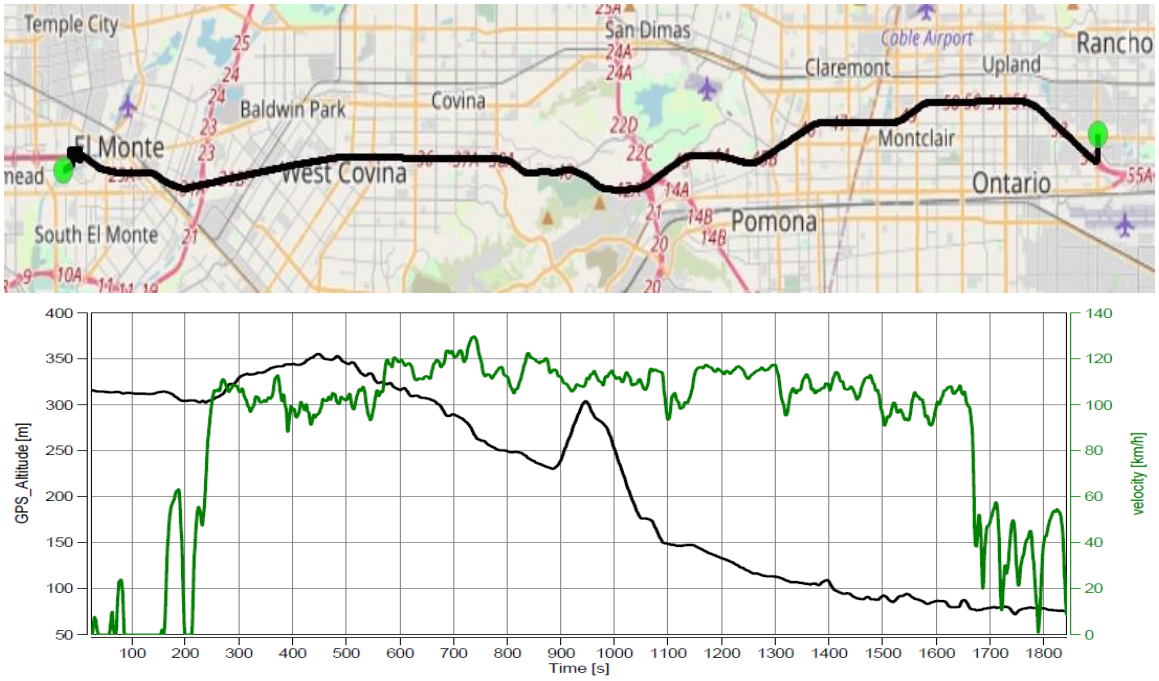


Figure 2. Map of Route B2 – Highway West. Including speed and elevation

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

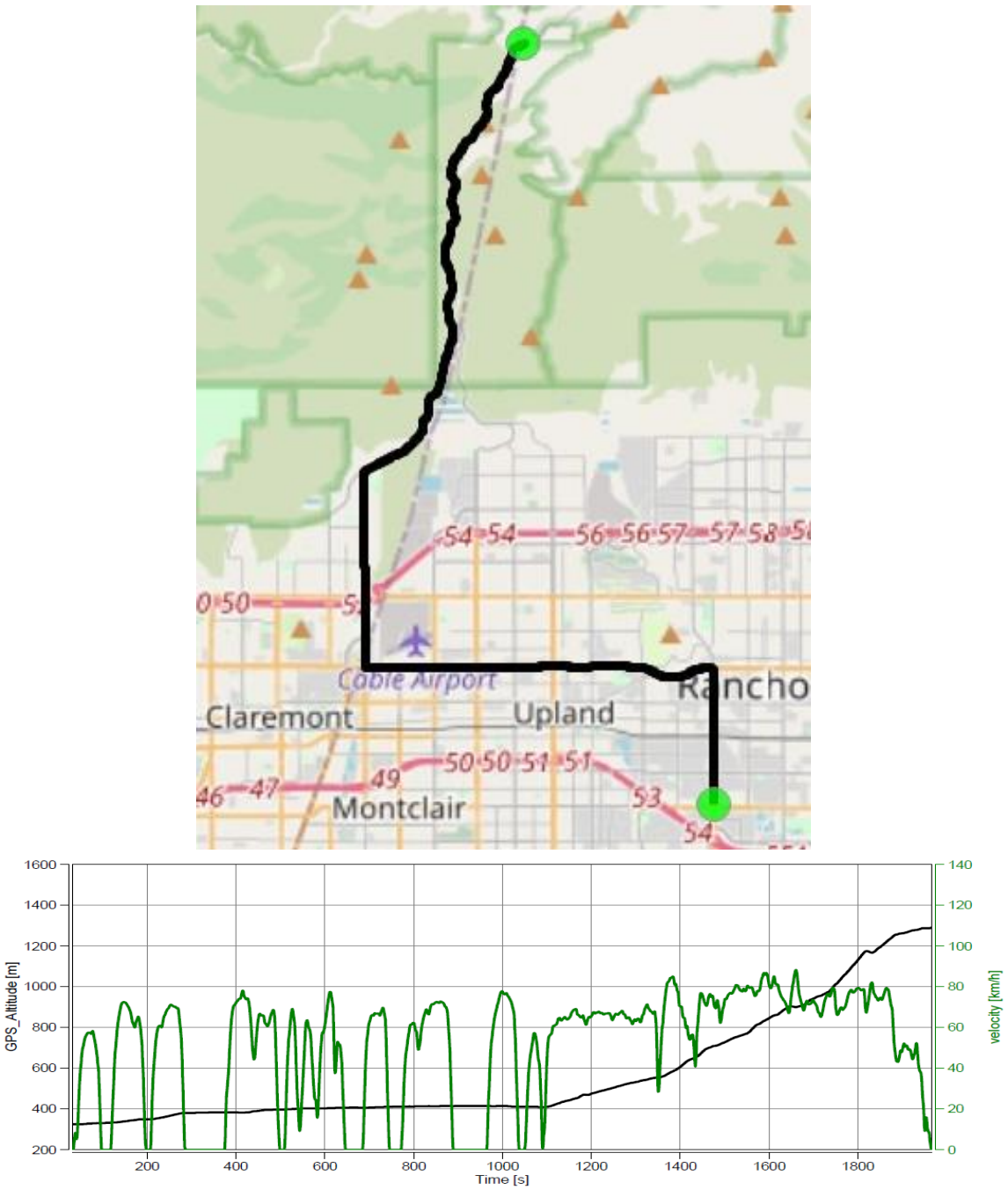


Figure 3. Map of Route A2 – Mountain Uphill. Including speed and elevation

B1 – Mountain Downhill.

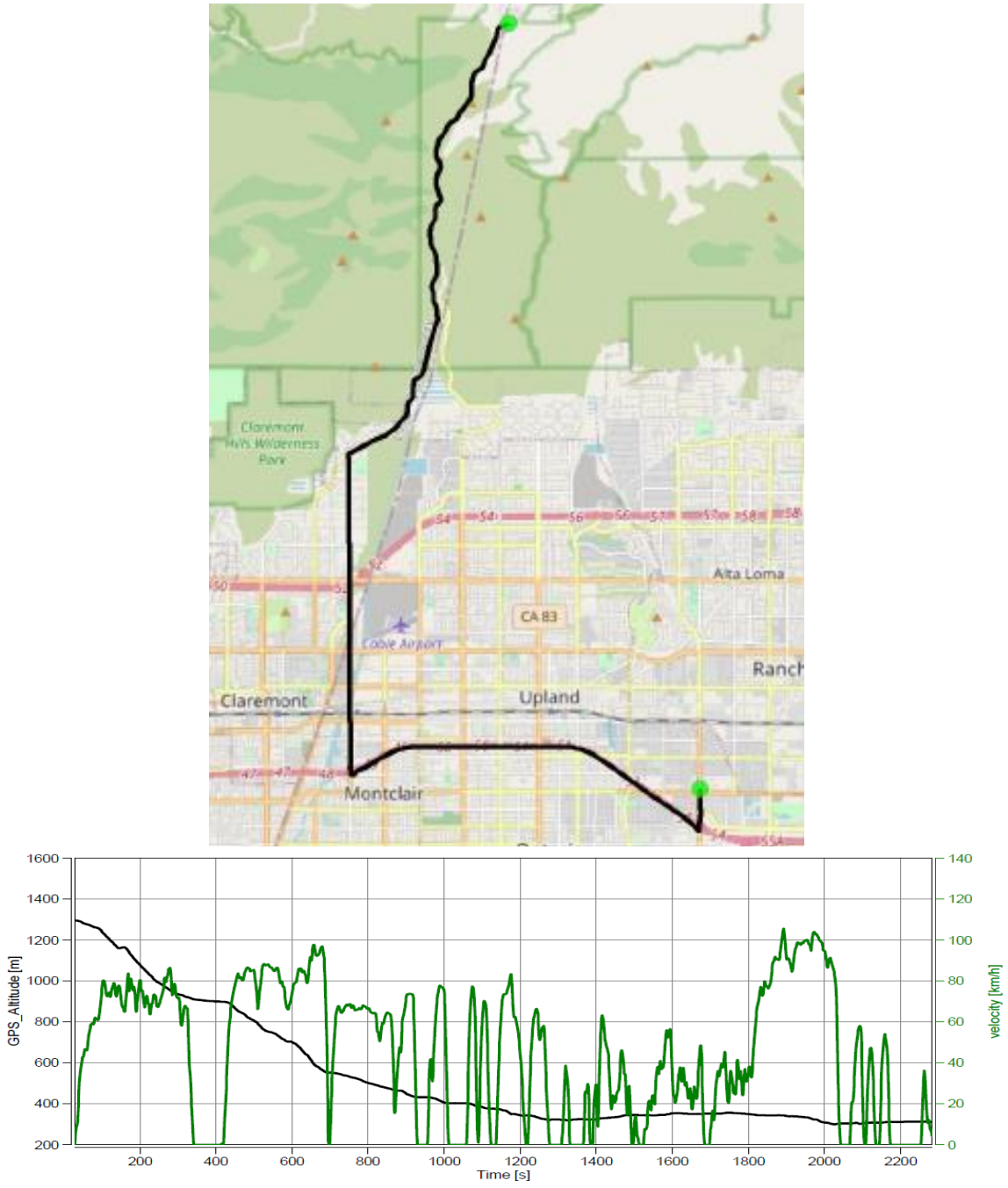


Figure 4. Map of Route B1 – Mountain Downhill. Including speed and elevation

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

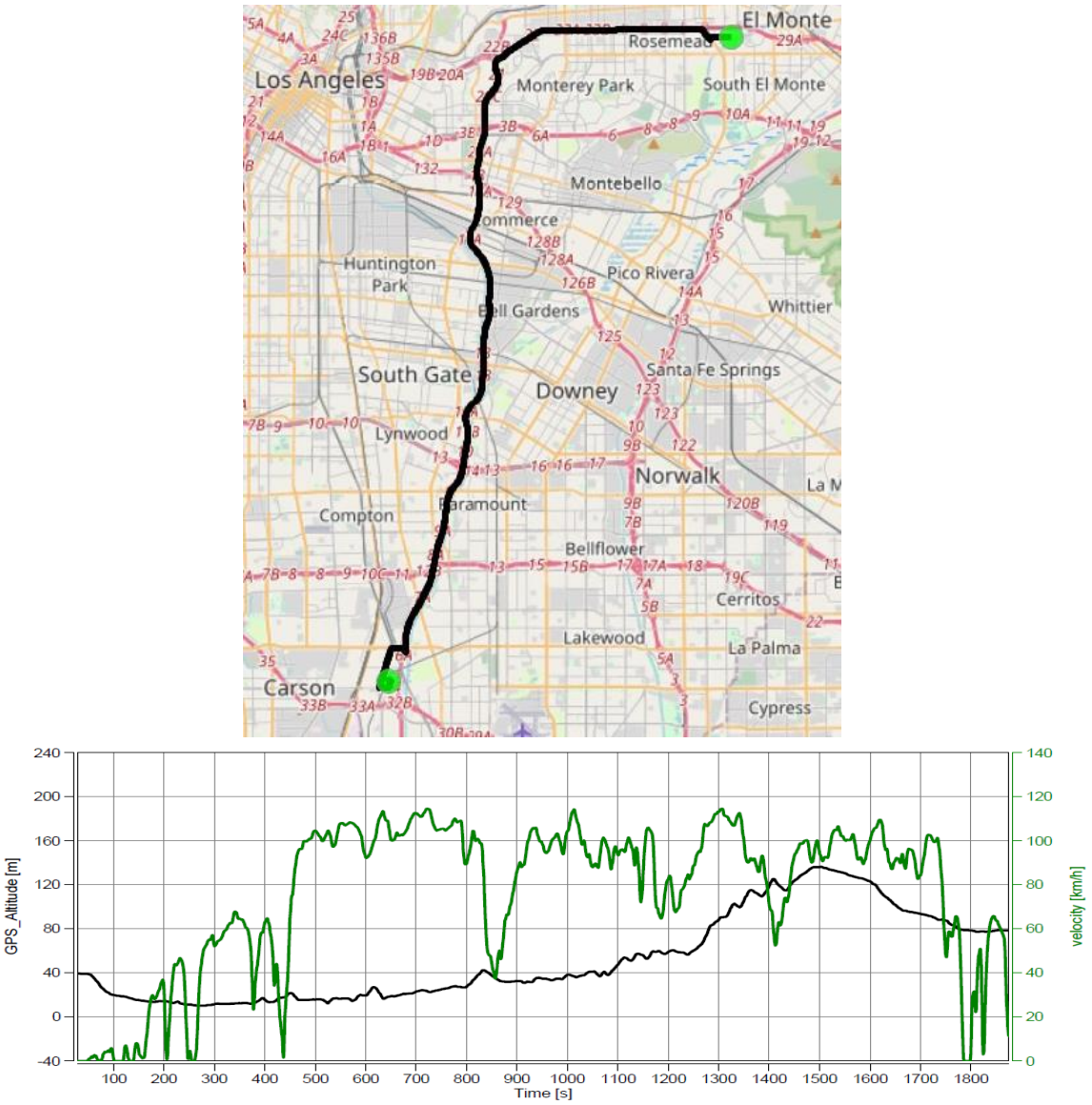


Figure 5. Map of Route A0 – Long Beach to CARB, El Monte. Including speed and elevation

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

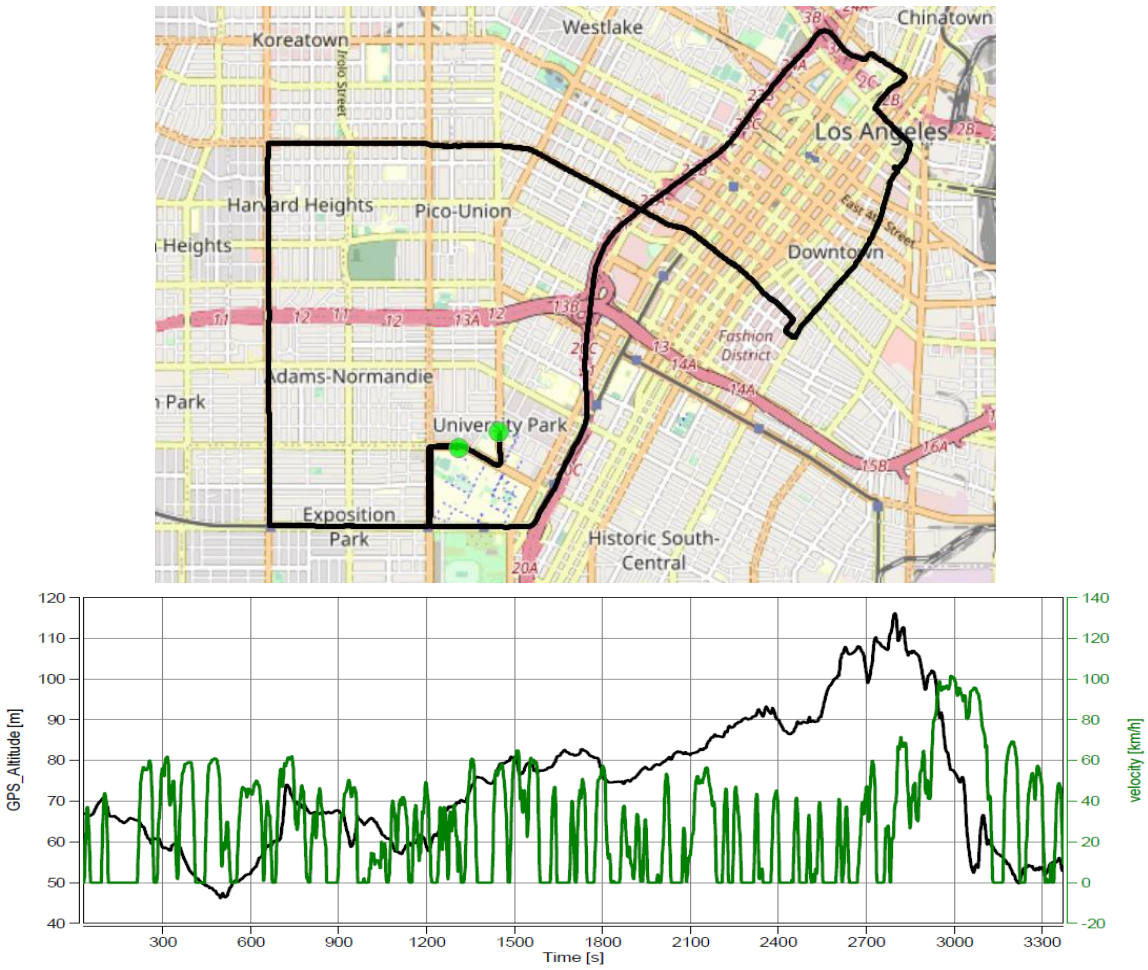


Figure 6. Map of LA City Route. Including speed and elevation

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 MY2024 CLA250 4M.pdf

The file contains log sheet information on PEMS testing conducted with the MY2024 Mercedes-Benz CLA250 4MATIC test vehicle C118-1270. 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: C118-1270
Page: Trip Summary

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1919.00	s
Trip Duration (a)	1919.00	s
Trip Distance	27.85	mi
Trip Distance (a)	27.85	mi
Trip Fuel Cons. (b)	2.11	kg
Trip Fuel Cons. (ab)	2.11	kg
Trip Fuel Cons. EU (ac)	2.16	kg
Trip Fuel Cons. US (ac)	2.14	kg
Trip Fuel Economy (b)	37.30	mpg_US
Trip Fuel Economy (ab)	37.30	mpg_US
Trip Fuel Economy EU (ac)	36.52	mpg_US
Trip Fuel Economy US (ac)	36.80	mpg_US
Trip Fuel Economy GGE (b)	37.30	mpg_US
Trip Fuel Economy GGE (ab)	37.30	mpg_US
Trip Fuel Economy EU GGE (ac)	36.52	mpg_US
Trip Fuel Economy US GGE (ac)	36.80	mpg_US
Trip Av. Eng. Speed	1426.16	rpm
Trip Av. Torque	63.58	lbft
Trip Av. Power	20.15	hp
Trip Work		
Trip Work (a)	10.74	hphr
Trip Exhaust Mass	33.65	kg
Trip Exhaust Mass EU (ac)	34.01	kg
Trip Exhaust Mass US (ac)	34.35	kg
Trip Av. Amb. Temperature	71.37	deg_F
Trip Av. Humidity	51.18	%
Trip Av. GPS Altitude	229.95	m
Fuel Type	Petrol (E10)	

ave THC	8.66509	ppm
ave NMHC	8.49179	ppm
ave CH4	0.17330	ppm
ave CO	168.06988	ppm
ave CO2	11.03590	%
ave NOx	5.19667	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	0.27723	g
tot NMHC	0.25644	g
tot CH4	0.00614	g
tot CO	6.82391	g
tot CO2	6503.47967	g
tot NO (d)	0.08754	g
tot NO2	0.06345	g
tot NOx	0.14863	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	52.24230	mi/hr
Trip Distance Share Urban	5.65149	% distanc
Trip Distance Share Rural	10.96133	% distanc
Trip Distance Share Motorway	83.38718	% distanc

BS CO2	605.61529	g/hphr
BS CO	0.63545	g/hphr
BS THC	0.02582	g/hphr
BS NMHC	0.02388	g/hphr
BS CH4	0.00057	g/hphr
BS NO (d)	0.00815	g/hphr
BS NO2	0.00591	g/hphr
BS NOx	0.01384	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	233.53448	g/mi
DS CO	0.24504	g/mi
DS THC	0.00996	g/mi
DS NMHC	0.00921	g/mi
DS CH4	0.00022	g/mi
DS NO (d)	0.00314	g/mi
DS NO2	0.00228	g/mi
DS NOx	0.00534	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	3078.32290	g/kg
FS CO	3.22999	g/kg
FS THC	0.13122	g/kg
FS NMHC	0.12138	g/kg
FS CH4	0.00291	g/kg
FS NO (d)	0.04144	g/kg
FS NO2	0.03003	g/kg
FS NOx	0.07035	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

Case: C118-1270
Page: Trip Summary Drift Corrected

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1919.00	s
Trip Duration (a)	1919.00	s
Trip Distance	27.85	mi
Trip Distance (a)	27.85	mi
Trip Fuel Cons. (b)	2.11	kg
Trip Fuel Cons. (ab)	2.11	kg
Trip Fuel Cons. EU (ac)	2.16	kg
Trip Fuel Cons. US (ac)	2.14	kg
Trip Fuel Economy (b)	37.30	mpg_US
Trip Fuel Economy (ab)	37.30	mpg_US
Trip Fuel Economy EU (ac)	36.52	mpg_US
Trip Fuel Economy US (ac)	36.80	mpg_US
Trip Fuel Economy GGE (b)	37.30	mpg_US
Trip Fuel Economy GGE (ab)	37.30	mpg_US
Trip Fuel Economy EU GGE (ac)	36.52	mpg_US
Trip Fuel Economy US GGE (ac)	36.80	mpg_US
Trip Av. Eng. Speed	1426.16	rpm
Trip Av. Torque	63.58	lbft
Trip Av. Power	20.15	hp
Trip Work		
Trip Work (a)	10.74	hphr
Trip Exhaust Mass	33.65	kg
Trip Exhaust Mass EU (ac)	34.01	kg
Trip Exhaust Mass US (ac)	34.35	kg
Trip Av. Amb. Temperature	71.37	deg_F
Trip Av. Humidity	51.18	%
Trip Av. GPS Altitude	229.95	m
Fuel Type	Petrol (E10)	

ave THC DC	8.68786	ppm
ave NMHC DC	8.51410	ppm
ave CH4 DC	0.17376	ppm
ave CO DC	170.74762	ppm
ave CO2 DC	11.03879	%
ave NOx DC	5.22346	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	0.27796	g
tot NMHC DC	0.25711	g
tot CH4 DC	0.00616	g
tot CO DC	6.90728	g
tot CO2 DC	6505.18527	g
tot NO DC (d)	0.08572	g
tot NO2 DC	0.06796	g
tot NOx DC	0.15001	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	52.24230	mi/hr
Trip Distance Share Urban	5.65149	% distanc
Trip Distance Share Rural	10.96133	% distanc
Trip Distance Share Motorway	83.38718	% distanc

BS CO2 DC	605.77412	g/hphr
BS CO DC	0.64322	g/hphr
BS THC DC	0.02588	g/hphr
BS NMHC DC	0.02394	g/hphr
BS CH4 DC	0.00057	g/hphr
BS NO DC (d)	0.00798	g/hphr
BS NO2 DC	0.00633	g/hphr
BS NOx DC	0.01397	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	233.59573	g/mi
DS CO DC	0.24803	g/mi
DS THC DC	0.00998	g/mi
DS NMHC DC	0.00923	g/mi
DS CH4 DC	0.00022	g/mi
DS NO DC (d)	0.00308	g/mi
DS NO2 DC	0.00244	g/mi
DS NOx DC	0.00539	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	3079.13022	g/kg
FS CO DC	3.26945	g/kg
FS THC DC	0.13157	g/kg
FS NMHC DC	0.12170	g/kg
FS CH4 DC	0.00292	g/kg
FS NO DC (d)	0.04057	g/kg
FS NO2 DC	0.03217	g/kg
FS NOx DC	0.07100	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

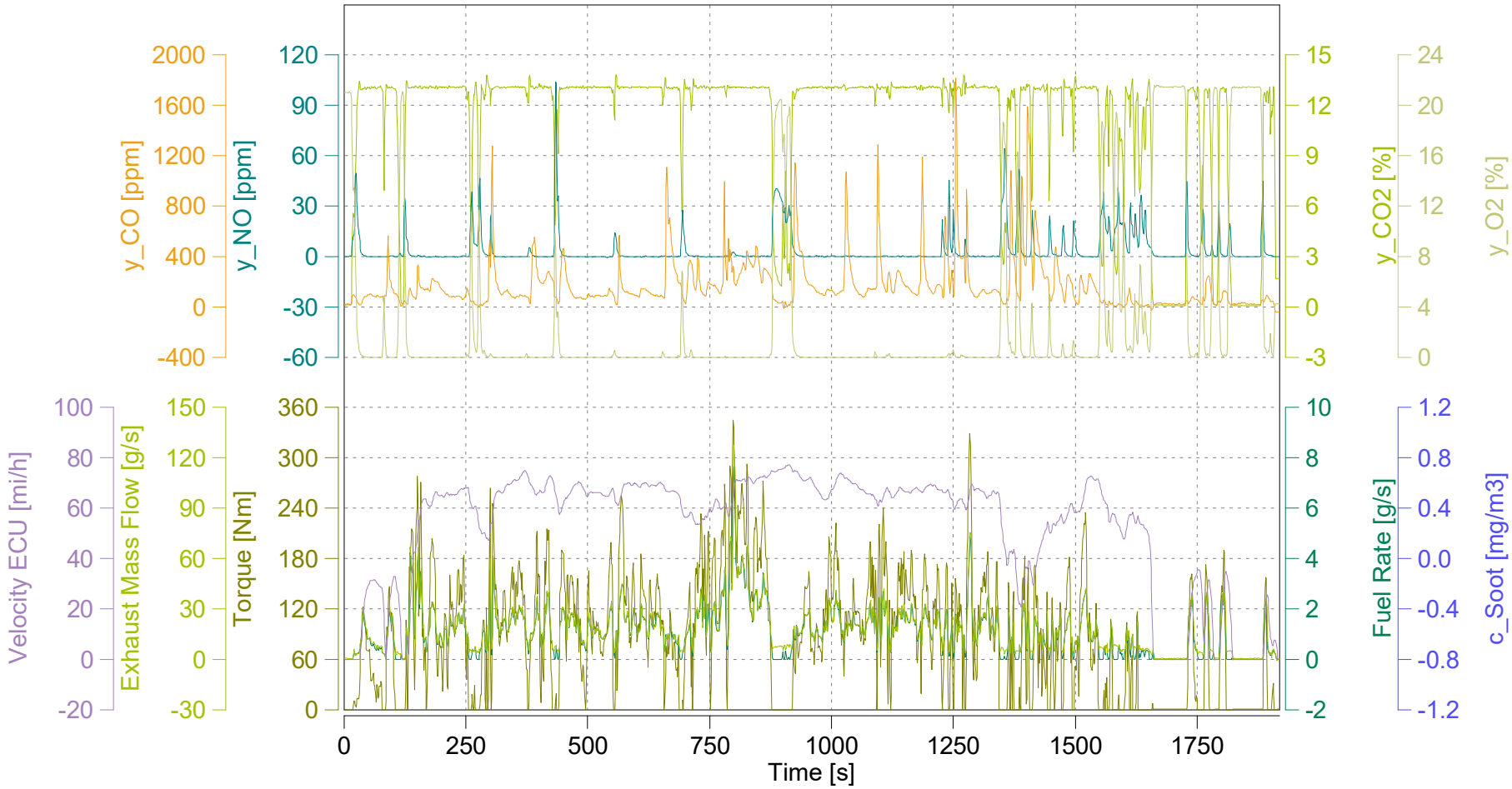
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment Check

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



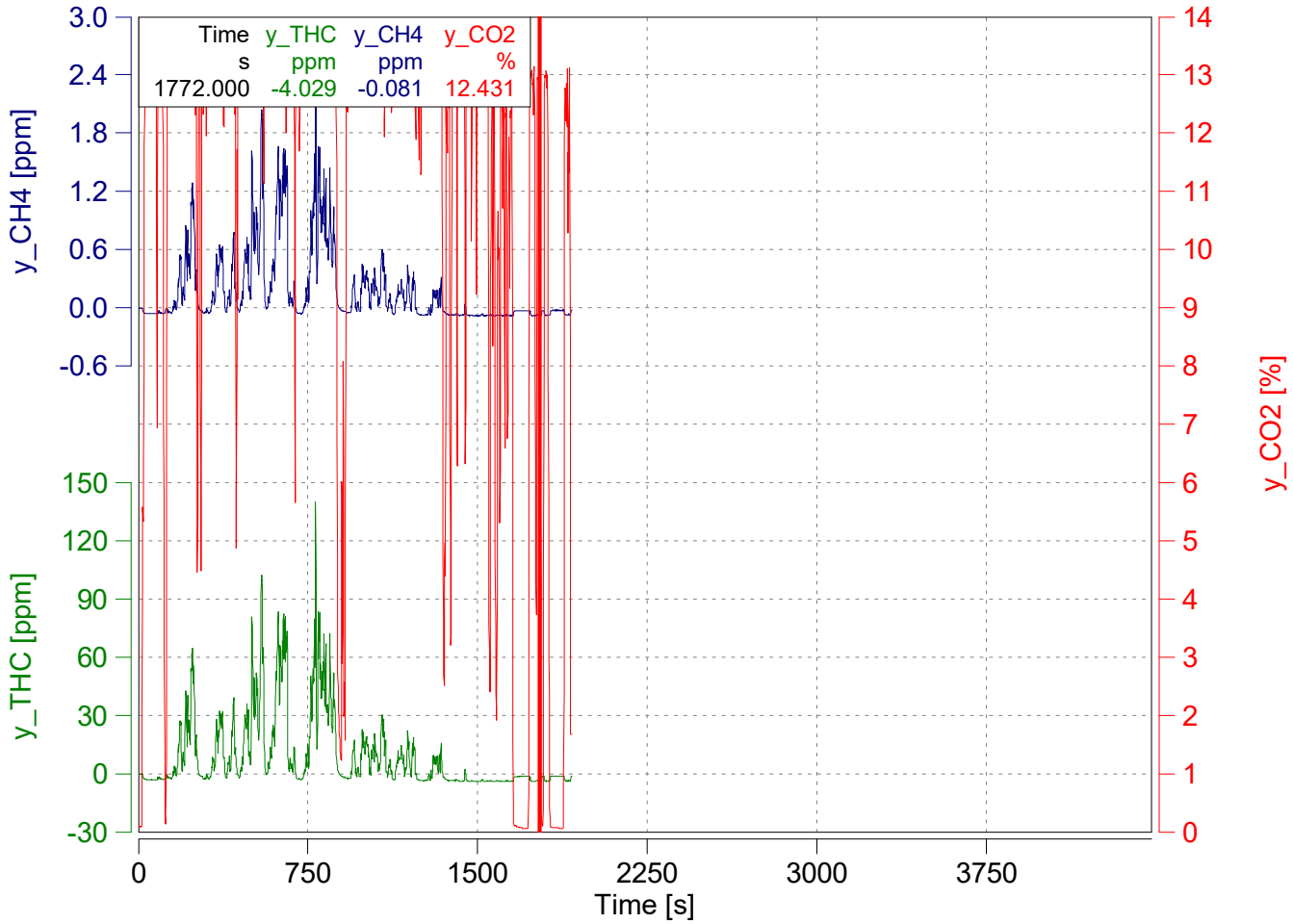
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment of Gas Concentrations

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

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

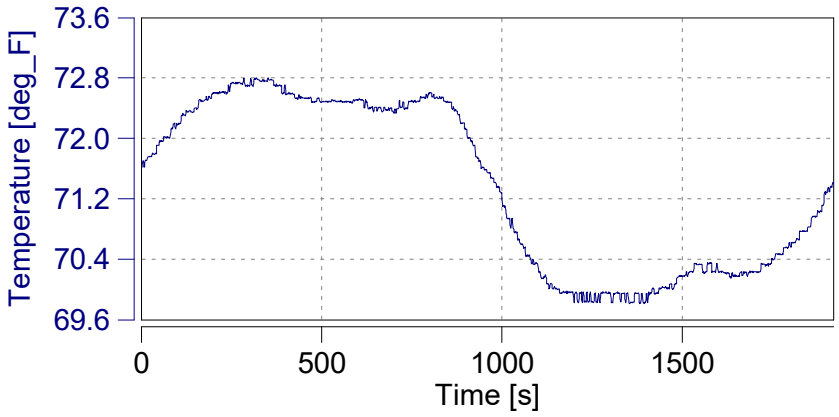
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

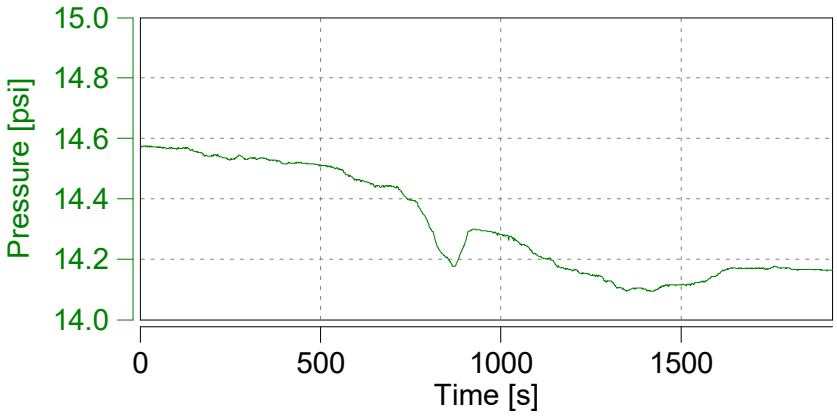
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

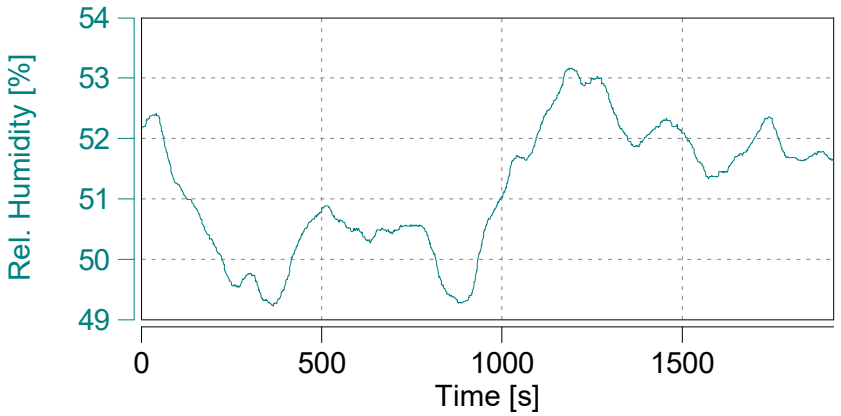
Case: C118-1270
Page: Ambient Conditions

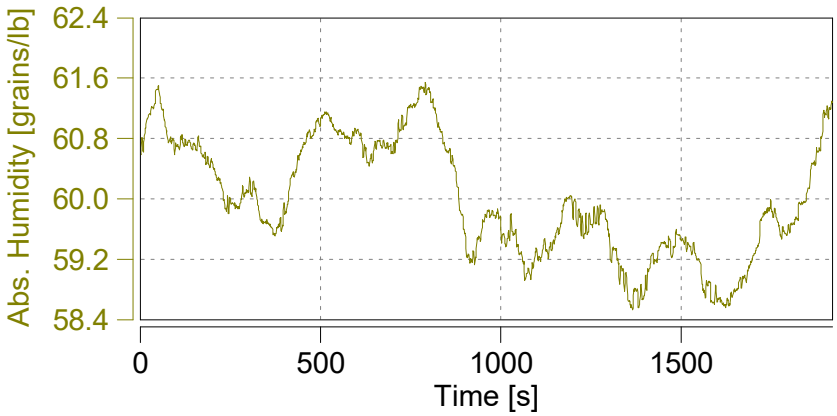
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









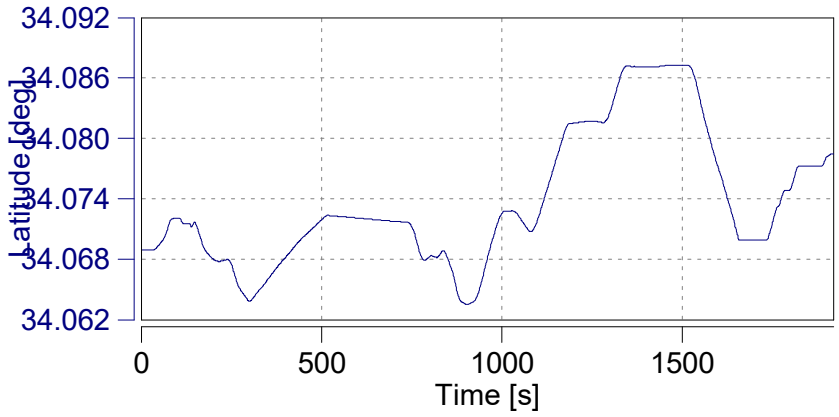
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

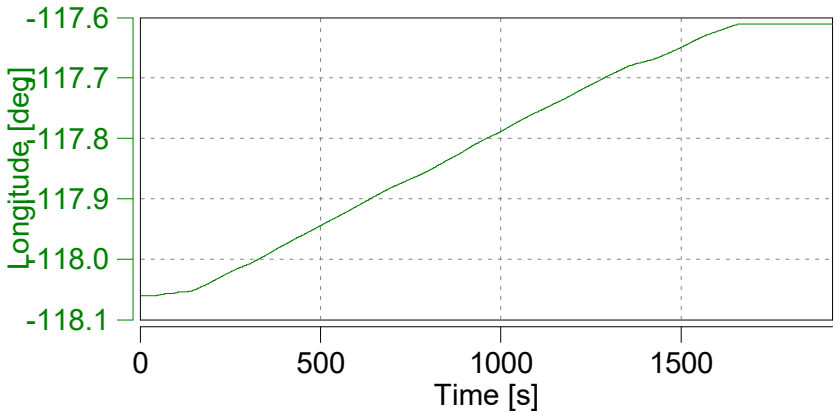
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

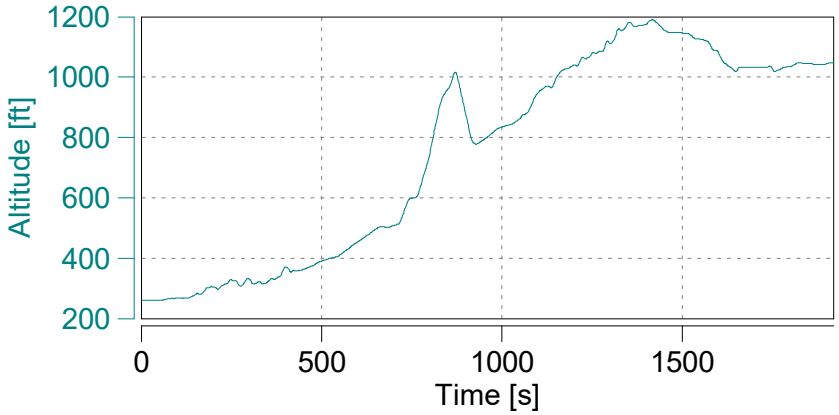
Case: C118-1270
Page: GPS

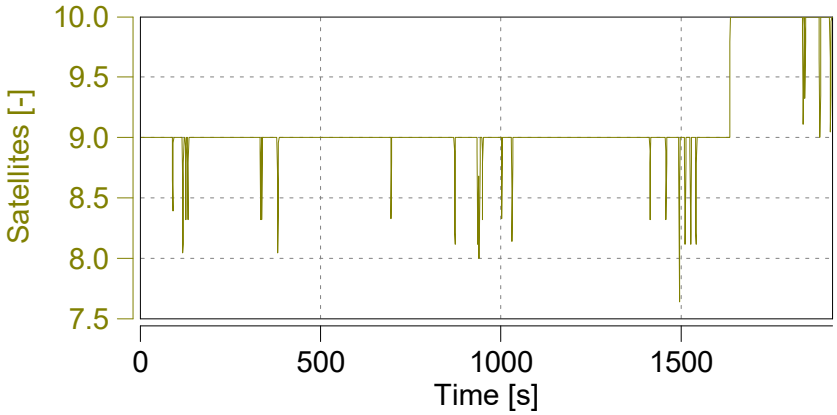
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









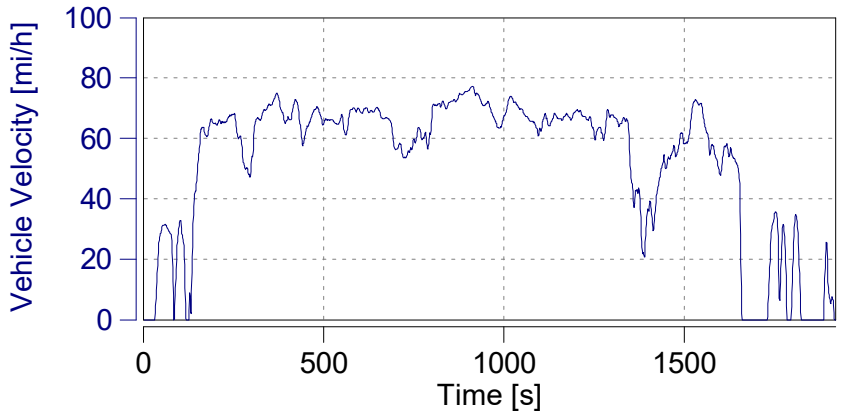
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

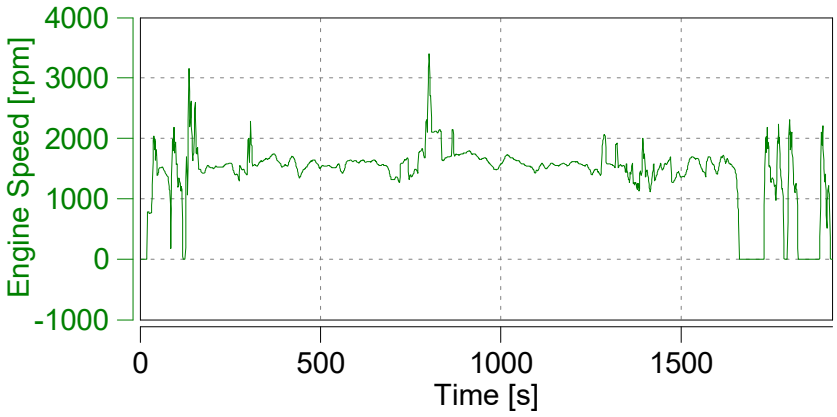
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

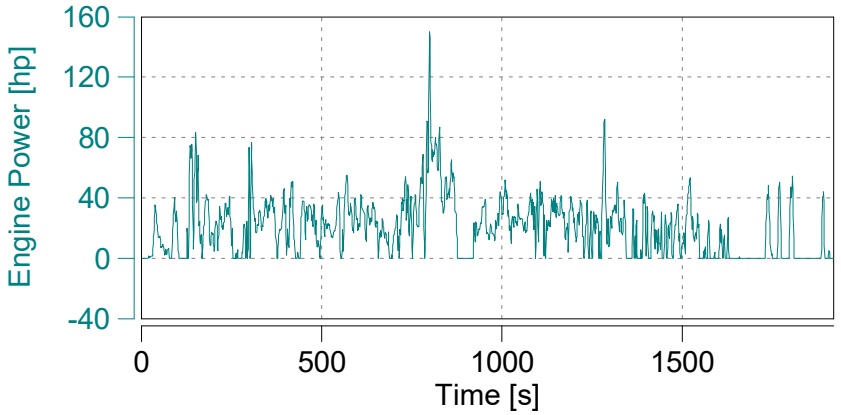
Case: C118-1270
Page: Engine (1)

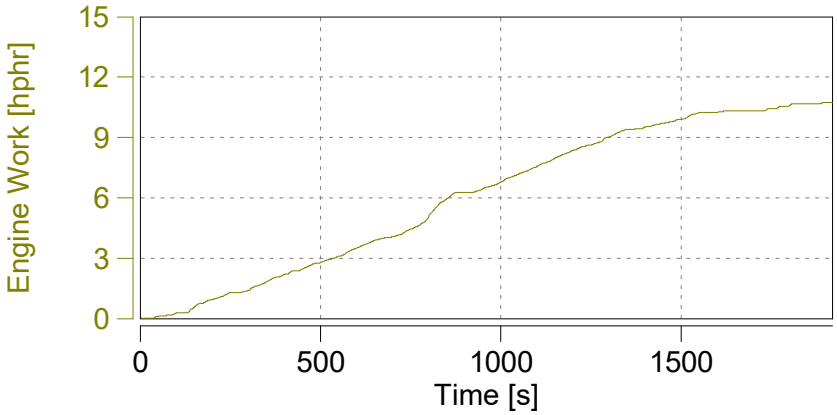
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









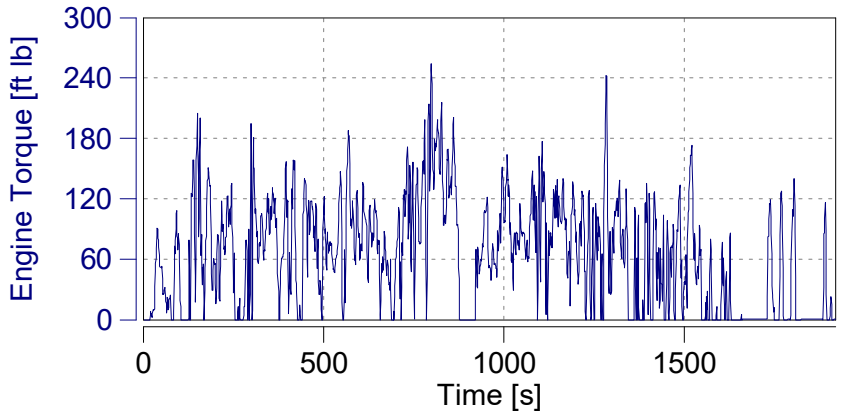
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

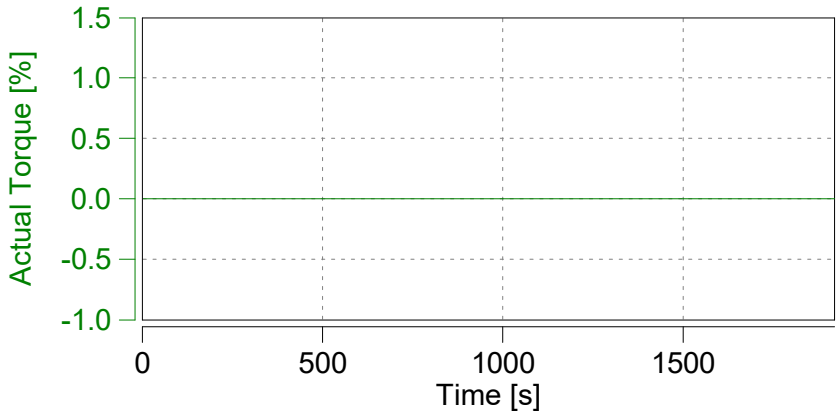
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

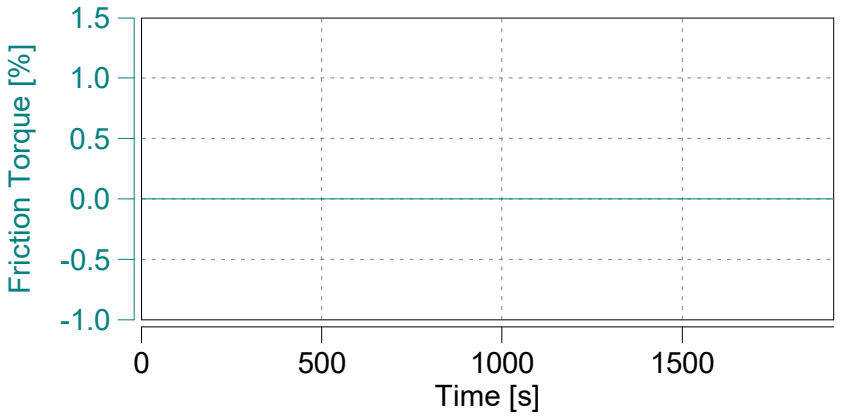
Case: C118-1270
Page: Engine (2)

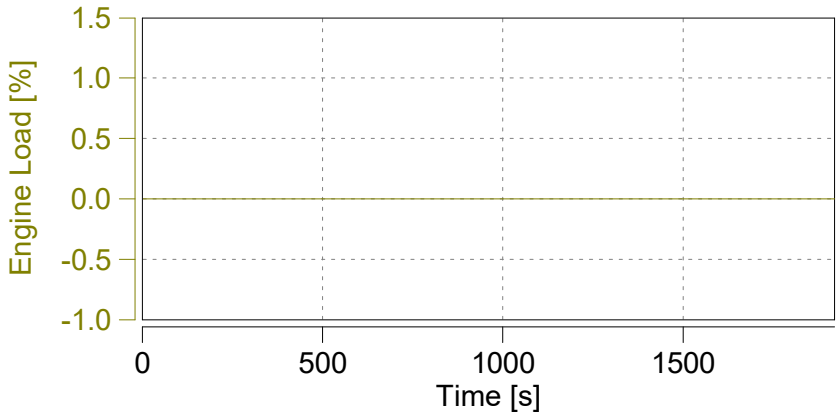
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019







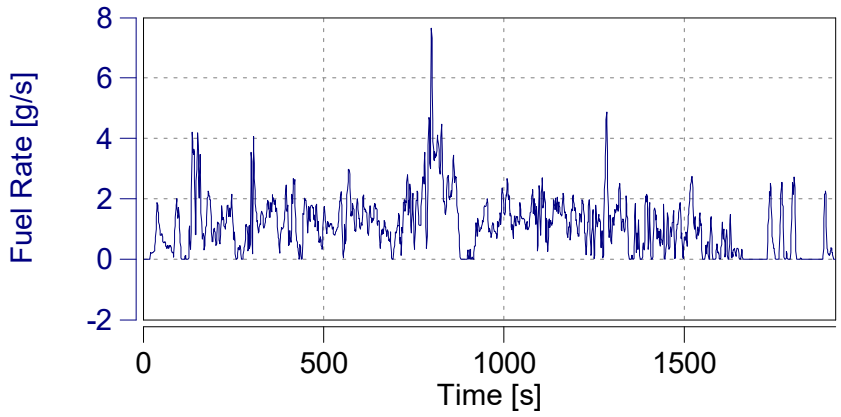


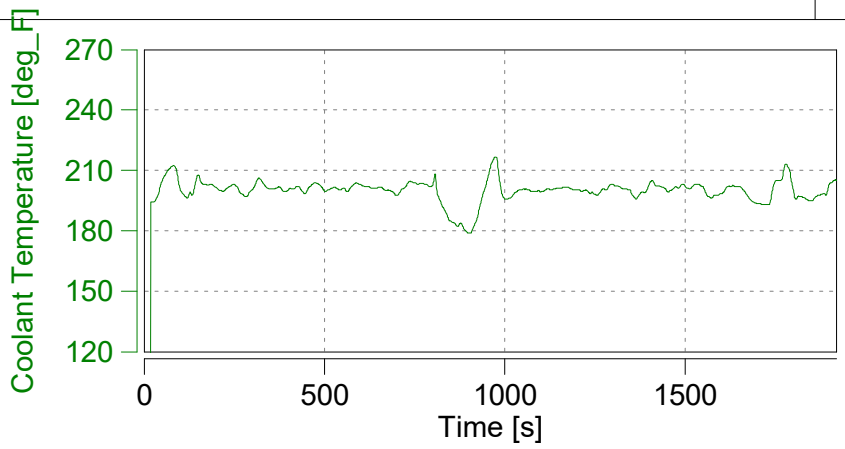
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

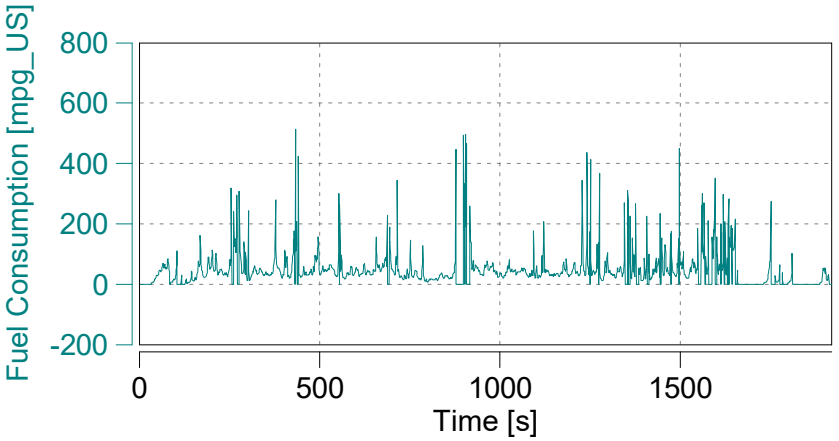
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

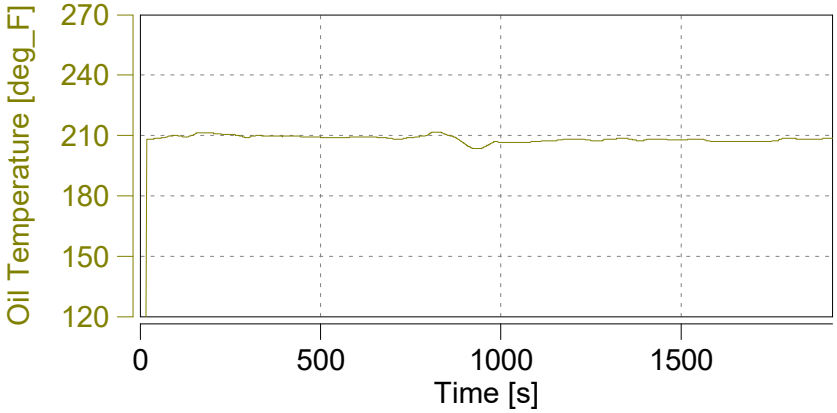
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









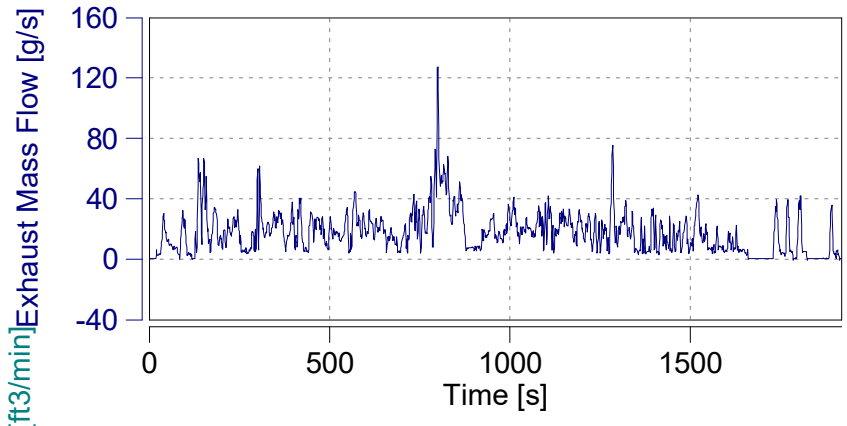
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

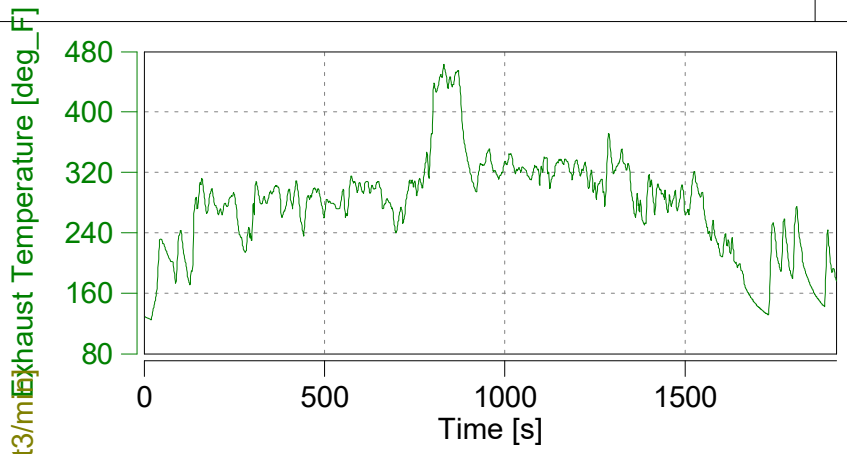
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

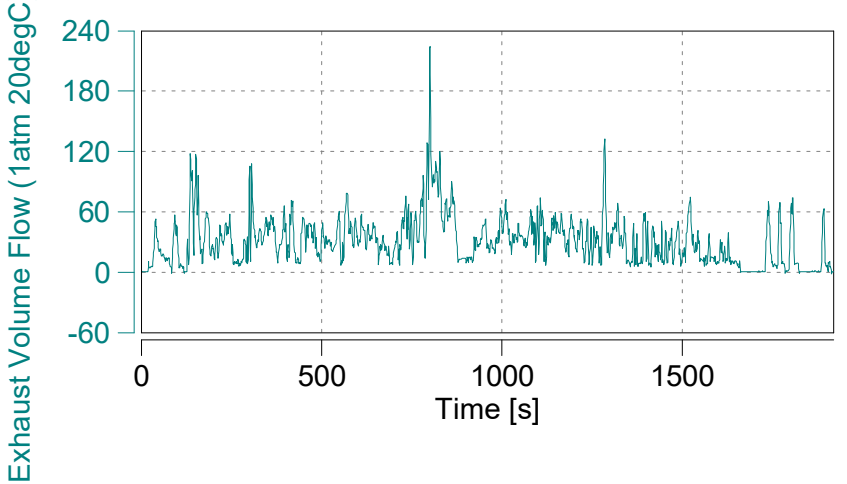
Case: C118-1270
Page: Exhaust Flow (1)

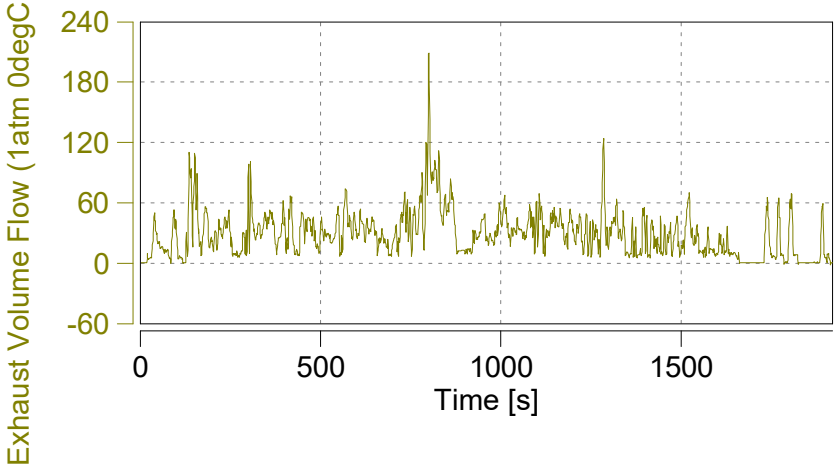
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









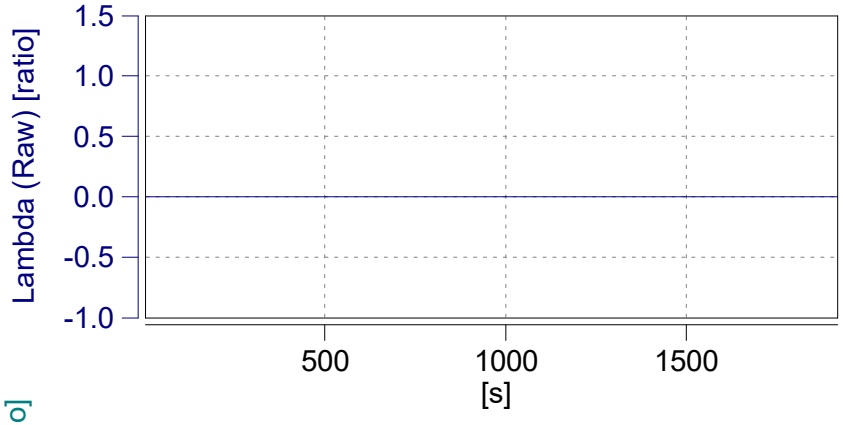
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

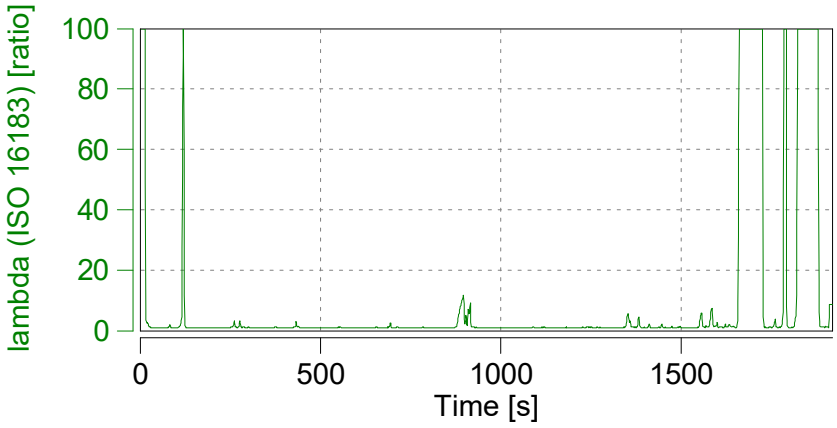
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

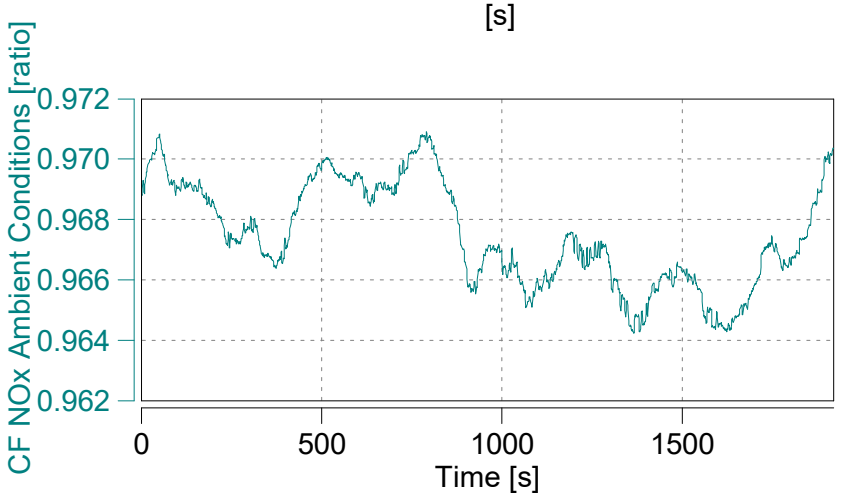
Case: C118-1270
Page: Exhaust Flow (2)

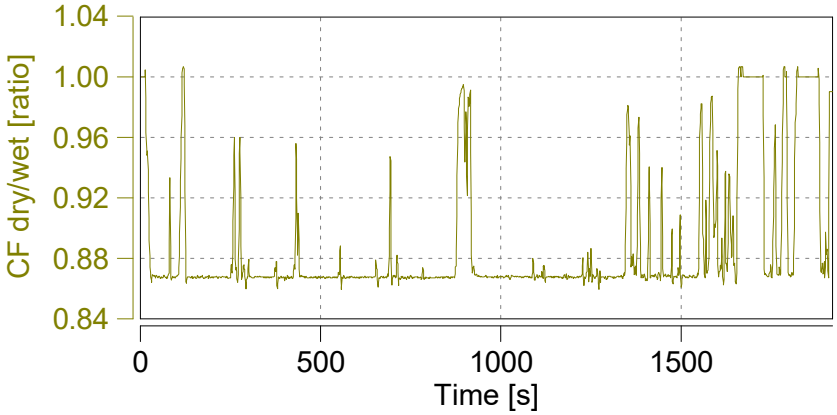
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









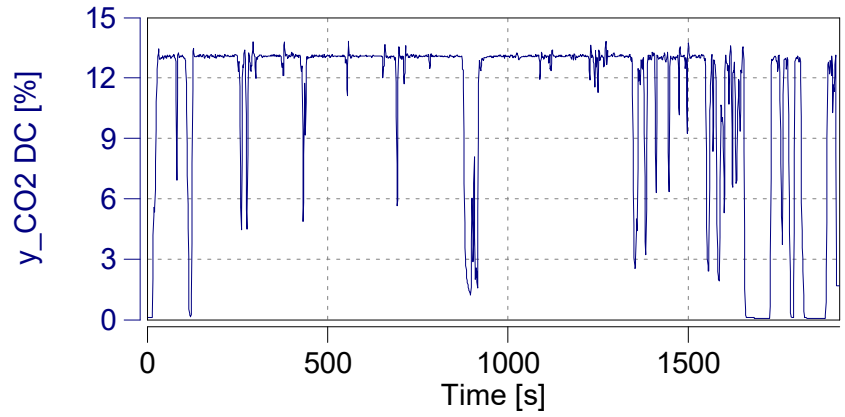
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

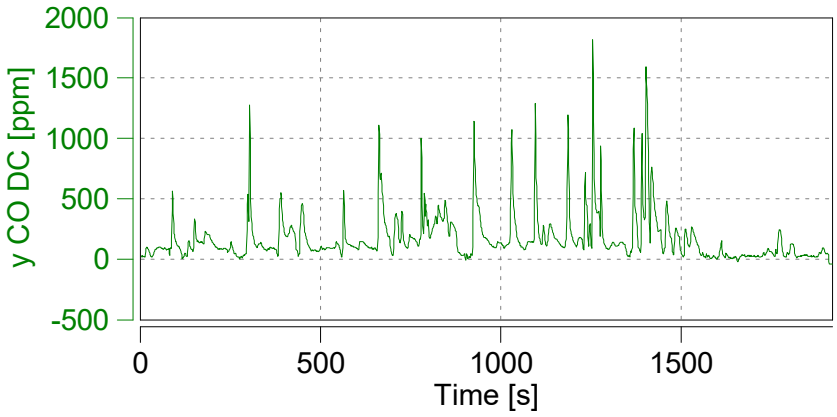
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

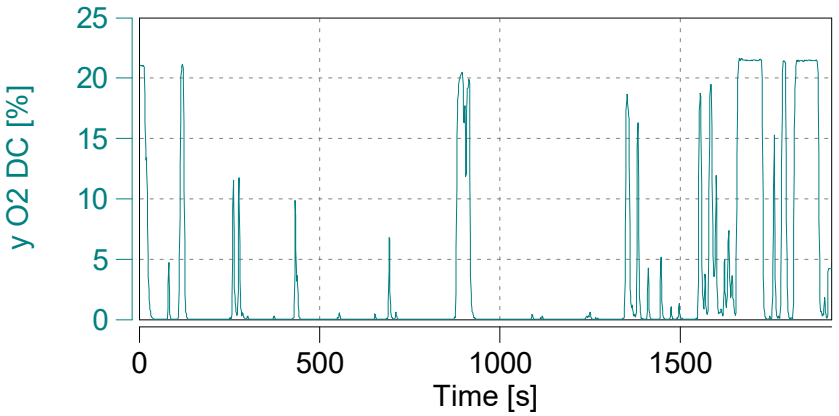
Case: C118-1270
Page: Corrected Emissions (1)

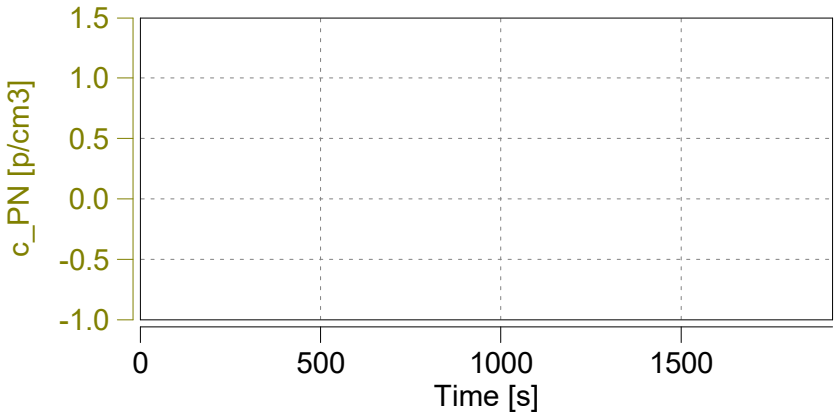
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









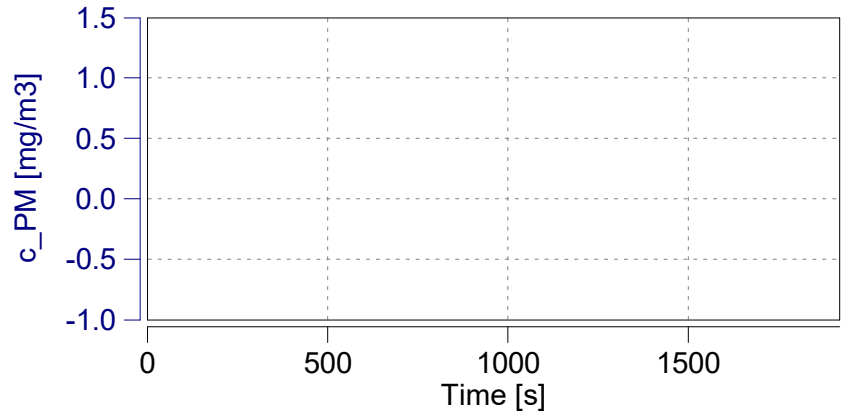
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

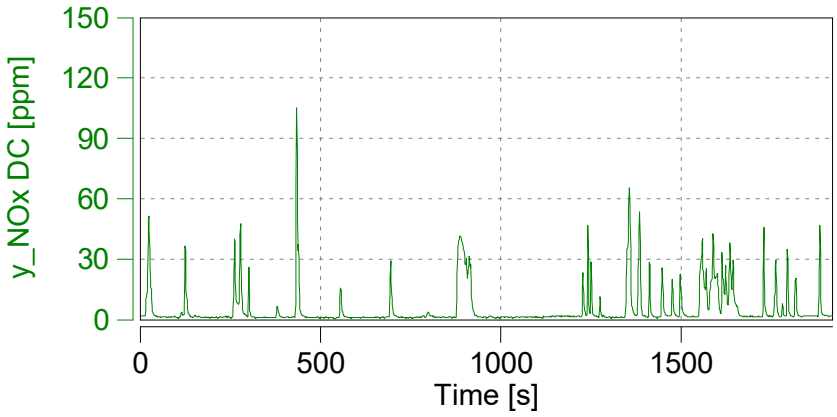
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

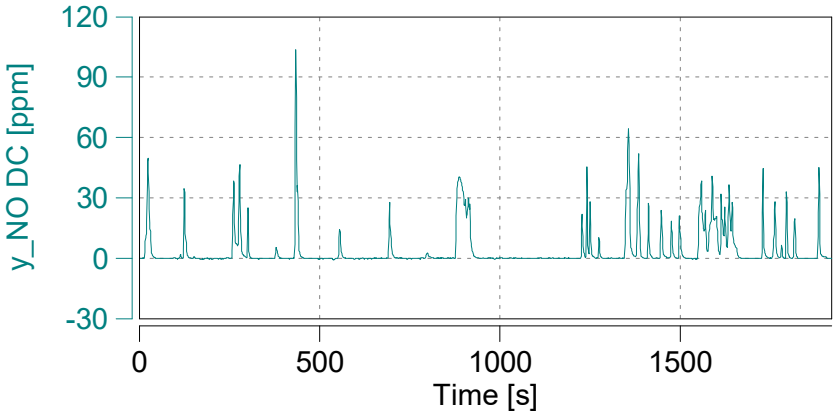
Case: C118-1270
Page: Corrected Emissions (2)

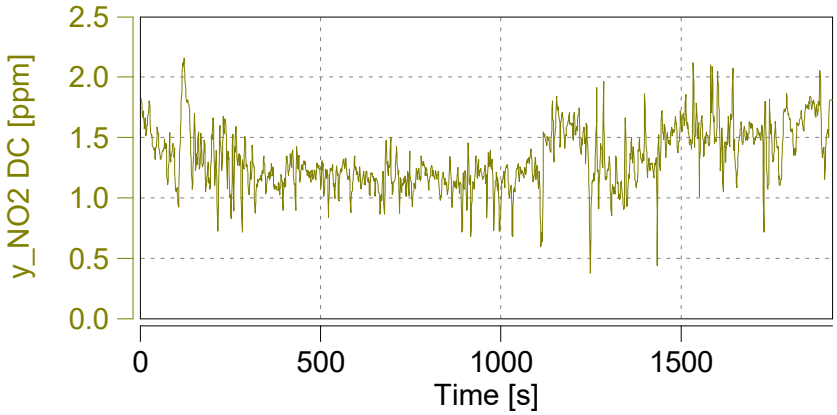
'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









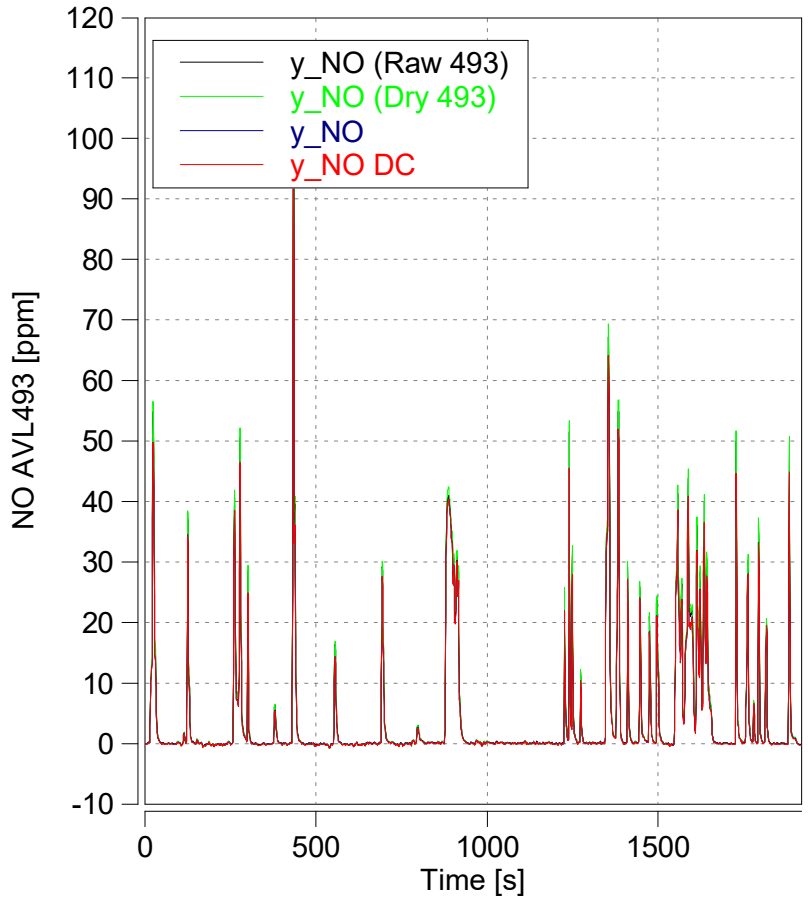
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

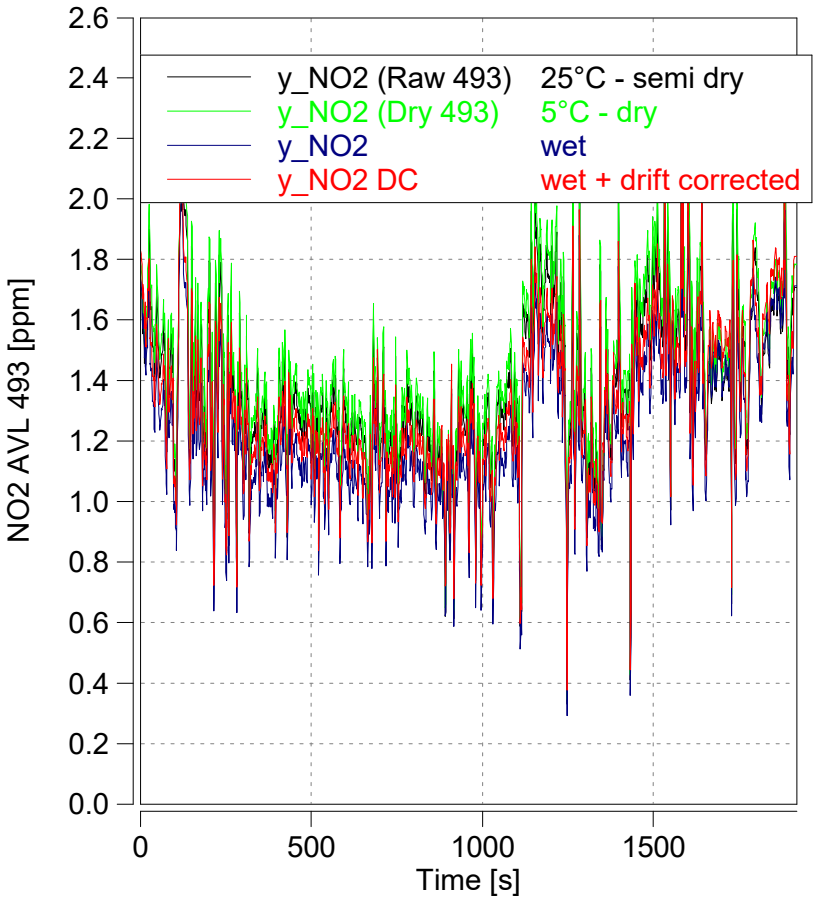
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019





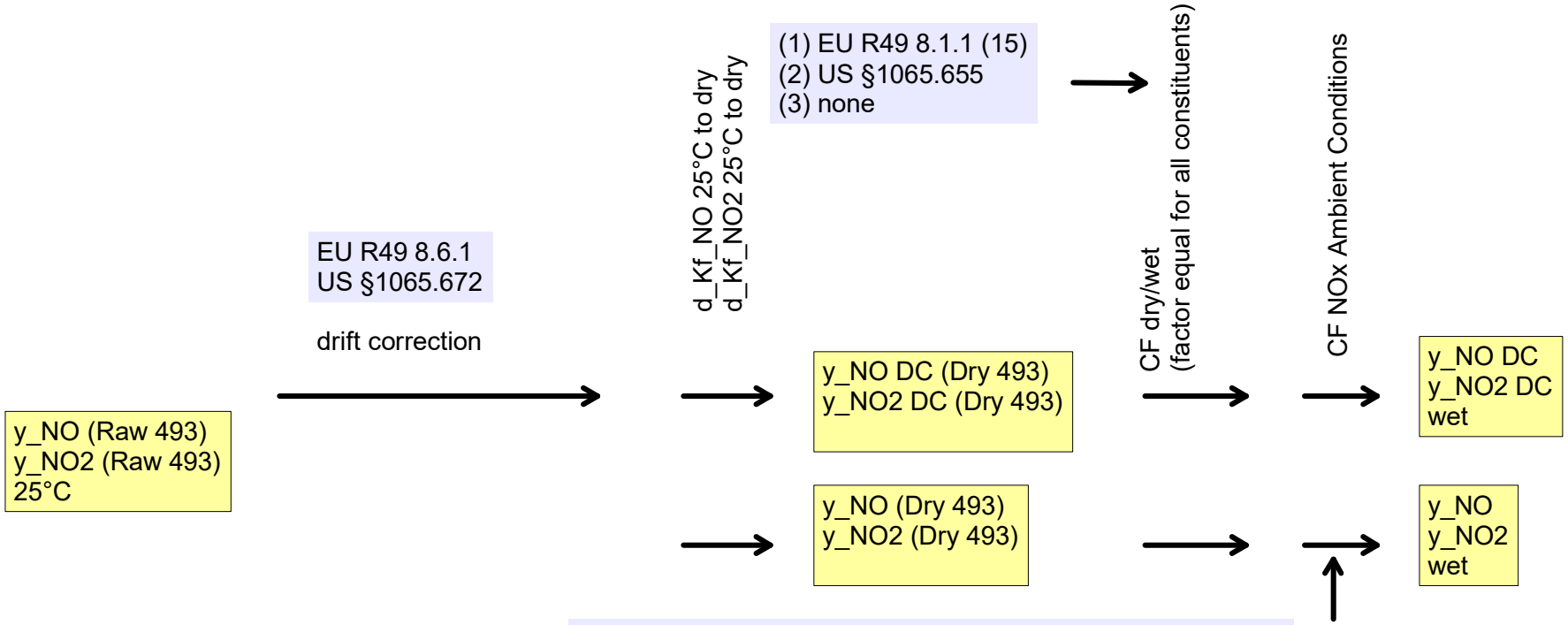
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

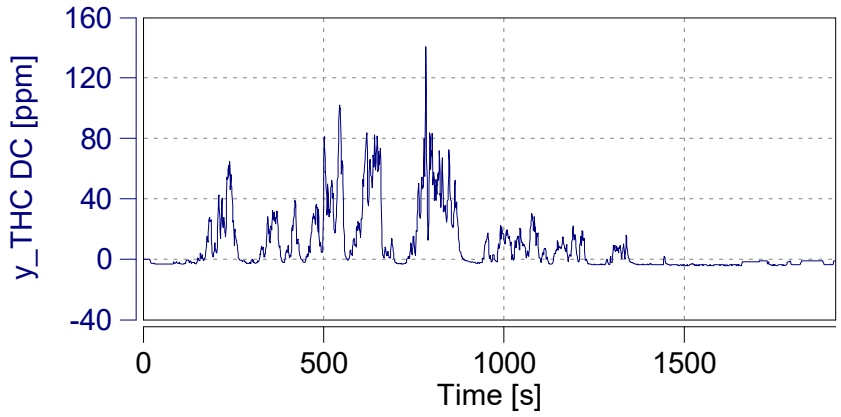
AVL
Concerto M.O.V.E, 2019

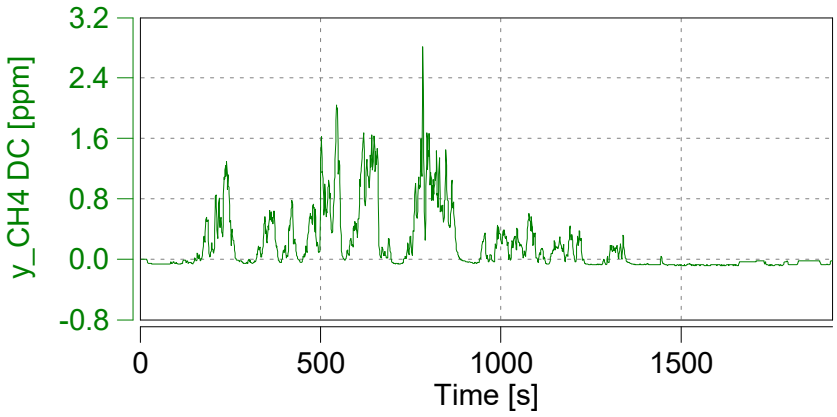
NOx - AVL 493

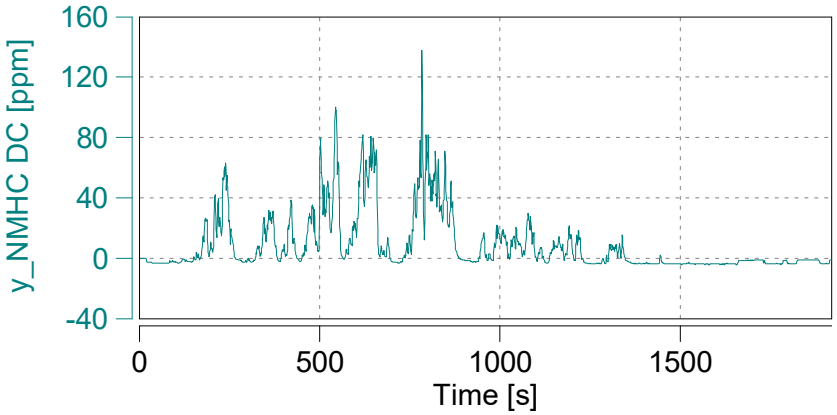


'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019







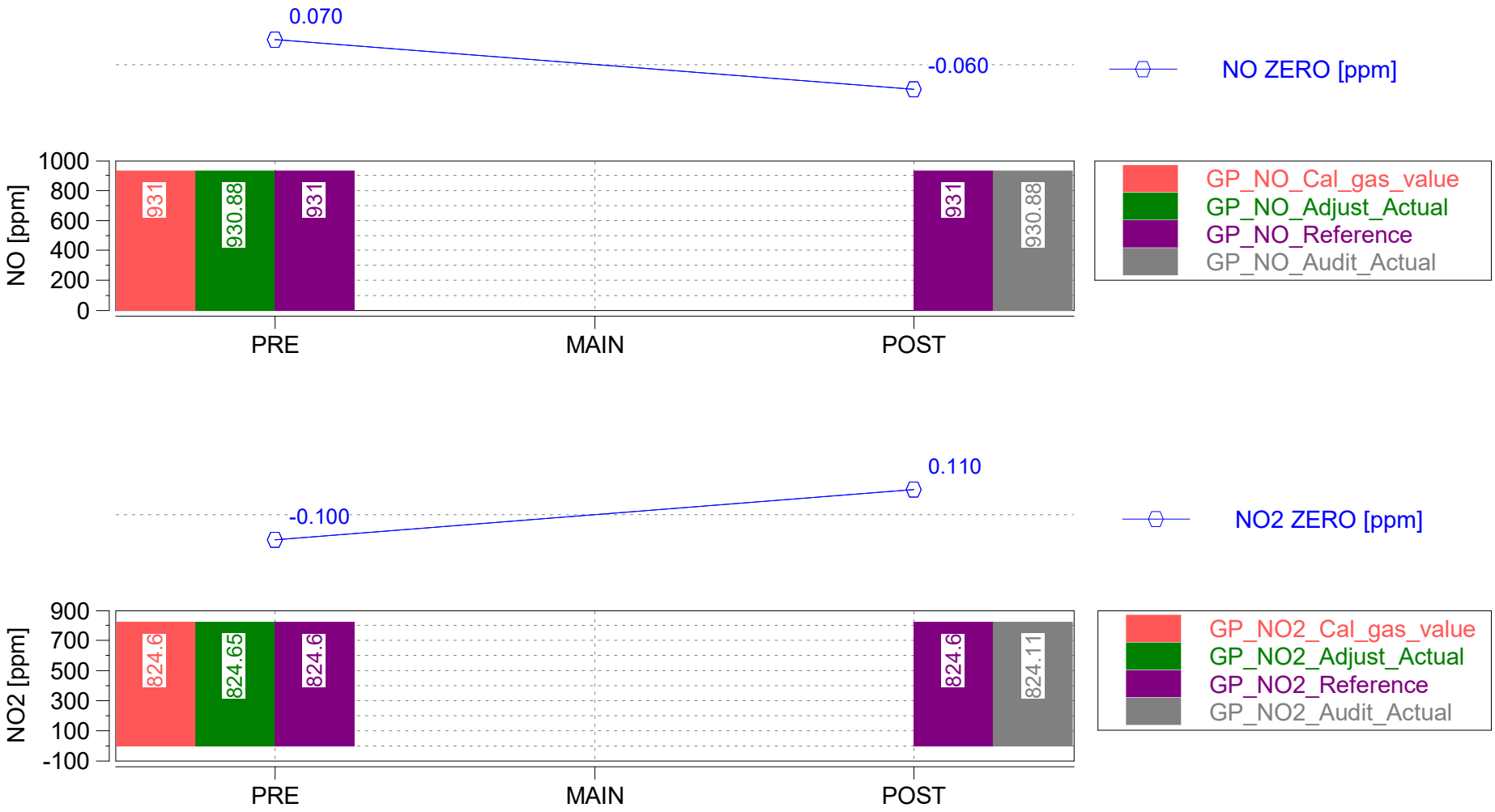
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



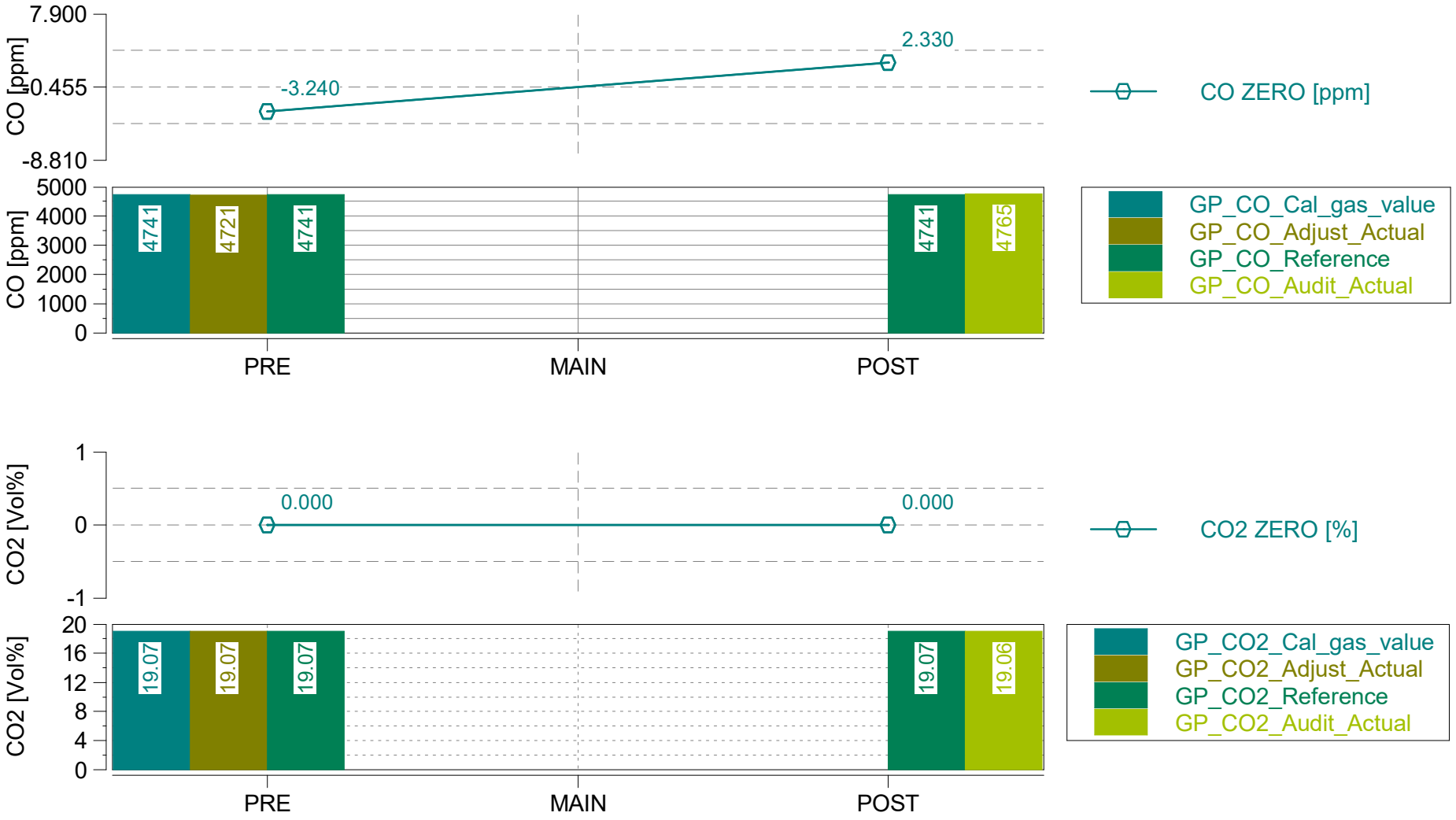
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



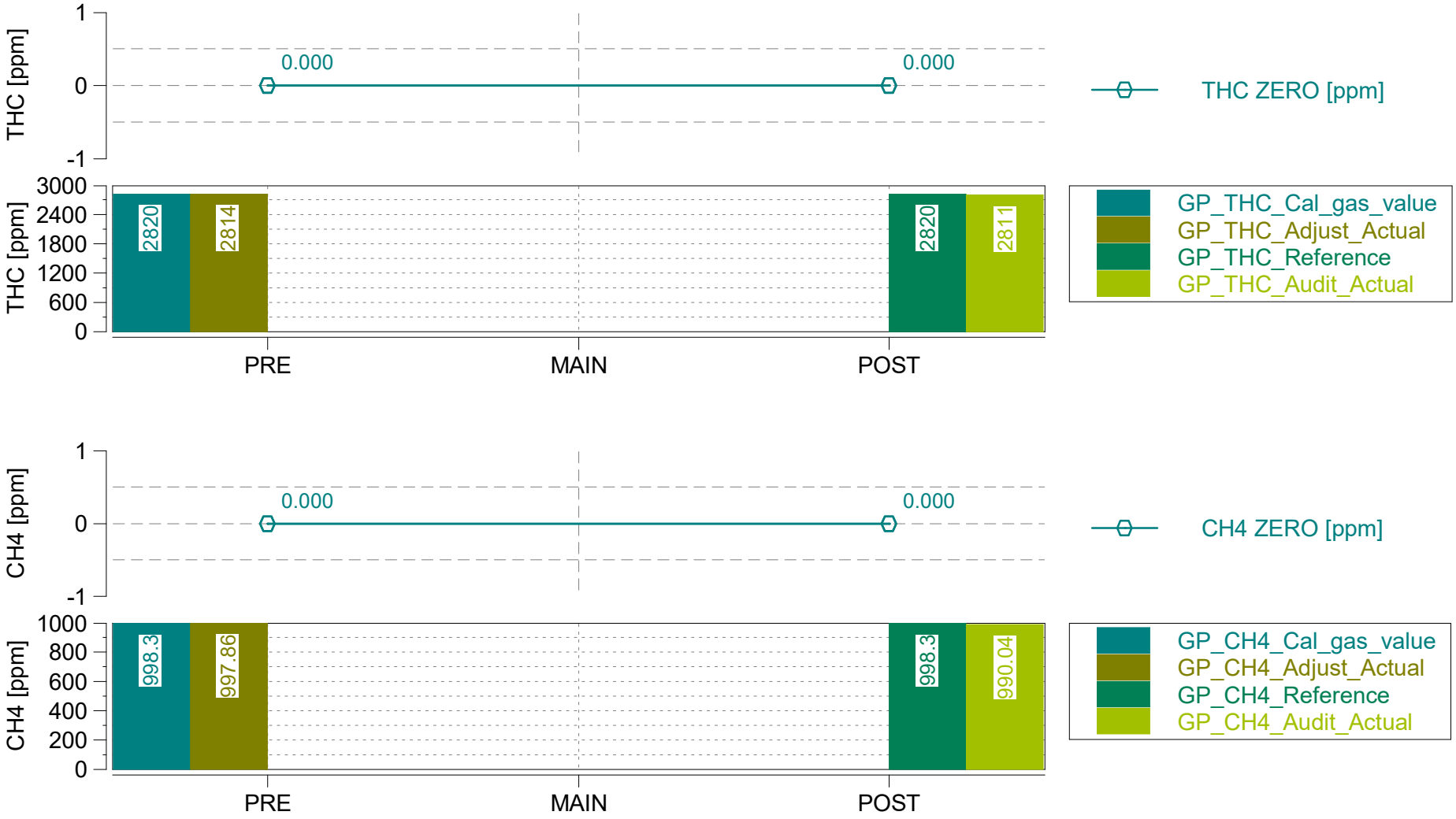
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-02)	**0.08**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-02
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

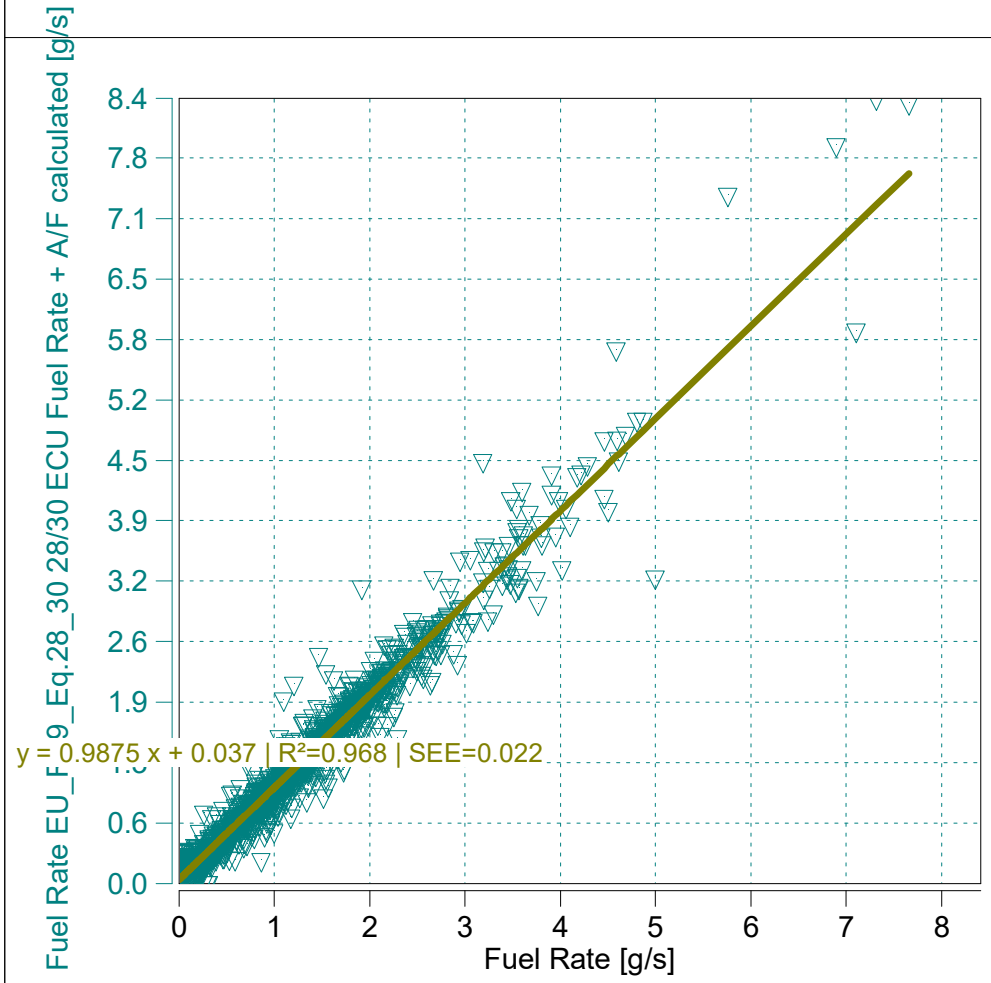
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 - Freeway East (A1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



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

y = 0.9875 x + 0.037 | R²=0.968 | SEE=0.022
m = 0.99 (0.9 - 1.1 recommended)
R² = 0.97 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1863.00	s
Trip Duration (a)	1863.00	s
Trip Distance	28.51	mi
Trip Distance (a)	28.51	mi
Trip Fuel Cons. (b)	1.73	kg
Trip Fuel Cons. (ab)	1.73	kg
Trip Fuel Cons. EU (ac)	1.80	kg
Trip Fuel Cons. US (ac)	1.79	kg
Trip Fuel Economy (b)	46.50	mpg_US
Trip Fuel Economy (ab)	46.50	mpg_US
Trip Fuel Economy EU (ac)	44.80	mpg_US
Trip Fuel Economy US (ac)	45.14	mpg_US
Trip Fuel Economy GGE (b)	46.50	mpg_US
Trip Fuel Economy GGE (ab)	46.50	mpg_US
Trip Fuel Economy EU GGE (ac)	44.80	mpg_US
Trip Fuel Economy US GGE (ac)	45.14	mpg_US
Trip Av. Eng. Speed	1485.21	rpm
Trip Av. Torque	51.73	lbft
Trip Av. Power	16.43	hp
Trip Work		
Trip Work (a)	8.50	hphr
Trip Exhaust Mass	28.35	kg
Trip Exhaust Mass EU (ac)	26.89	kg
Trip Exhaust Mass US (ac)	27.12	kg
Trip Av. Amb. Temperature	77.40	deg_F
Trip Av. Humidity	42.70	%
Trip Av. GPS Altitude	214.32	m
Fuel Type	Petrol (E10)	

ave THC	-4.45114	ppm
ave NMHC	-4.36211	ppm
ave CH4	-0.08902	ppm
ave CO	235.21123	ppm
ave CO2	11.36208	%
ave NOx	5.12056	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	0.00001	g
tot NMHC	0.00001	g
tot CH4	0.00000	g
tot CO	7.73748	g
tot CO2	5424.71880	g
tot NO (d)	0.10686	g
tot NO2	0.05468	g
tot NOx	0.15978	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	55.08786	mi/hr
Trip Distance Share Urban	5.56107	% distanc
Trip Distance Share Rural	1.06527	% distanc
Trip Distance Share Motorway	93.37367	% distanc

BS CO2	638.11355	g/hphr
BS CO	0.91017	g/hphr
BS THC	0.00000	g/hphr
BS NMHC	0.00000	g/hphr
BS CH4	0.00000	g/hphr
BS NO (d)	0.01257	g/hphr
BS NO2	0.00643	g/hphr
BS NOx	0.01880	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	190.28783	g/mi
DS CO	0.27141	g/mi
DS THC	0.00000	g/mi
DS NMHC	0.00000	g/mi
DS CH4	0.00000	g/mi
DS NO (d)	0.00375	g/mi
DS NO2	0.00192	g/mi
DS NOx	0.00560	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	3126.75539	g/kg
FS CO	4.45981	g/kg
FS THC	0.00000	g/kg
FS NMHC	0.00000	g/kg
FS CH4	0.00000	g/kg
FS NO (d)	0.06159	g/kg
FS NO2	0.03152	g/kg
FS NOx	0.09210	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: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary Drift Corrected

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1863.00	s
Trip Duration (a)	1863.00	s
Trip Distance	28.51	mi
Trip Distance (a)	28.51	mi
Trip Fuel Cons. (b)	1.73	kg
Trip Fuel Cons. (ab)	1.73	kg
Trip Fuel Cons. EU (ac)	1.80	kg
Trip Fuel Cons. US (ac)	1.79	kg
Trip Fuel Economy (b)	46.50	mpg_US
Trip Fuel Economy (ab)	46.50	mpg_US
Trip Fuel Economy EU (ac)	44.80	mpg_US
Trip Fuel Economy US (ac)	45.14	mpg_US
Trip Fuel Economy GGE (b)	46.50	mpg_US
Trip Fuel Economy GGE (ab)	46.50	mpg_US
Trip Fuel Economy EU GGE (ac)	44.80	mpg_US
Trip Fuel Economy US GGE (ac)	45.14	mpg_US
Trip Av. Eng. Speed	1485.21	rpm
Trip Av. Torque	51.73	lbft
Trip Av. Power	16.43	hp
Trip Work		
Trip Work (a)	8.50	hphr
Trip Exhaust Mass	28.35	kg
Trip Exhaust Mass EU (ac)	26.89	kg
Trip Exhaust Mass US (ac)	27.12	kg
Trip Av. Amb. Temperature	77.40	deg_F
Trip Av. Humidity	42.70	%
Trip Av. GPS Altitude	214.32	m
Fuel Type	Petrol (E10)	

ave THC DC	-4.46283	ppm
ave NMHC DC	-4.37357	ppm
ave CH4 DC	-0.08926	ppm
ave CO DC	237.79810	ppm
ave CO2 DC	11.36506	%
ave NOx DC	5.14730	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	0.00001	g
tot NMHC DC	0.00001	g
tot CH4 DC	0.00000	g
tot CO DC	7.80563	g
tot CO2 DC	5426.14149	g
tot NO DC (d)	0.10524	g
tot NO2 DC	0.05850	g
tot NOx DC	0.16095	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	55.08786	mi/hr
Trip Distance Share Urban	5.56107	% distanc
Trip Distance Share Rural	1.06527	% distanc
Trip Distance Share Motorway	93.37367	% distanc

BS CO2 DC	638.28090	g/hphr
BS CO DC	0.91818	g/hphr
BS THC DC	0.00000	g/hphr
BS NMHC DC	0.00000	g/hphr
BS CH4 DC	0.00000	g/hphr
BS NO DC (d)	0.01238	g/hphr
BS NO2 DC	0.00688	g/hphr
BS NOx DC	0.01893	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	190.33773	g/mi
DS CO DC	0.27381	g/mi
DS THC DC	0.00000	g/mi
DS NMHC DC	0.00000	g/mi
DS CH4 DC	0.00000	g/mi
DS NO DC (d)	0.00369	g/mi
DS NO2 DC	0.00205	g/mi
DS NOx DC	0.00565	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	3127.57541	g/kg
FS CO DC	4.49909	g/kg
FS THC DC	0.00000	g/kg
FS NMHC DC	0.00000	g/kg
FS CH4 DC	0.00000	g/kg
FS NO DC (d)	0.06066	g/kg
FS NO2 DC	0.03372	g/kg
FS NOx DC	0.09277	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

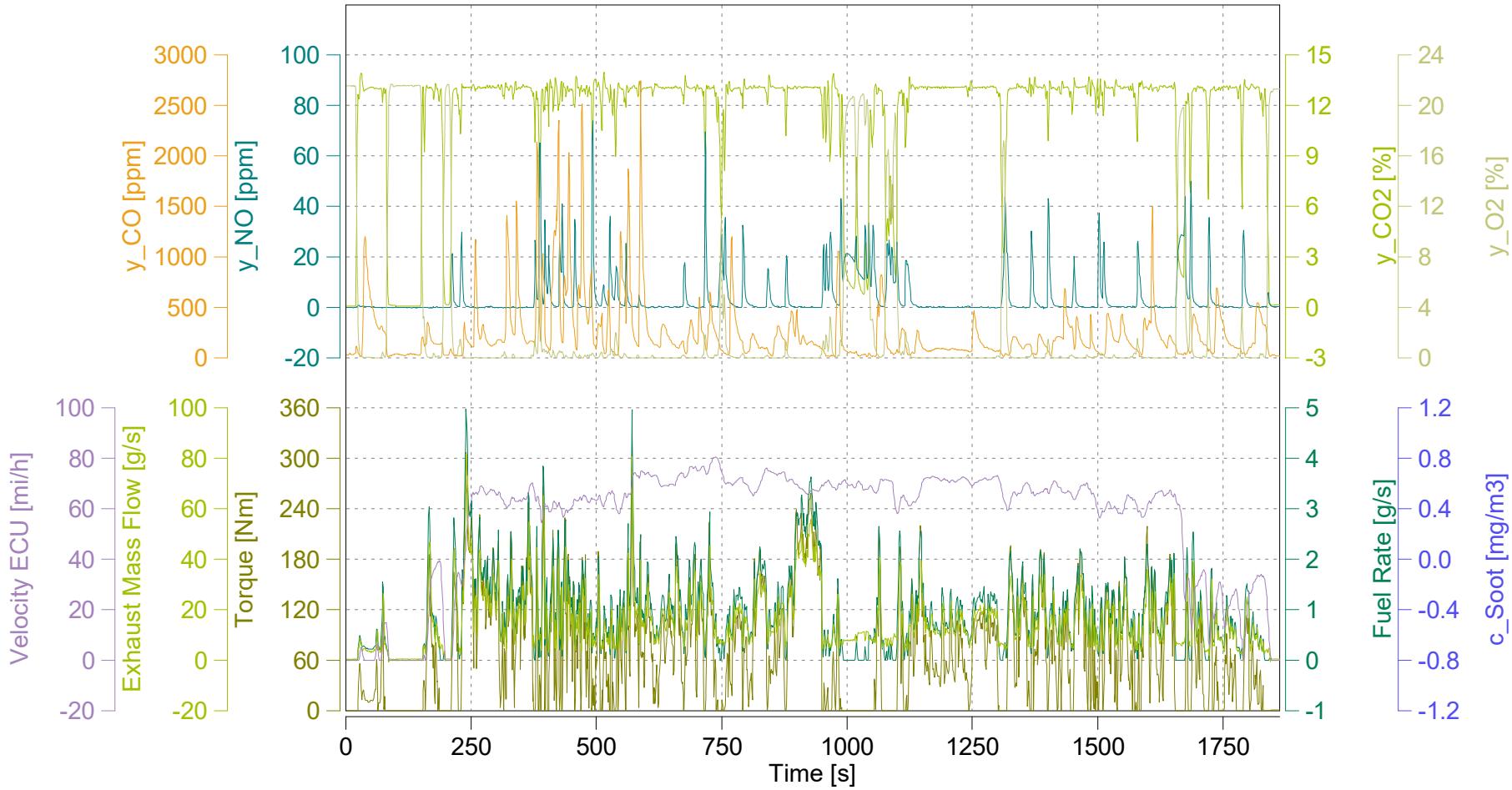
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment Check

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



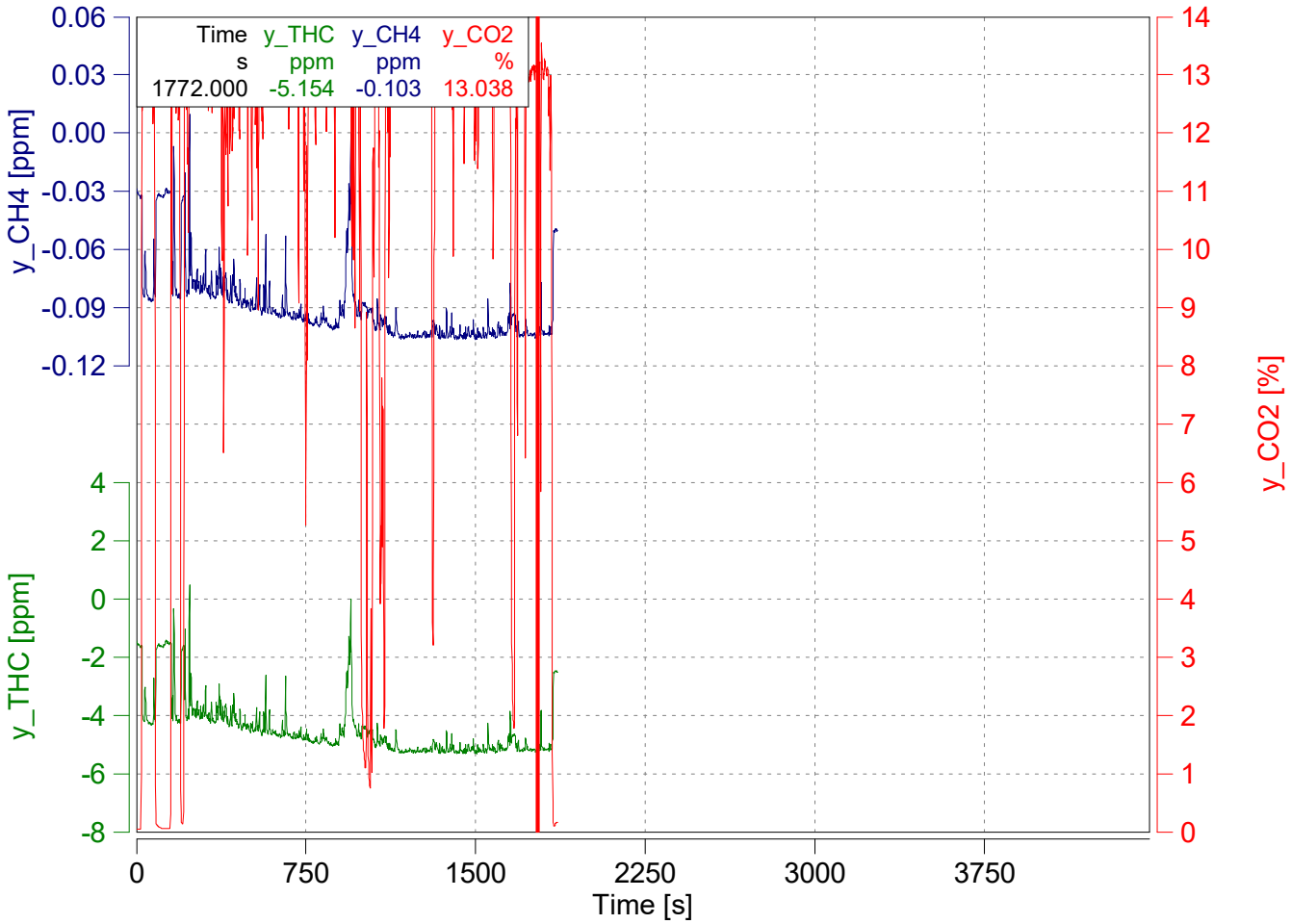
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment of Gas Concentrations

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

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

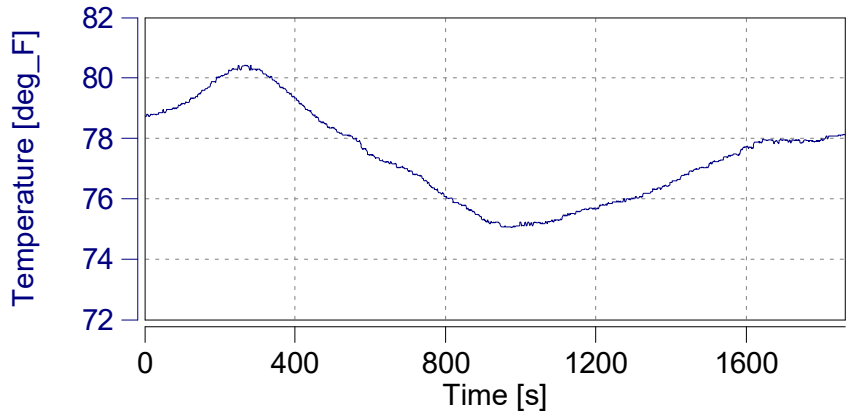
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

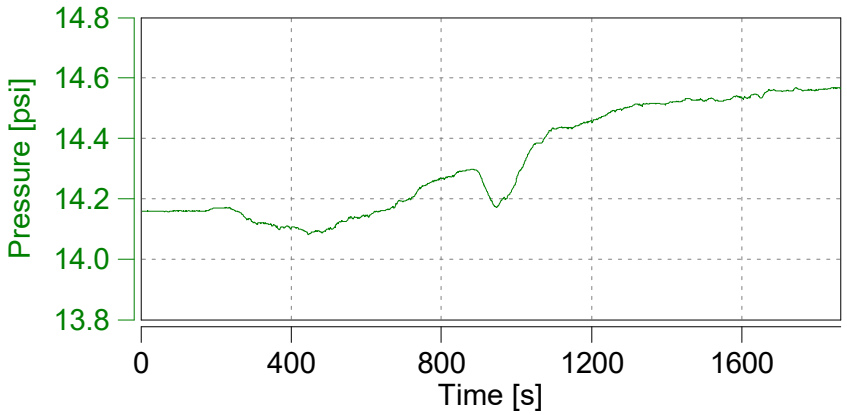
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

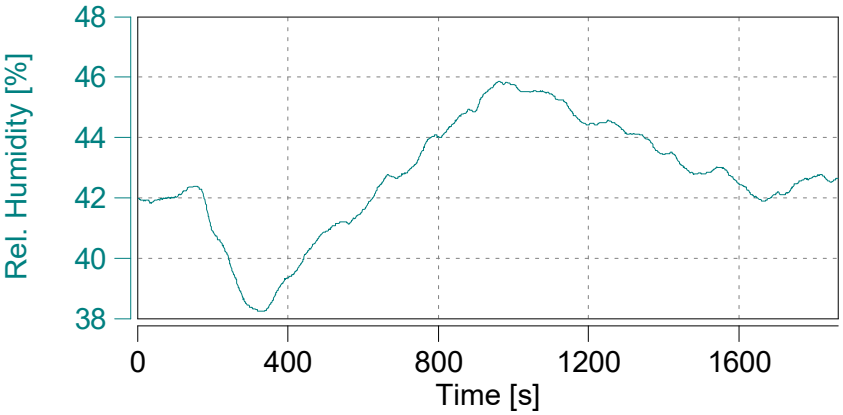
Case: C118-1270
Page: Ambient Conditions

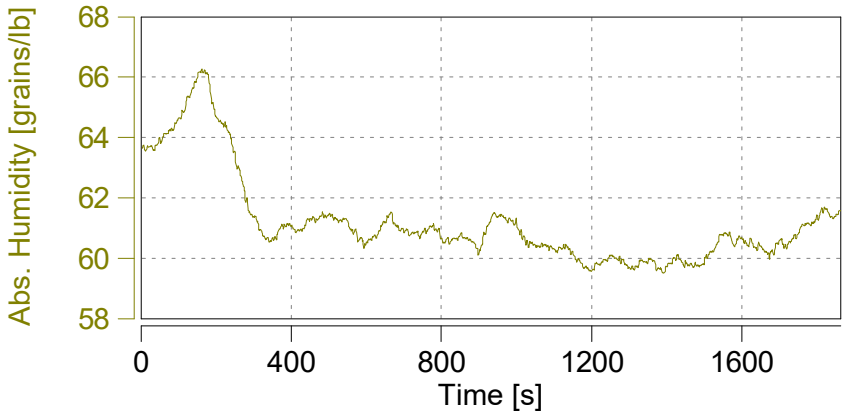
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









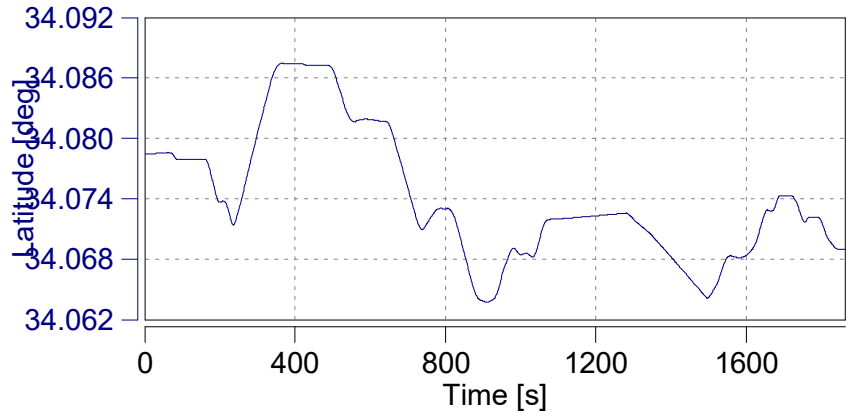
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

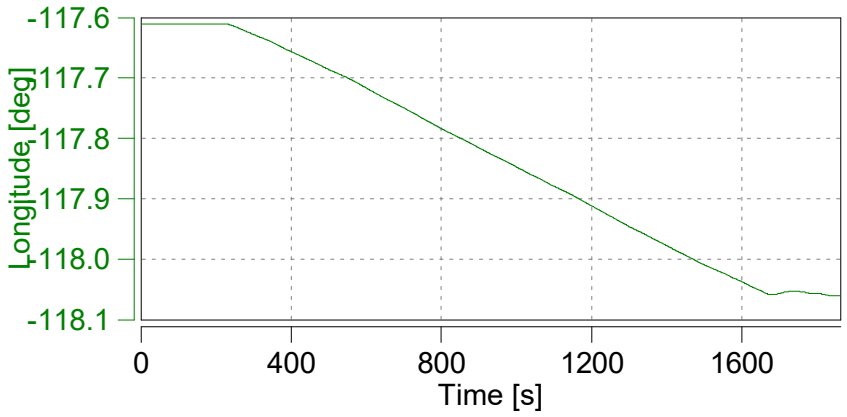
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

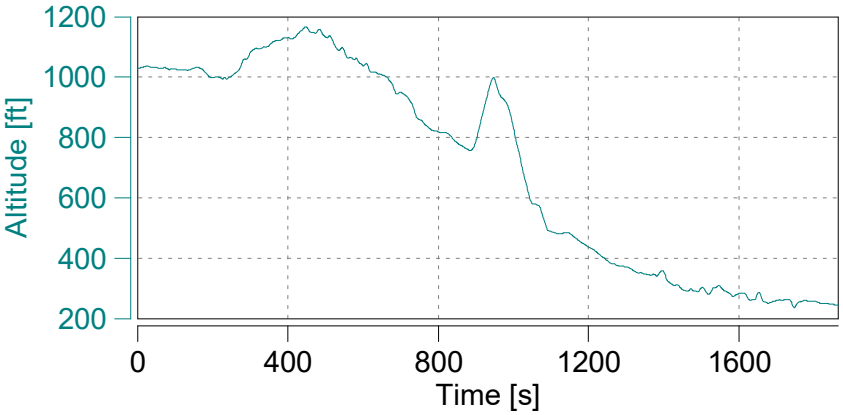
Case: C118-1270
Page: GPS

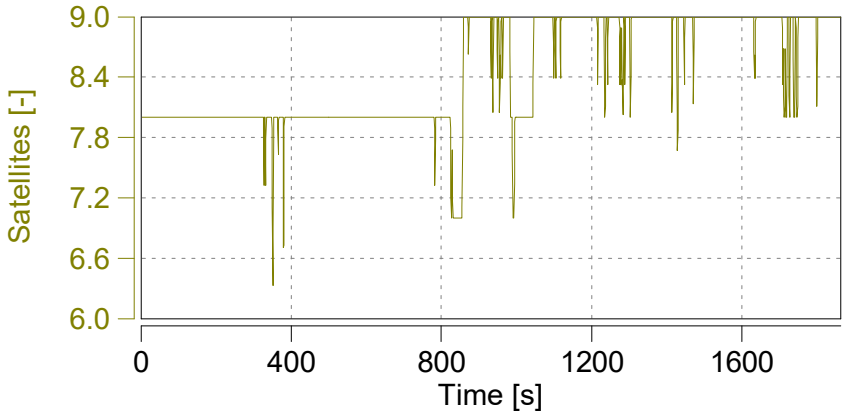
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









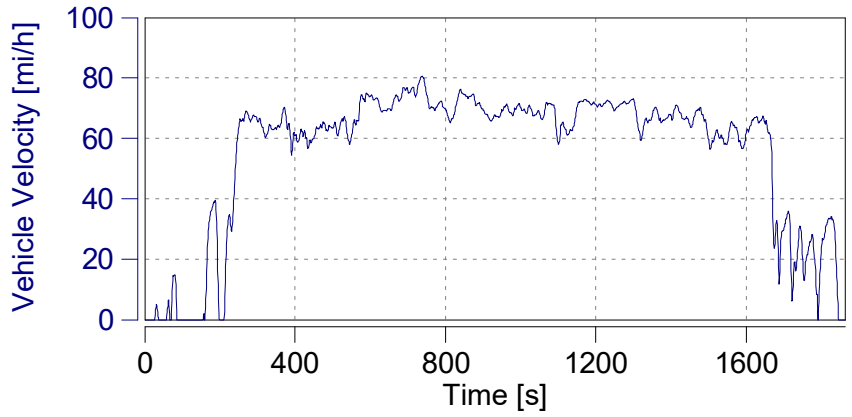
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

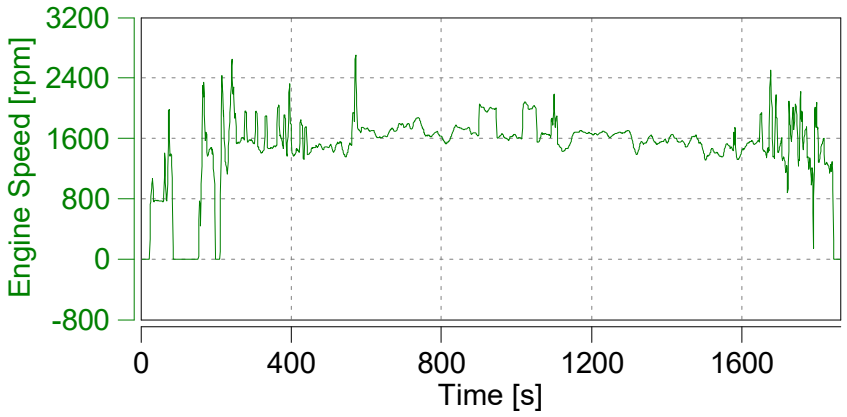
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

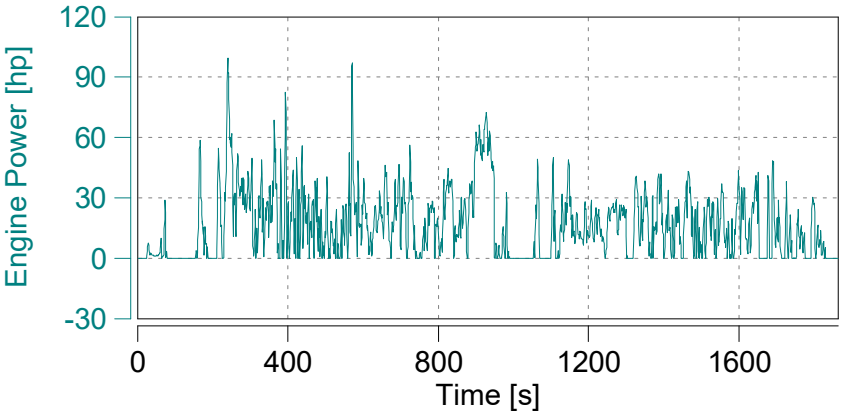
Case: C118-1270
Page: Engine (1)

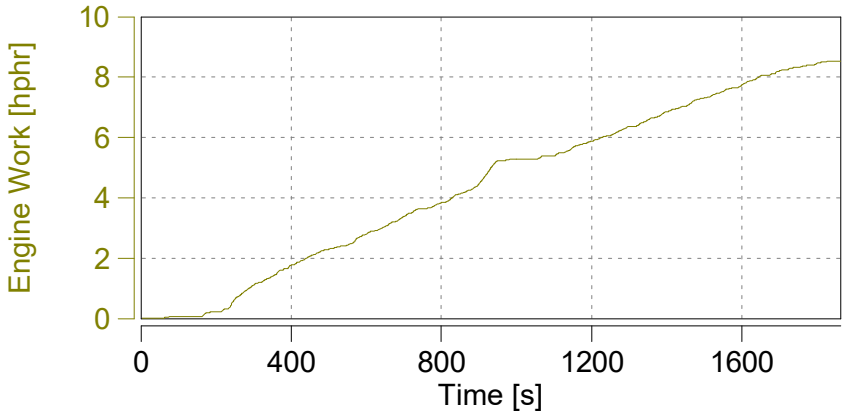
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









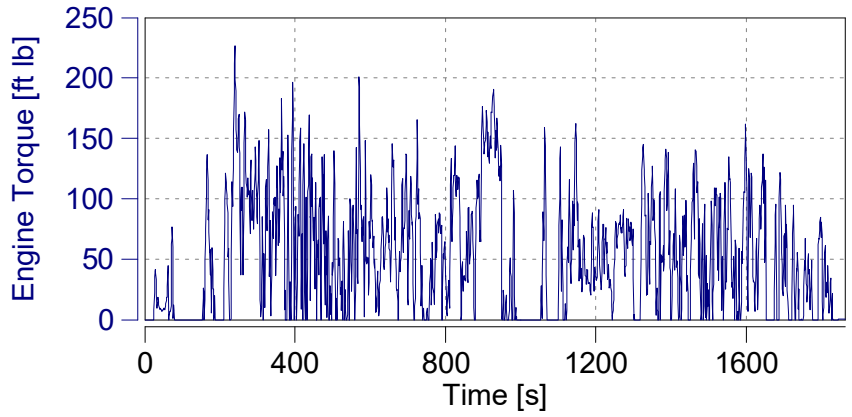
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

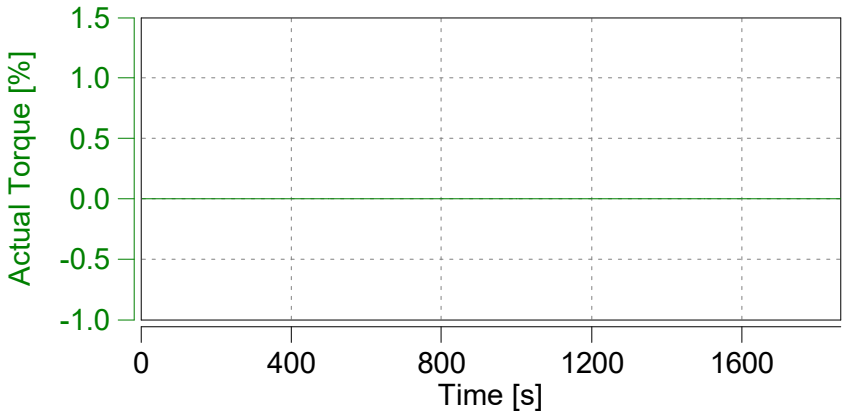
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

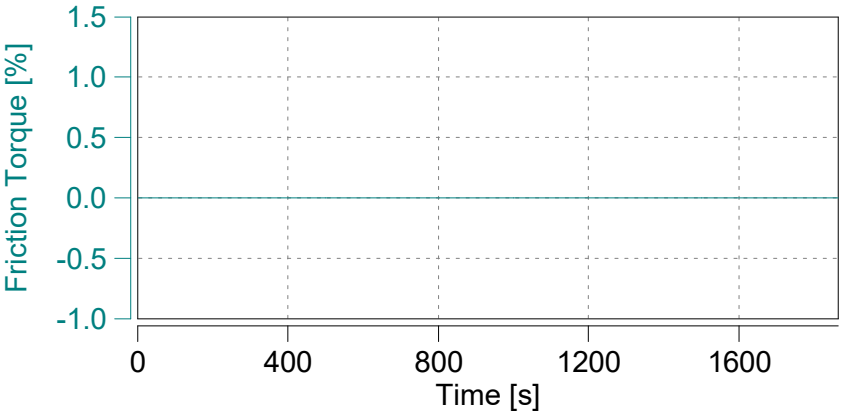
Case: C118-1270
Page: Engine (2)

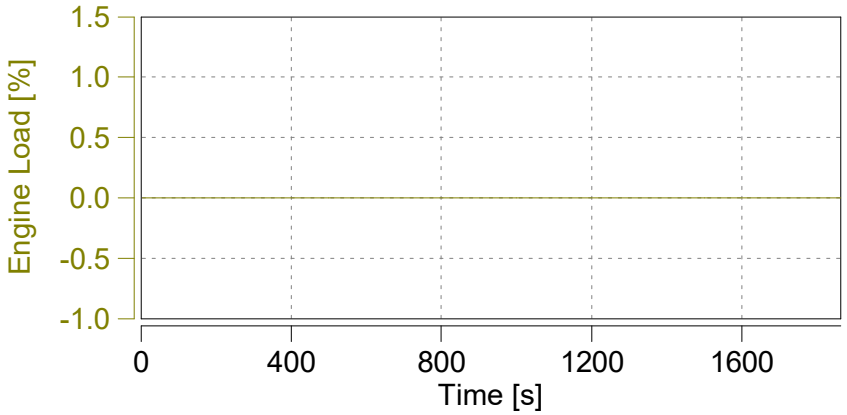
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









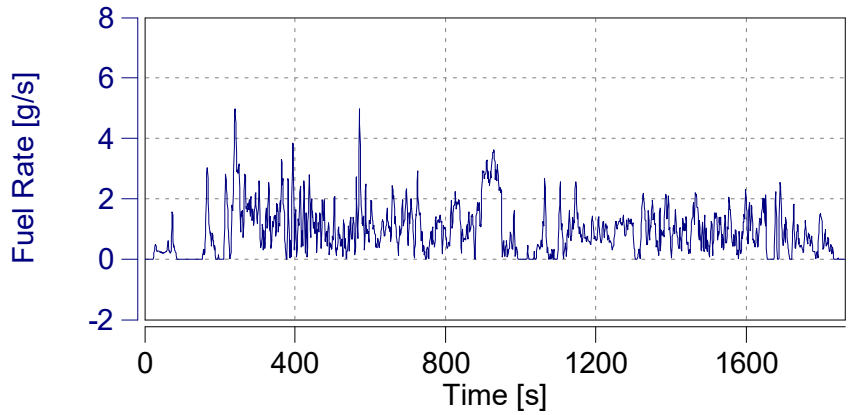
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

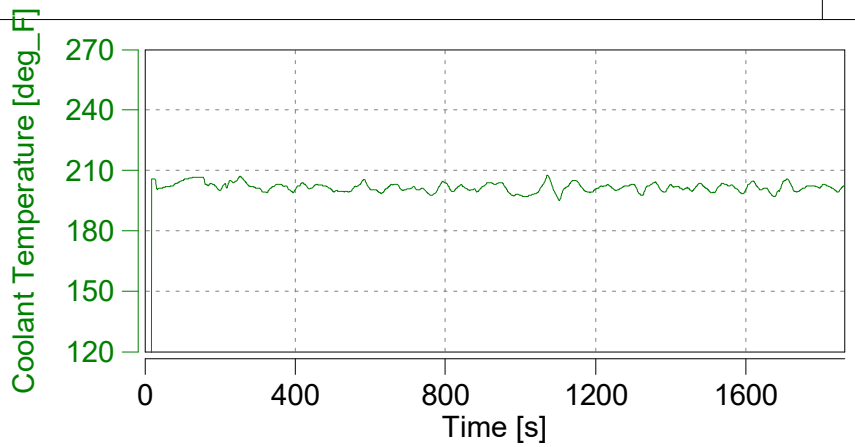
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

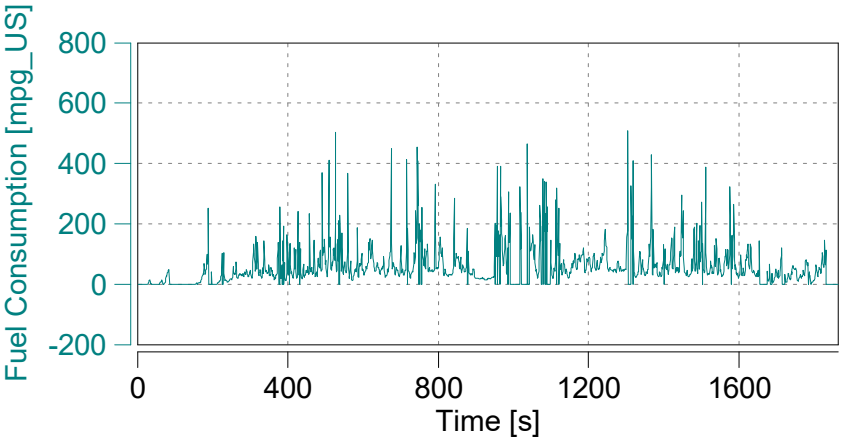
Case: C118-1270
Page: Engine (3)

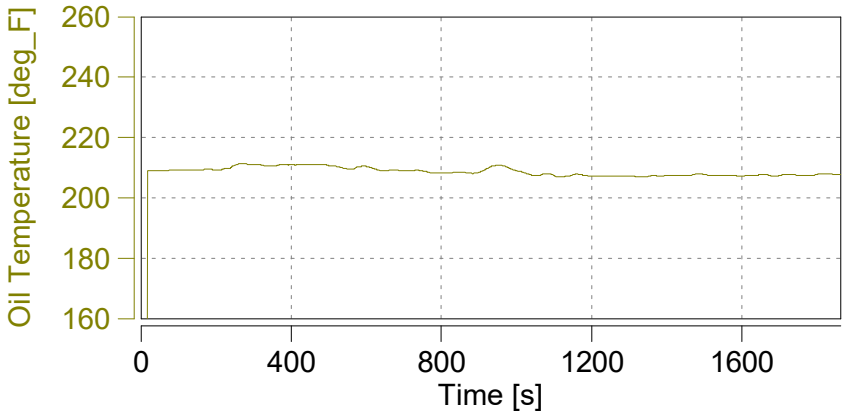
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









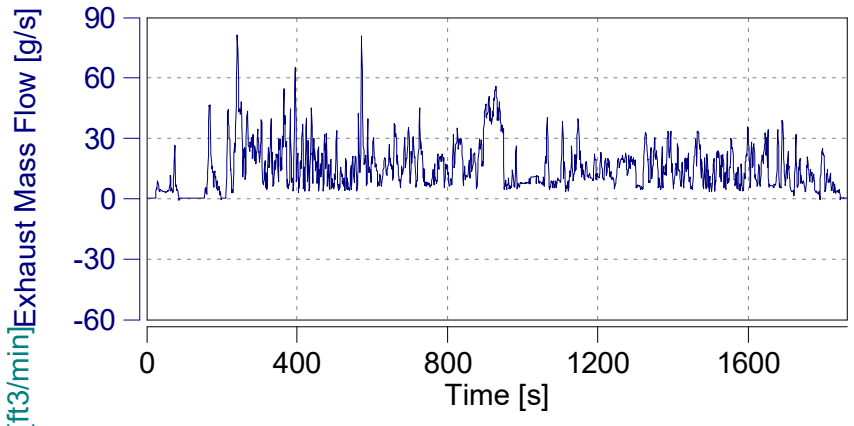
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

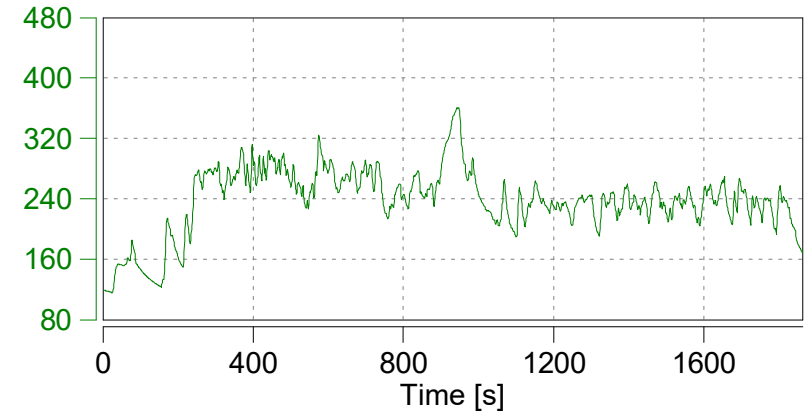
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

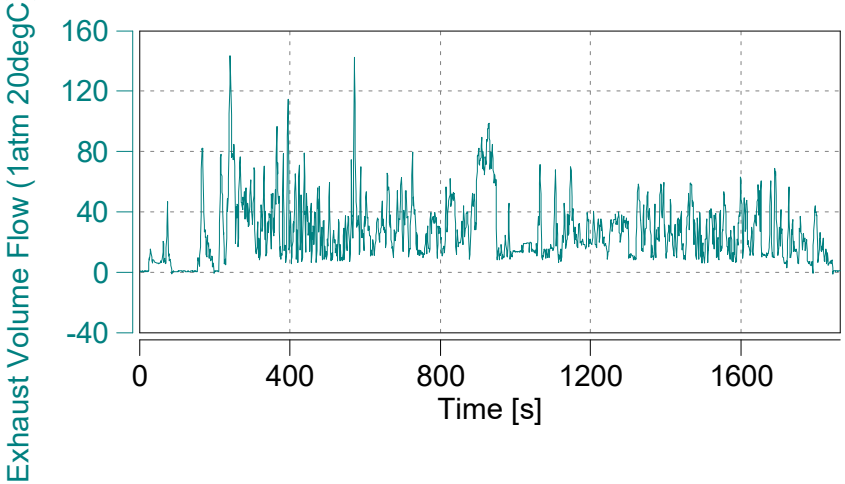
Case: C118-1270
Page: Exhaust Flow (1)

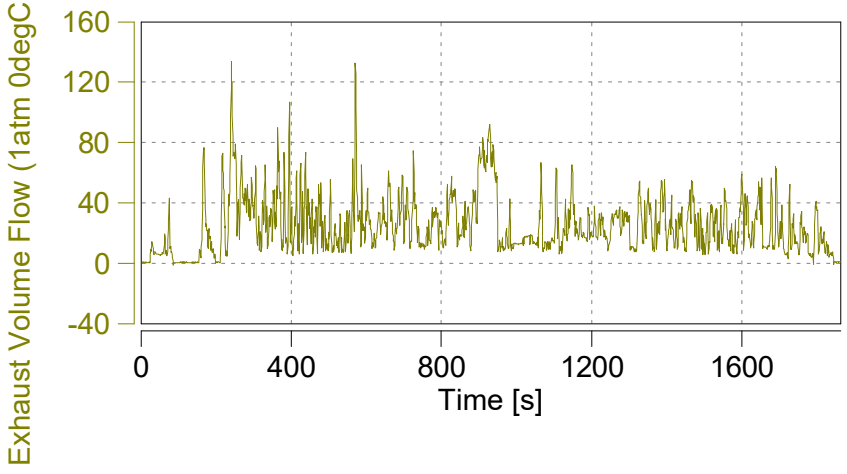
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









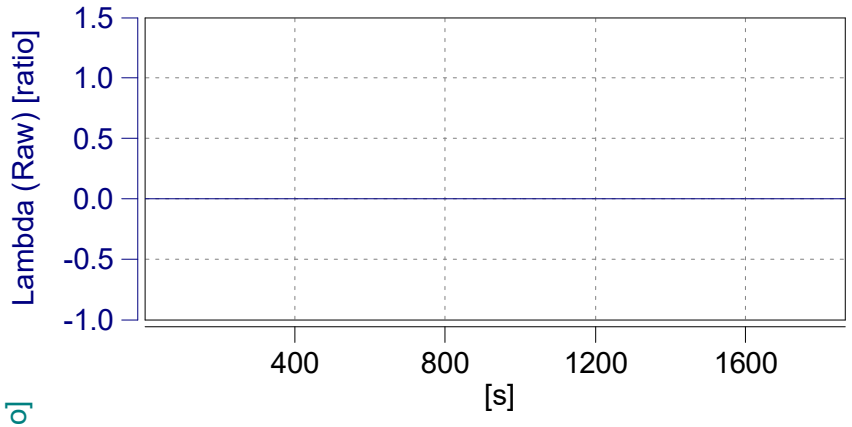
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

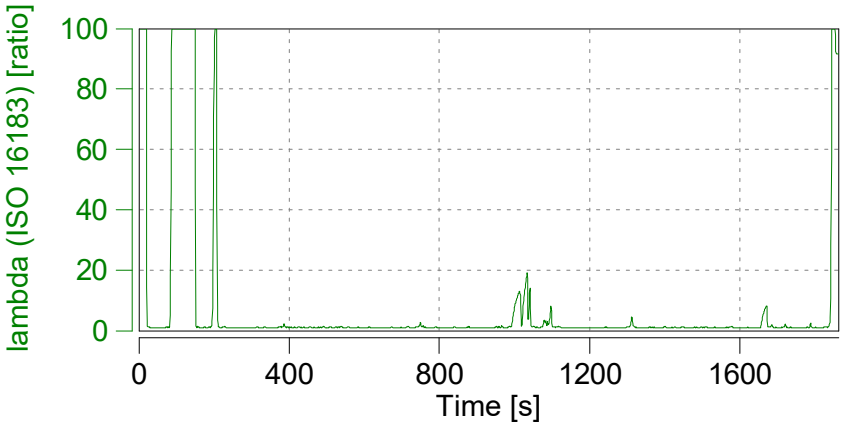
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

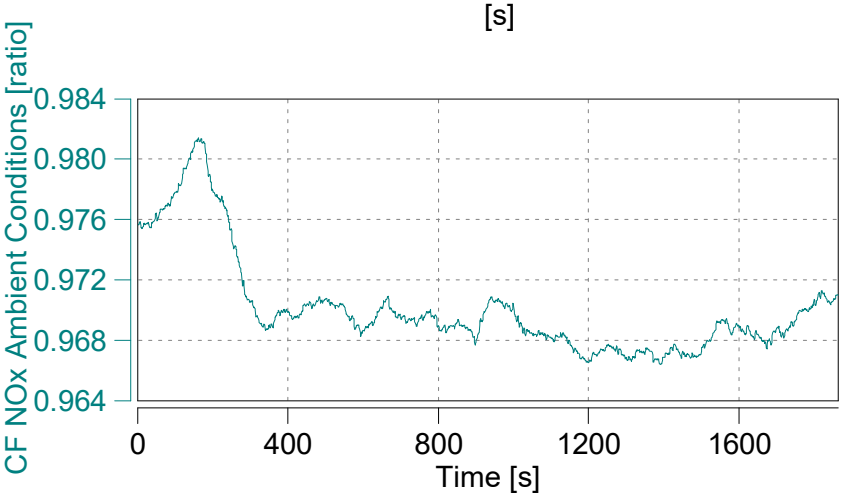
Case: C118-1270
Page: Exhaust Flow (2)

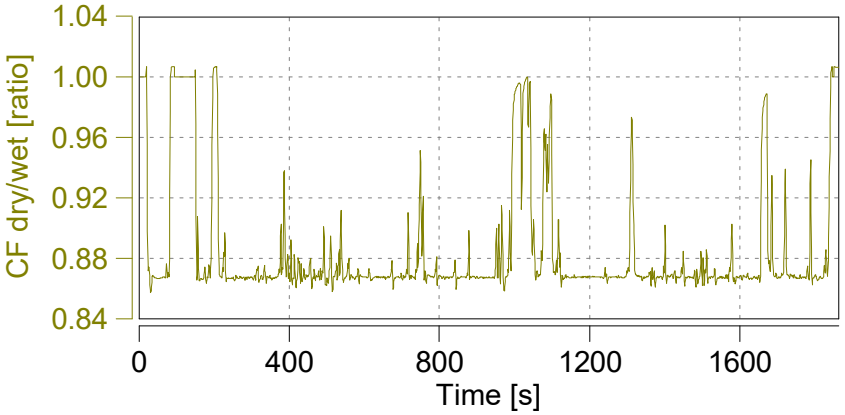
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









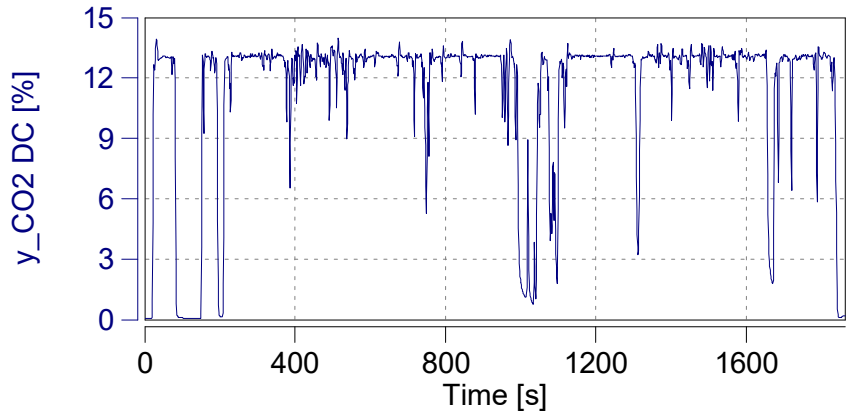
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

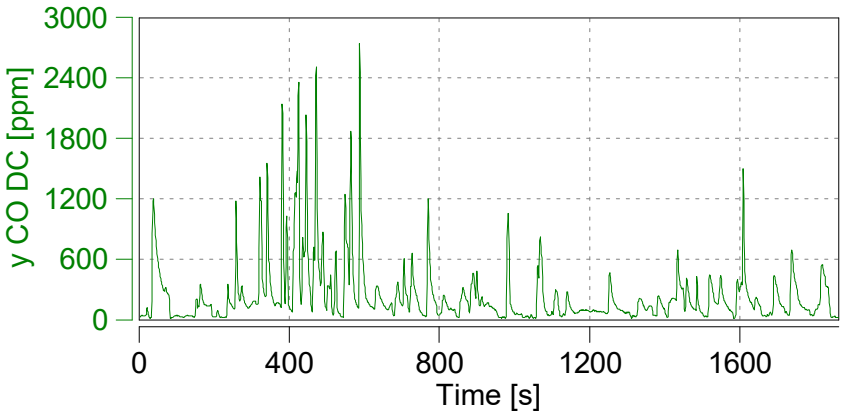
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

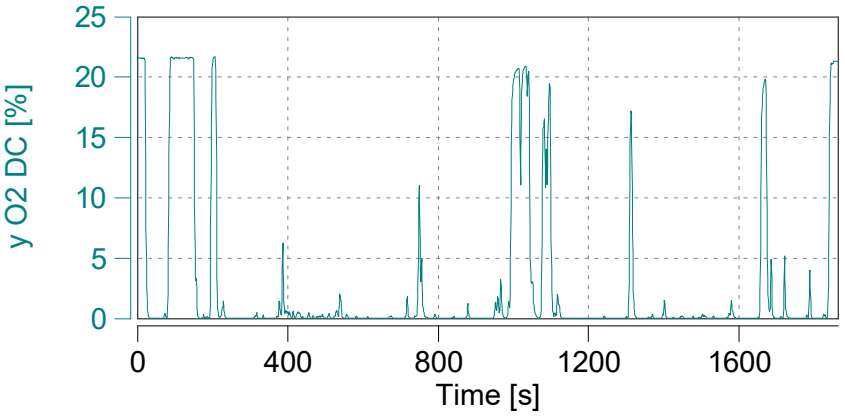
Case: C118-1270
Page: Corrected Emissions (1)

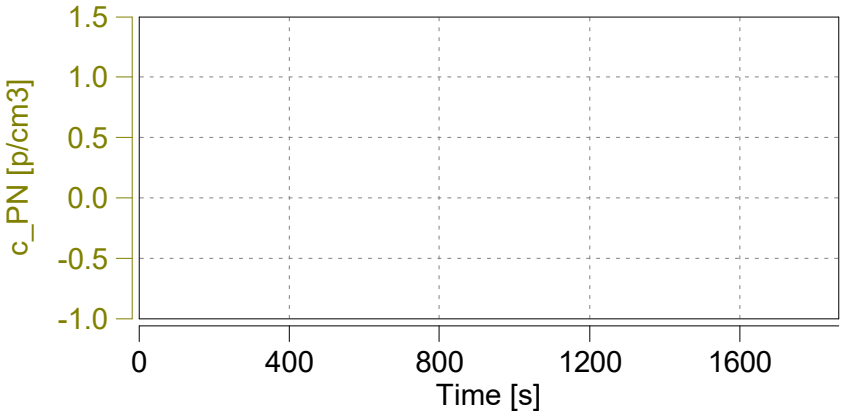
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









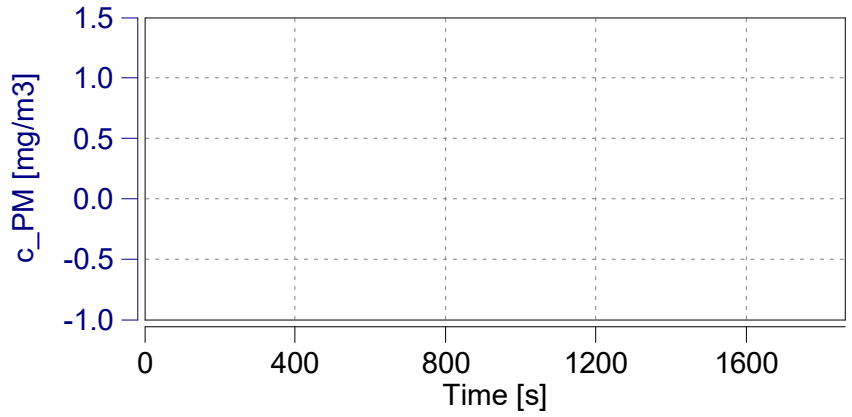
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

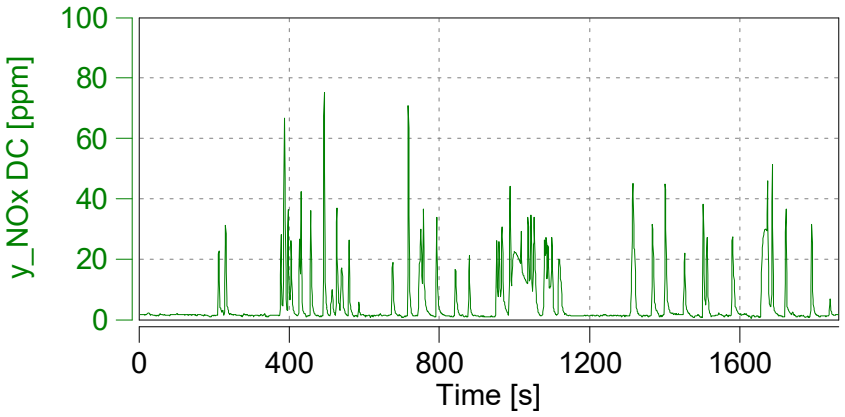
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

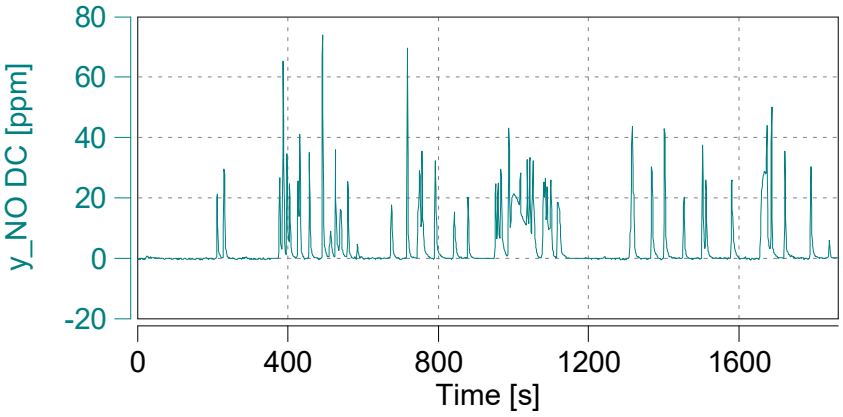
Case: C118-1270
Page: Corrected Emissions (2)

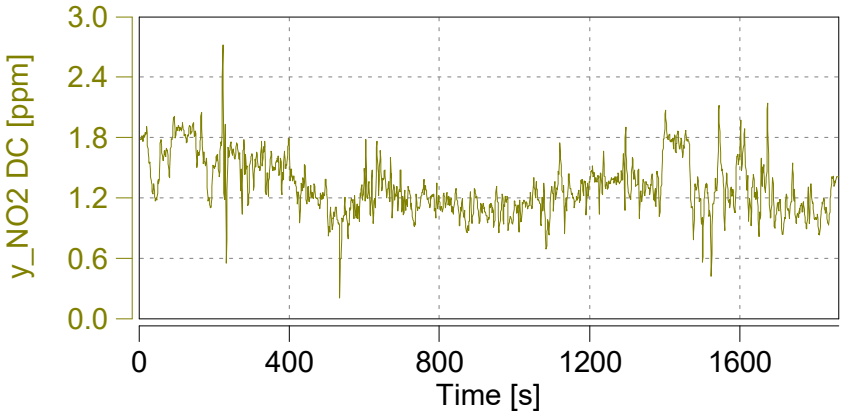
'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









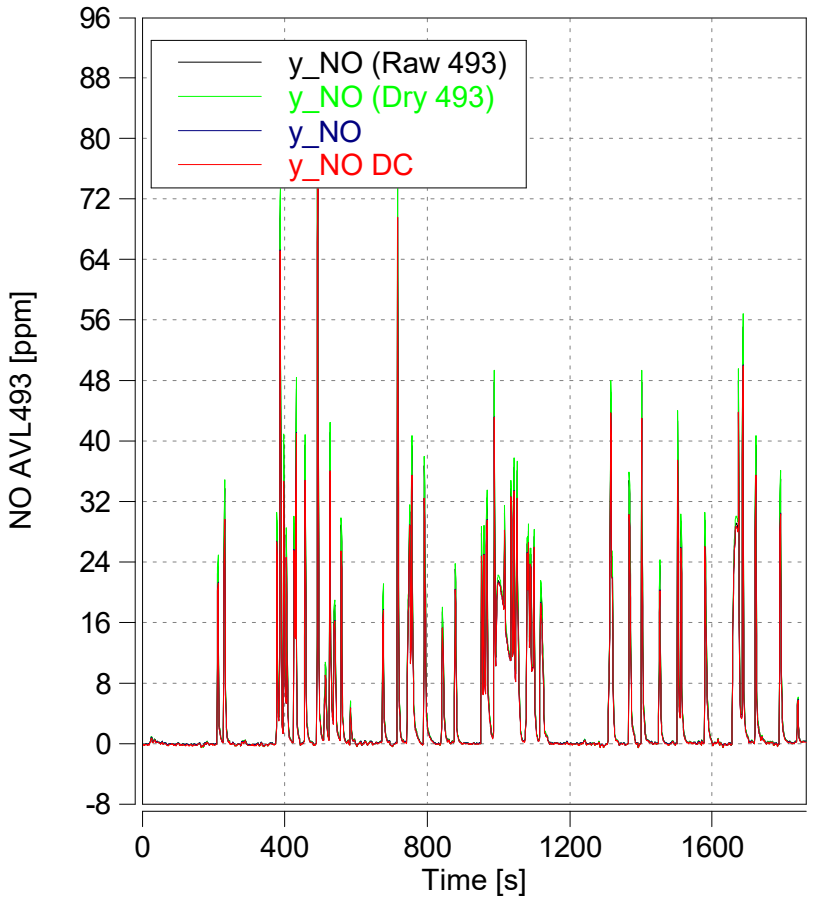
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

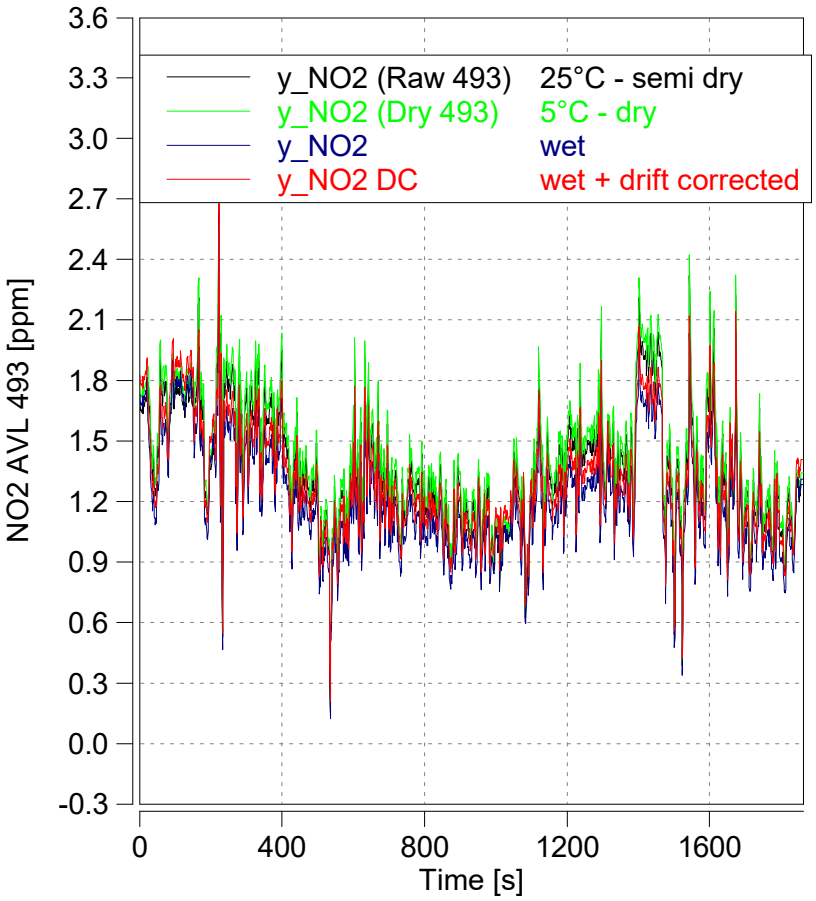
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

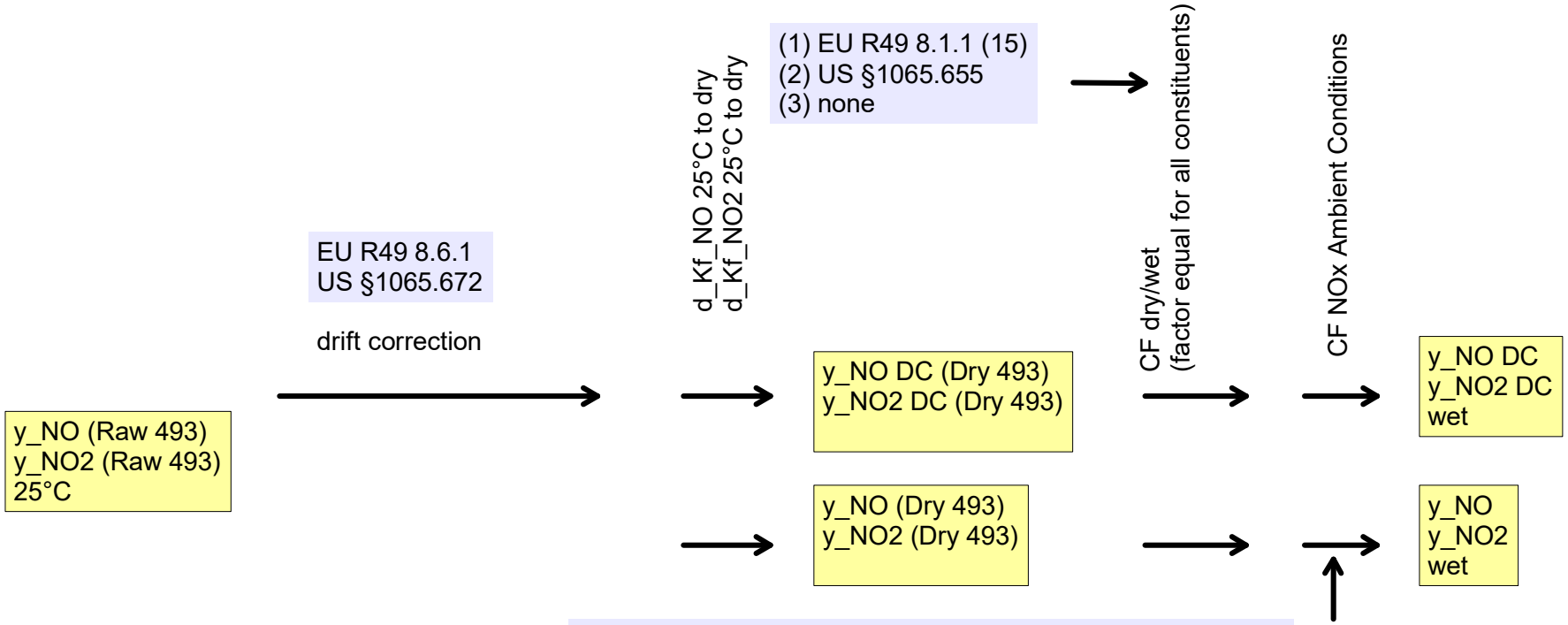




Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

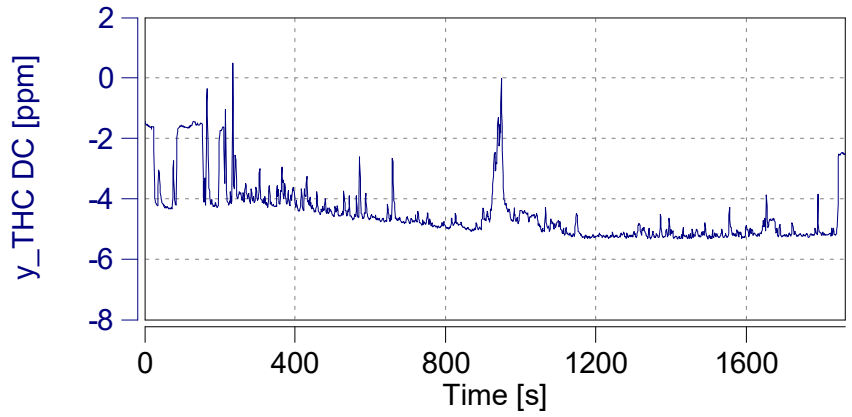
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

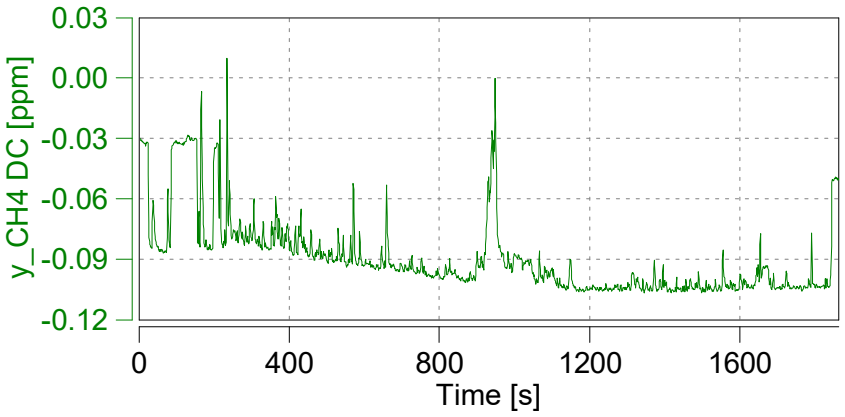
NOx - AVL 493

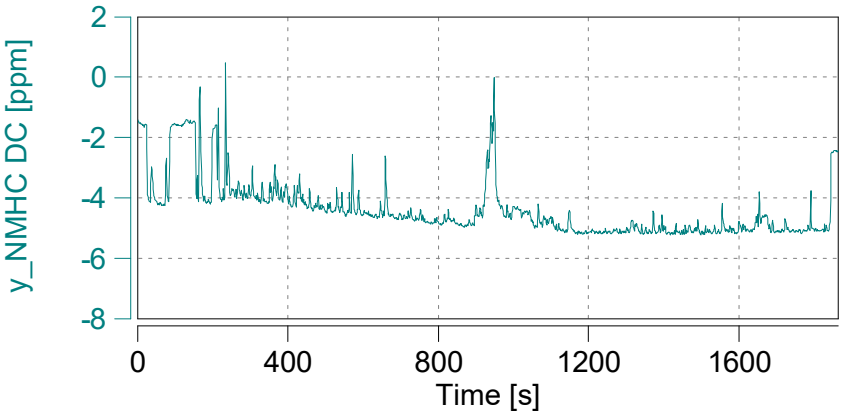

y_NO (Raw 493)
y_NO2 (Raw 493)
25°C
EU R49 8.6.1
US §1065.672
drift correction
d_Kf_NO 25°C to dry
d_Kf_NO2 25°C to dry
(1) EU R49 8.1.1 (15)
(2) US §1065.655
(3) none
y_NO DC (Dry 493)
y_NO2 DC (Dry 493)
y_NO (Dry 493)
y_NO2 (Dry 493)
CF dry/wet
(factor equal for all constituents)
CF NOx Ambient Conditions
y_NO DC
y_NO2 DC
wet
y_NO
y_NO2
wet
(1) HD Diesel Engine SwRI FinalReport 08-2597, 1999
(2) humidity only
(3) equivalent uncorrected NOx limit method for EU in service
(4) US §40.86.1342.94 Diesel
(5) US §40.86.1342.94 SI
(6) US §40.86.1370–2007 (default US)
(7) US 40.1065.670
(8) none (default EU)

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019







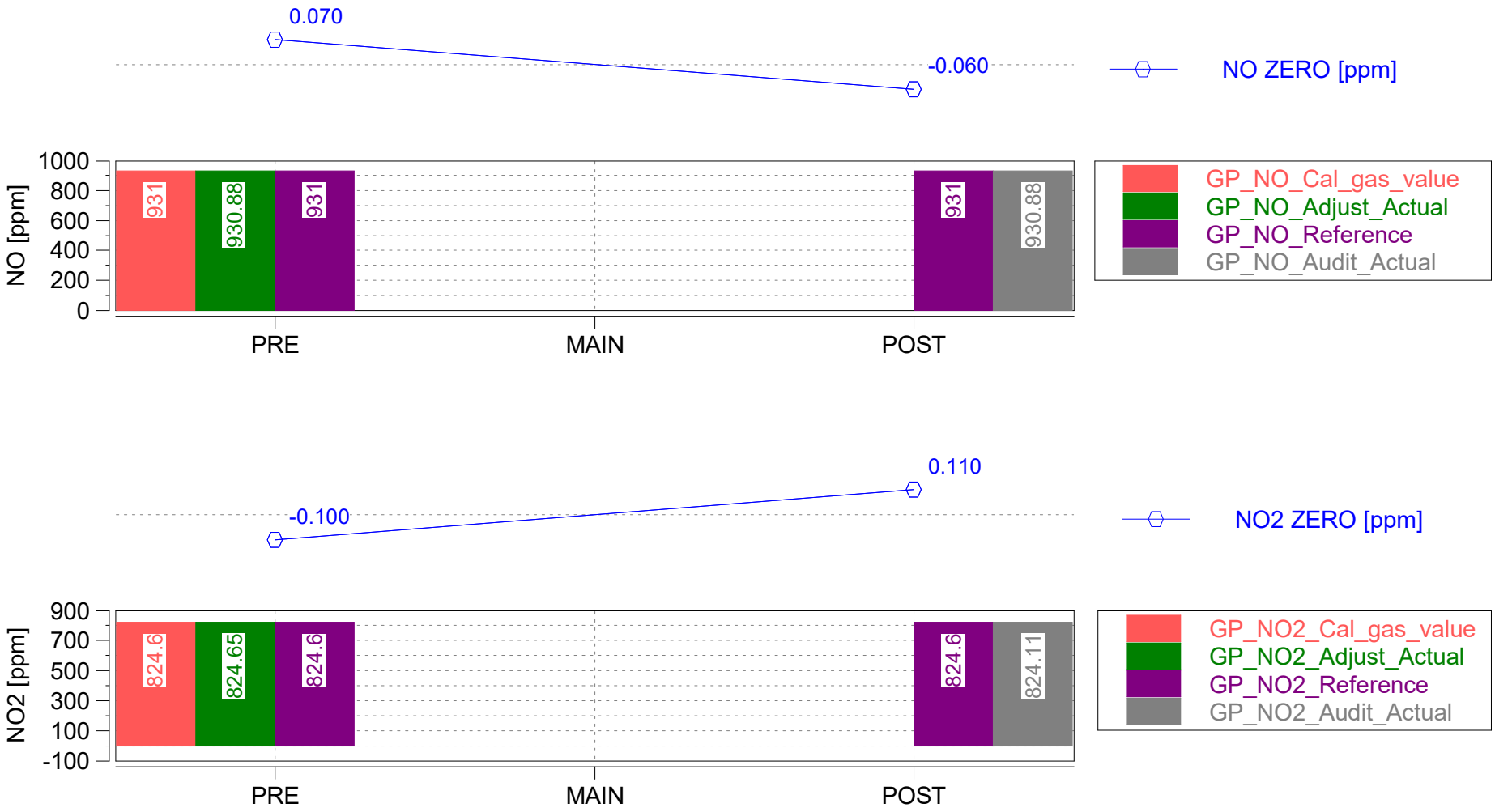
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



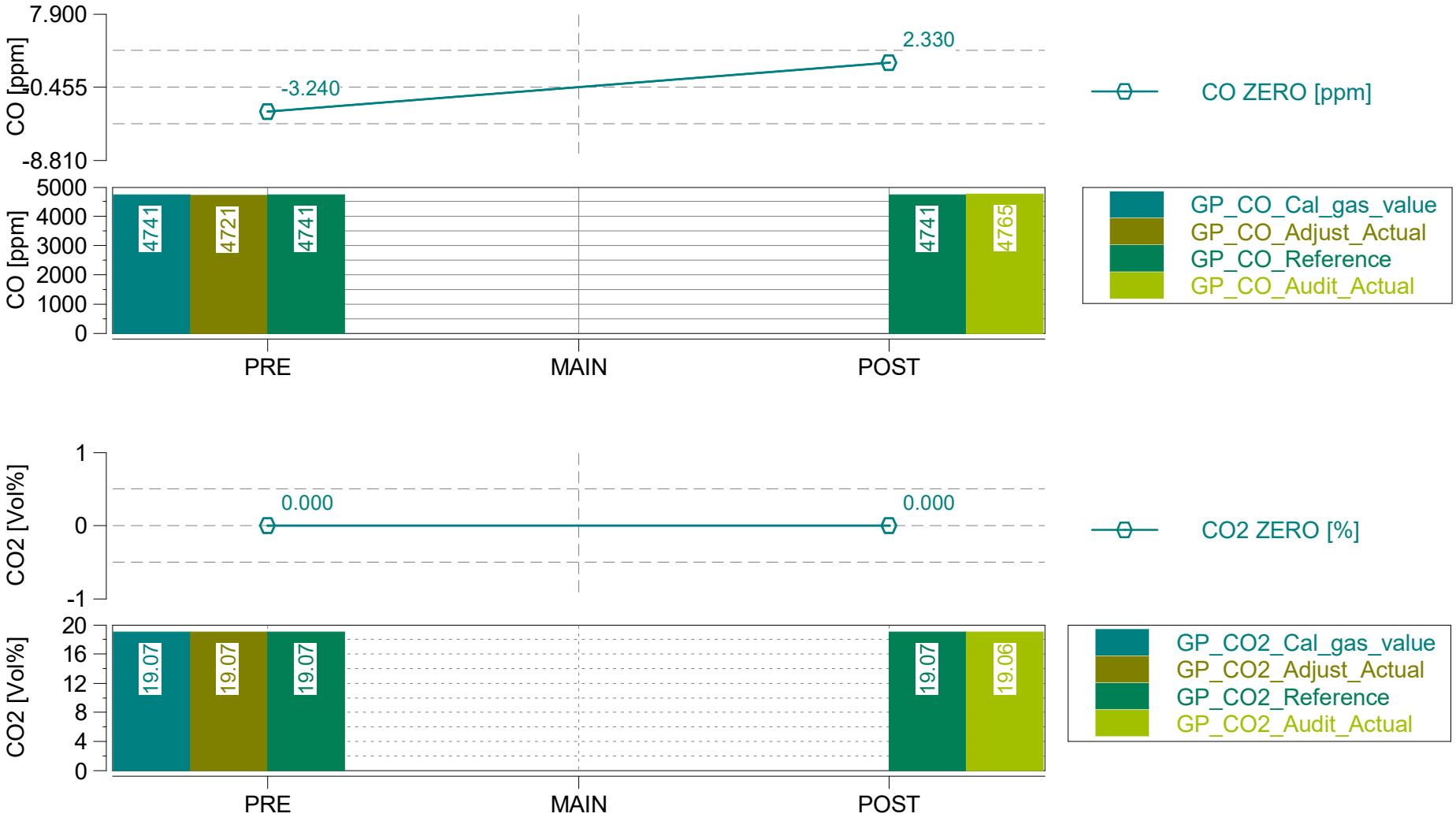
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



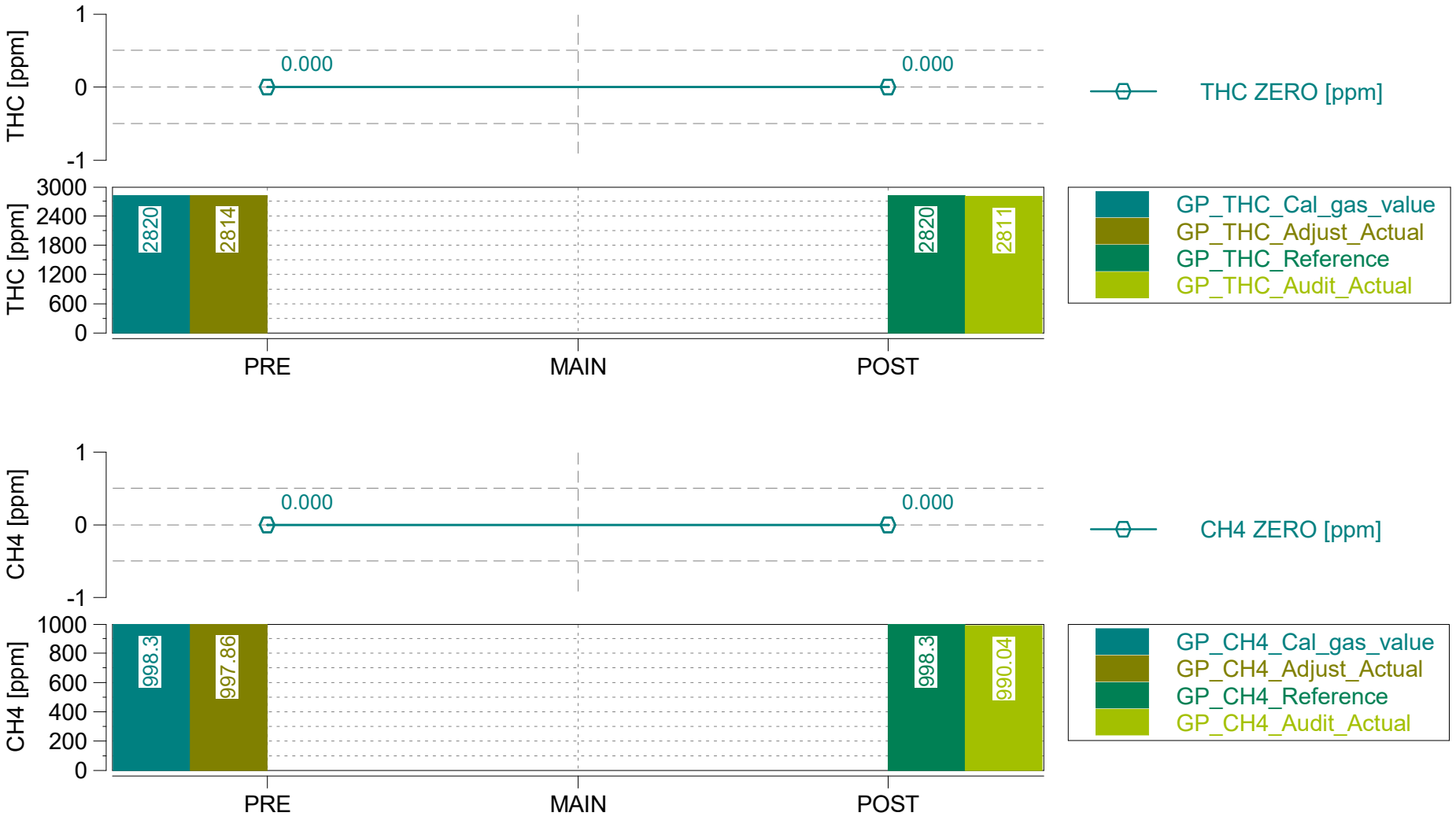
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-02)	**0.08**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-02
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

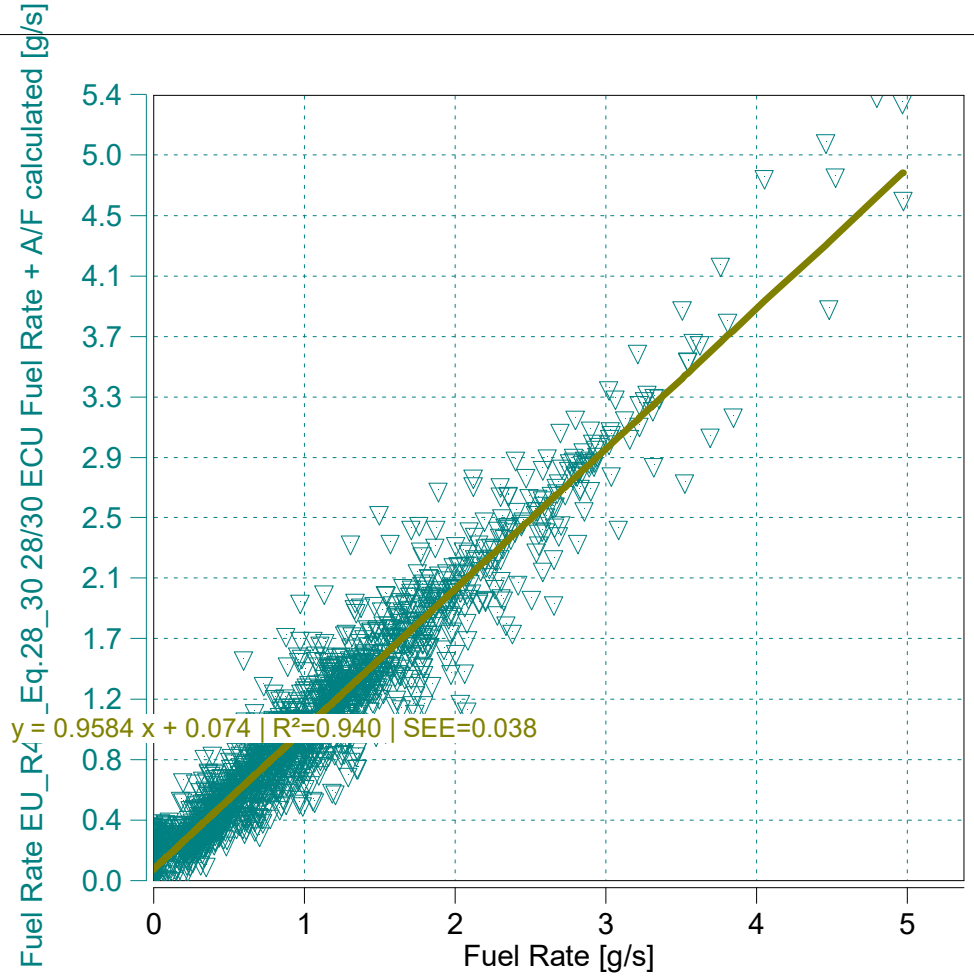
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 - Freeway West (B2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



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

y = 0.9584 x + 0.074 | R²=0.940 | SEE=0.038
m = 0.96 (0.9 - 1.1 recommended)
R² = 0.94 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1975.00	s
Trip Duration (a)	1975.00	s
Trip Distance	17.19	mi
Trip Distance (a)	17.19	mi
Trip Fuel Cons. (b)	2.42	kg
Trip Fuel Cons. (ab)	2.42	kg
Trip Fuel Cons. EU (ac)	2.45	kg
Trip Fuel Cons. US (ac)	2.43	kg
Trip Fuel Economy (b)	20.13	mpg_US
Trip Fuel Economy (ab)	20.13	mpg_US
Trip Fuel Economy EU (ac)	19.89	mpg_US
Trip Fuel Economy US (ac)	20.04	mpg_US
Trip Fuel Economy GGE (b)	20.13	mpg_US
Trip Fuel Economy GGE (ab)	20.13	mpg_US
Trip Fuel Economy EU GGE (ac)	19.89	mpg_US
Trip Fuel Economy US GGE (ac)	20.04	mpg_US
Trip Av. Eng. Speed	1385.94	rpm
Trip Av. Torque	64.83	lbft
Trip Av. Power	23.02	hp
Trip Work		
Trip Work (a)	12.63	hphr
Trip Exhaust Mass	37.54	kg
Trip Exhaust Mass EU (ac)	37.42	kg
Trip Exhaust Mass US (ac)	37.74	kg
Trip Av. Amb. Temperature	69.25	deg_F
Trip Av. Humidity	53.29	%
Trip Av. GPS Altitude	571.76	m
Fuel Type	Petrol (E10)	

ave THC	1.12296	ppm
ave NMHC	1.10050	ppm
ave CH4	0.02246	ppm
ave CO	188.41481	ppm
ave CO2	10.41202	%
ave NOx	3.52560	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	0.12592	g
tot NMHC	0.11648	g
tot CH4	0.00279	g
tot CO	8.02115	g
tot CO2	7370.59658	g
tot NO (d)	0.05123	g
tot NO2	0.07342	g
tot NOx	0.11965	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	31.33427	mi/hr
Trip Distance Share Urban	20.62849	% distanc
Trip Distance Share Rural	79.37151	% distanc
Trip Distance Share Motorway	0.00000	% distanc

BS CO2	583.62359	g/hphr
BS CO	0.63514	g/hphr
BS THC	0.00997	g/hphr
BS NMHC	0.00922	g/hphr
BS CH4	0.00022	g/hphr
BS NO (d)	0.00406	g/hphr
BS NO2	0.00581	g/hphr
BS NOx	0.00947	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	428.76415	g/mi
DS CO	0.46661	g/mi
DS THC	0.00733	g/mi
DS NMHC	0.00678	g/mi
DS CH4	0.00016	g/mi
DS NO (d)	0.00298	g/mi
DS NO2	0.00427	g/mi
DS NOx	0.00696	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	3050.39703	g/kg
FS CO	3.31964	g/kg
FS THC	0.05211	g/kg
FS NMHC	0.04821	g/kg
FS CH4	0.00116	g/kg
FS NO (d)	0.02120	g/kg
FS NO2	0.03038	g/kg
FS NOx	0.04952	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: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary Drift Corrected

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	1975.00	s
Trip Duration (a)	1975.00	s
Trip Distance	17.19	mi
Trip Distance (a)	17.19	mi
Trip Fuel Cons. (b)	2.42	kg
Trip Fuel Cons. (ab)	2.42	kg
Trip Fuel Cons. EU (ac)	2.45	kg
Trip Fuel Cons. US (ac)	2.43	kg
Trip Fuel Economy (b)	20.13	mpg_US
Trip Fuel Economy (ab)	20.13	mpg_US
Trip Fuel Economy EU (ac)	19.89	mpg_US
Trip Fuel Economy US (ac)	20.04	mpg_US
Trip Fuel Economy GGE (b)	20.13	mpg_US
Trip Fuel Economy GGE (ab)	20.13	mpg_US
Trip Fuel Economy EU GGE (ac)	19.89	mpg_US
Trip Fuel Economy US GGE (ac)	20.04	mpg_US
Trip Av. Eng. Speed	1385.94	rpm
Trip Av. Torque	64.83	lbft
Trip Av. Power	23.02	hp
Trip Work		
Trip Work (a)	12.63	hphr
Trip Exhaust Mass	37.54	kg
Trip Exhaust Mass EU (ac)	37.42	kg
Trip Exhaust Mass US (ac)	37.74	kg
Trip Av. Amb. Temperature	69.25	deg_F
Trip Av. Humidity	53.29	%
Trip Av. GPS Altitude	571.76	m
Fuel Type	Petrol (E10)	

ave THC DC	1.12591	ppm
ave NMHC DC	1.10339	ppm
ave CH4 DC	0.02252	ppm
ave CO DC	191.08916	ppm
ave CO2 DC	10.41475	%
ave NOx DC	3.55224	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	0.12625	g
tot NMHC DC	0.11678	g
tot CH4 DC	0.00280	g
tot CO DC	8.11359	g
tot CO2 DC	7372.52959	g
tot NO DC (d)	0.04989	g
tot NO2 DC	0.07843	g
tot NOx DC	0.12117	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	31.33427	mi/hr
Trip Distance Share Urban	20.62849	% distanc
Trip Distance Share Rural	79.37151	% distanc
Trip Distance Share Motorway	0.00000	% distanc

BS CO2 DC	583.77665	g/hphr
BS CO DC	0.64246	g/hphr
BS THC DC	0.01000	g/hphr
BS NMHC DC	0.00925	g/hphr
BS CH4 DC	0.00022	g/hphr
BS NO DC (d)	0.00395	g/hphr
BS NO2 DC	0.00621	g/hphr
BS NOx DC	0.00959	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	428.87660	g/mi
DS CO DC	0.47199	g/mi
DS THC DC	0.00734	g/mi
DS NMHC DC	0.00679	g/mi
DS CH4 DC	0.00016	g/mi
DS NO DC (d)	0.00290	g/mi
DS NO2 DC	0.00456	g/mi
DS NOx DC	0.00705	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	3051.19703	g/kg
FS CO DC	3.35789	g/kg
FS THC DC	0.05225	g/kg
FS NMHC DC	0.04833	g/kg
FS CH4 DC	0.00116	g/kg
FS NO DC (d)	0.02065	g/kg
FS NO2 DC	0.03246	g/kg
FS NOx DC	0.05015	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

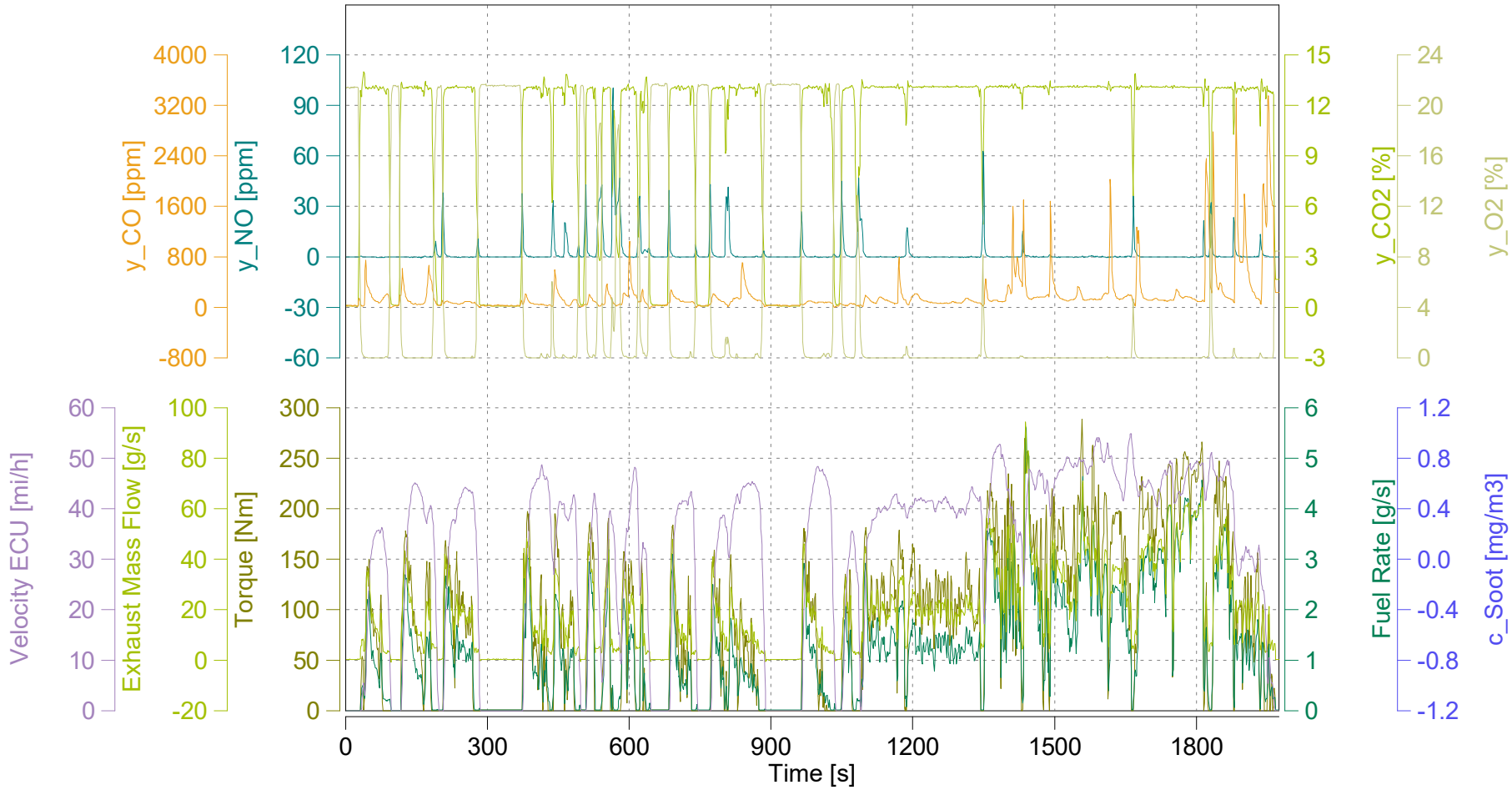
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment Check

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



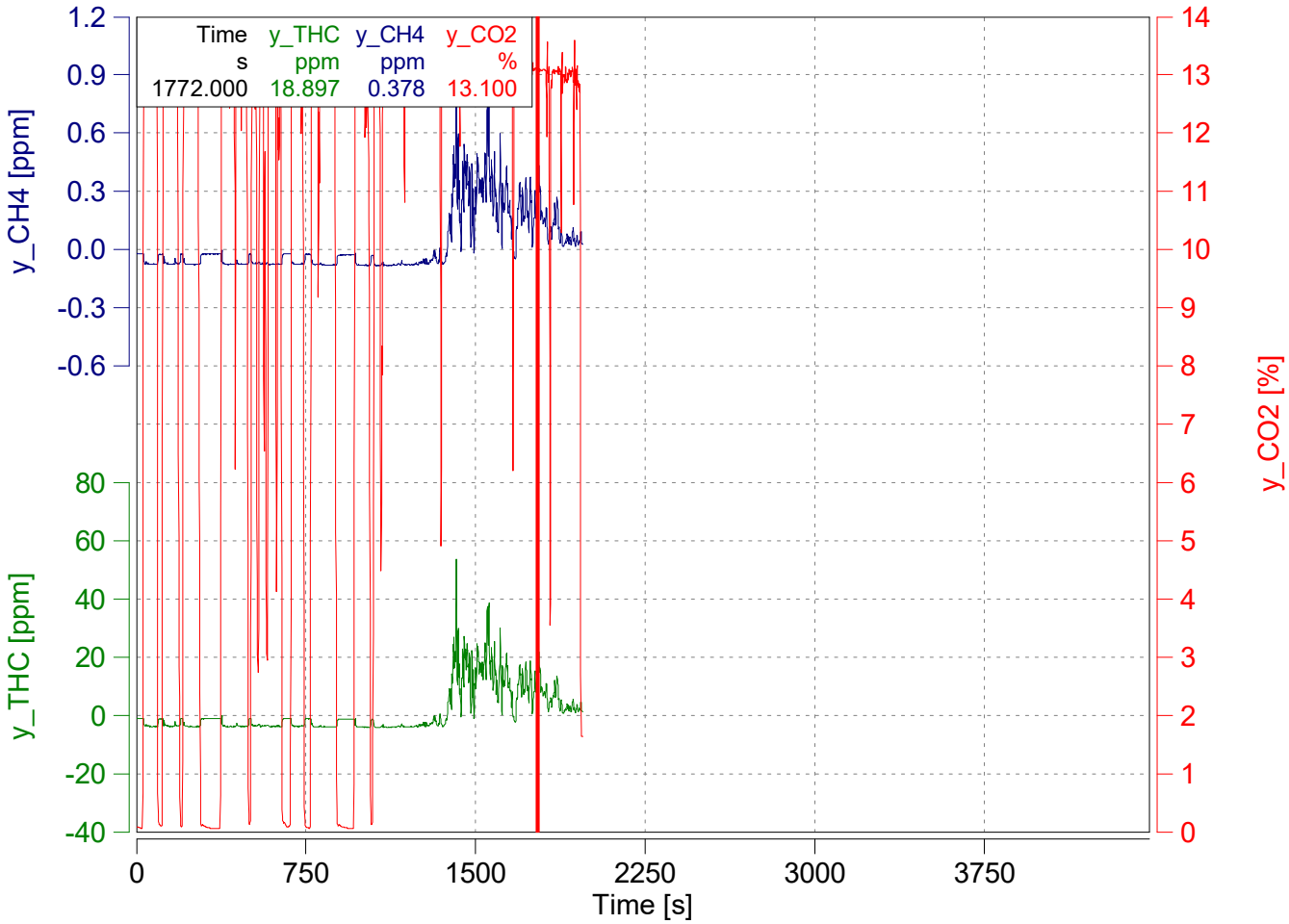
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment of Gas Concentrations

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

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

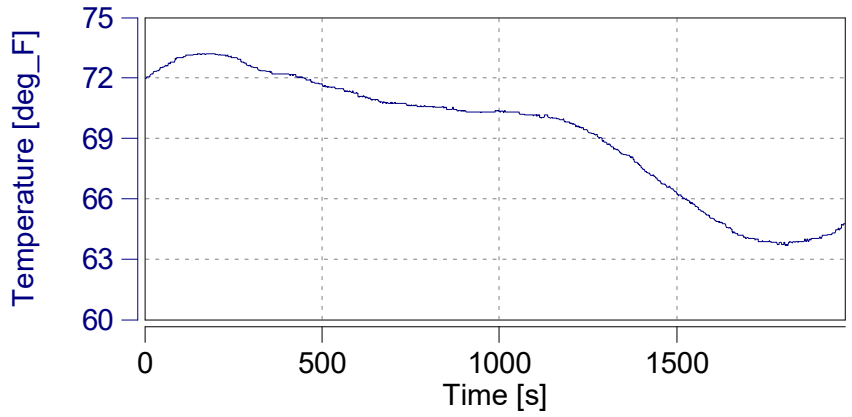
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

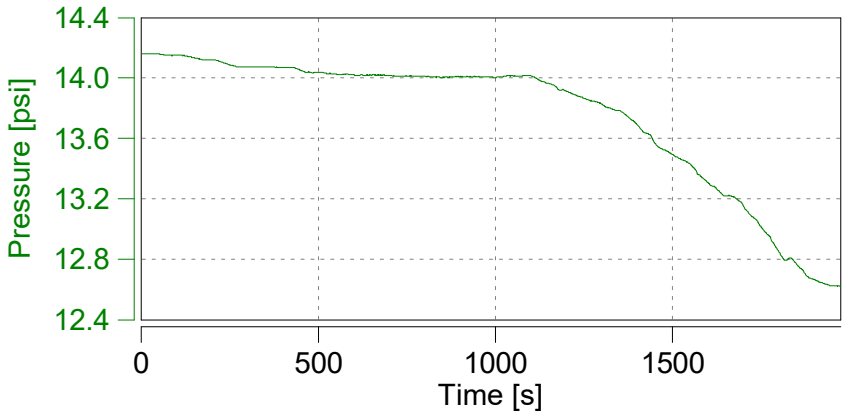
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

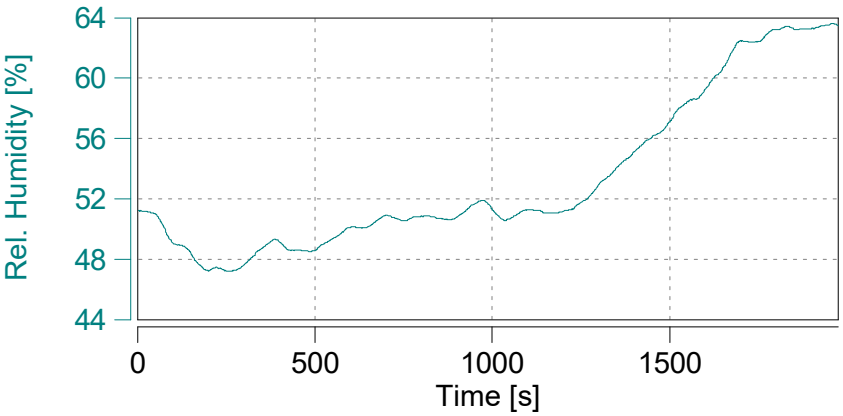
Case: C118-1270
Page: Ambient Conditions

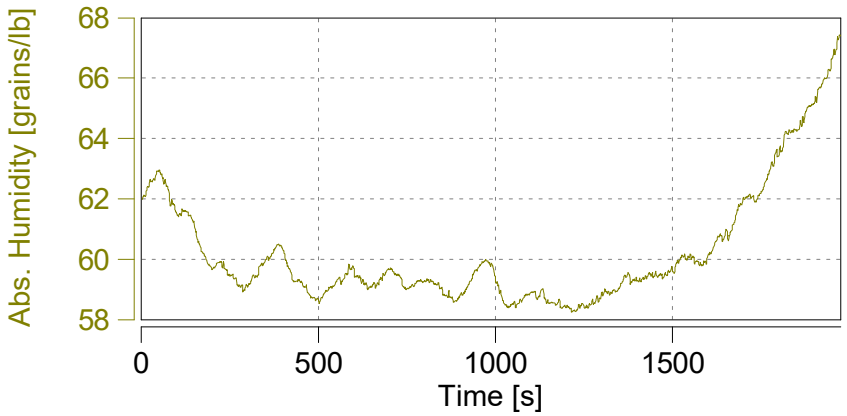
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









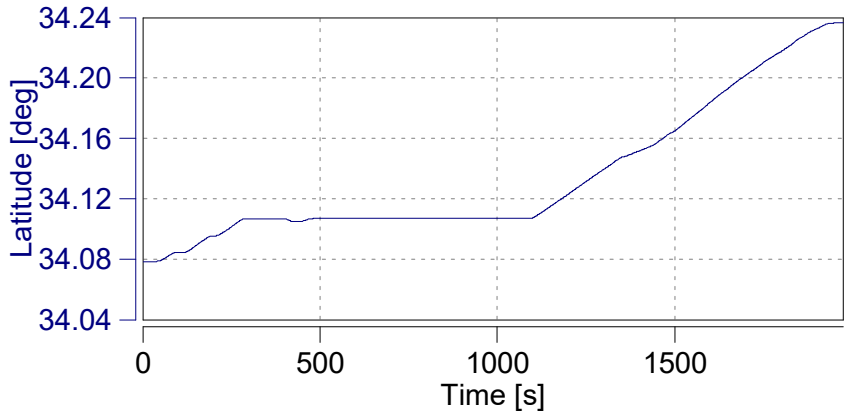
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

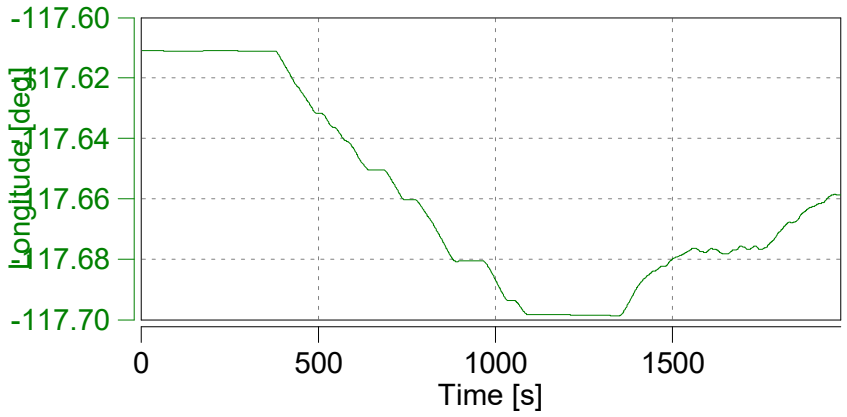
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

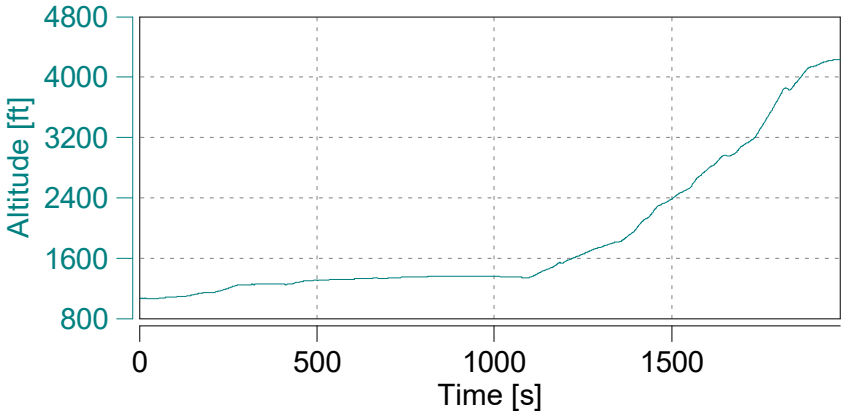
Case: C118-1270
Page: GPS

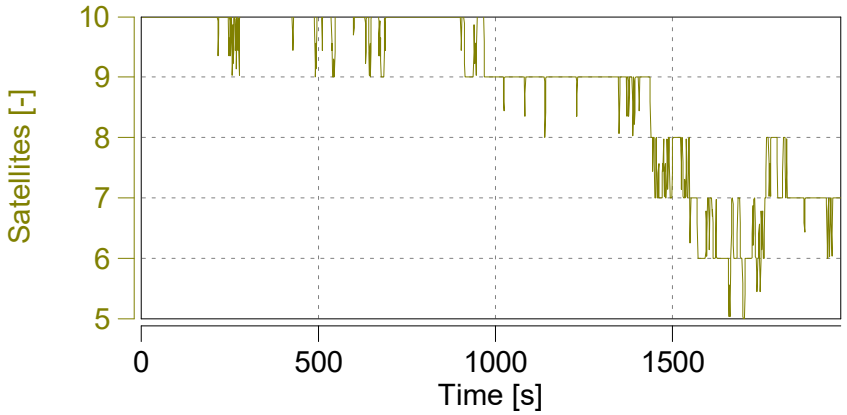
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









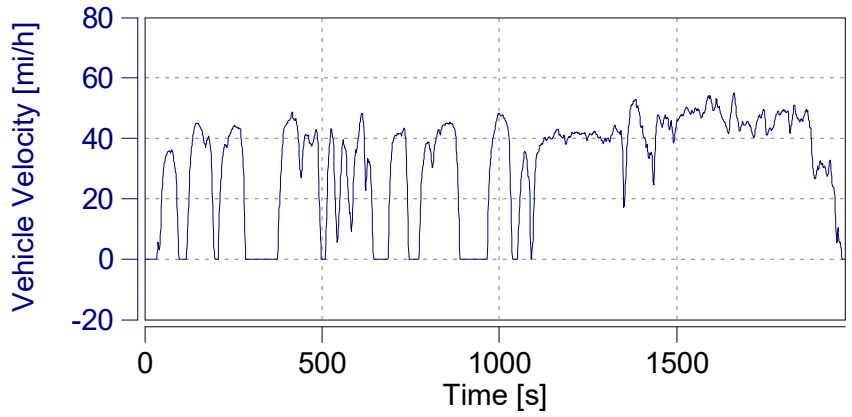
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

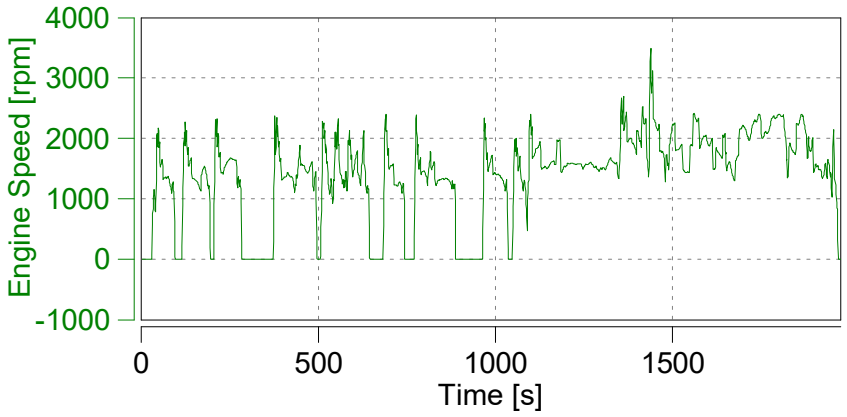
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

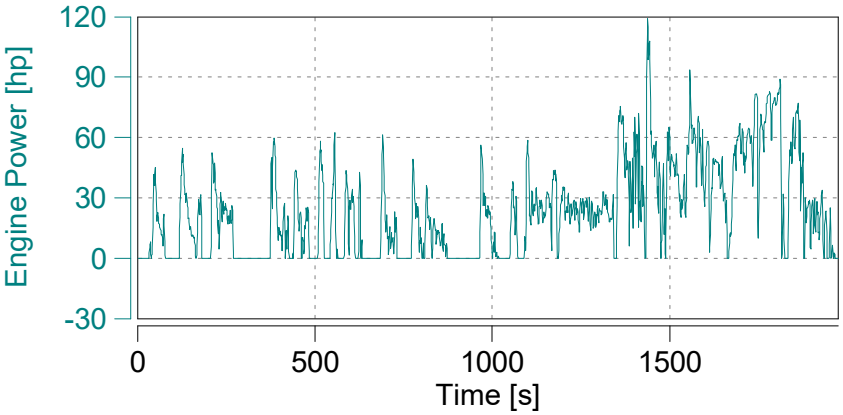
Case: C118-1270
Page: Engine (1)

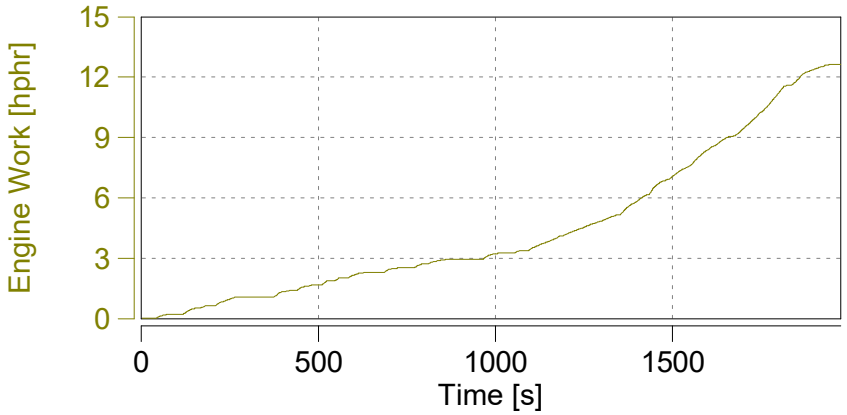
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









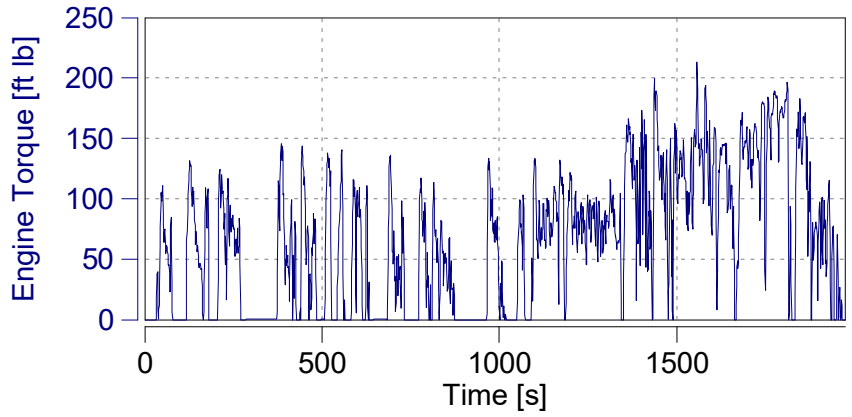
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

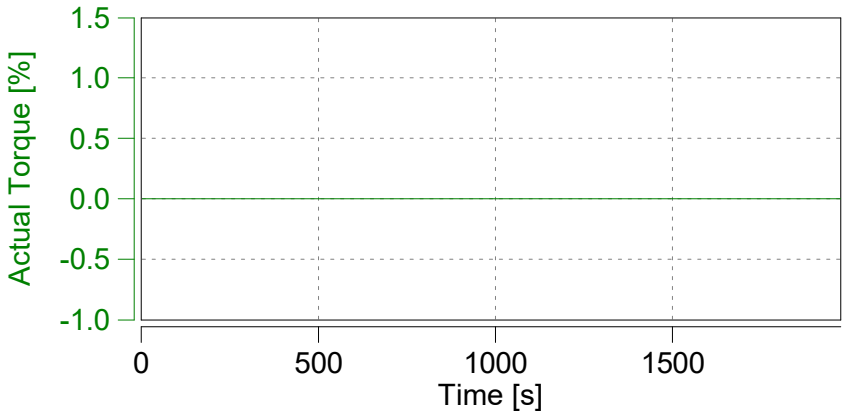
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

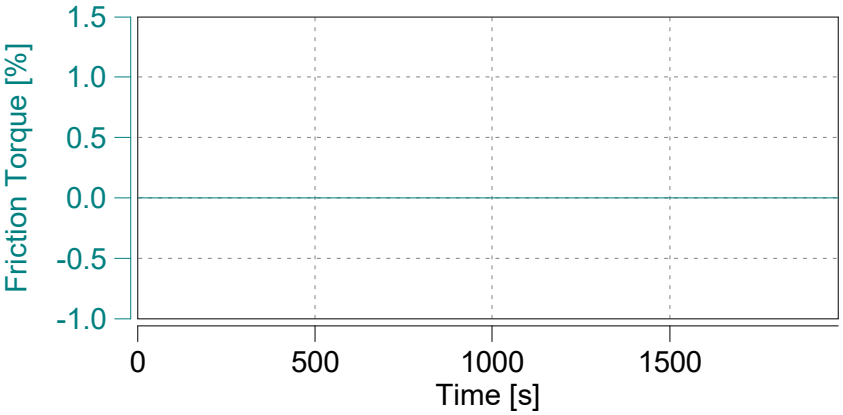
Case: C118-1270
Page: Engine (2)

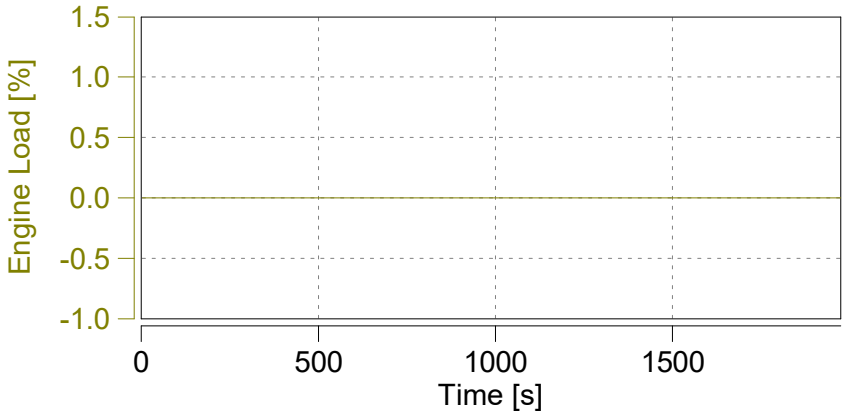
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

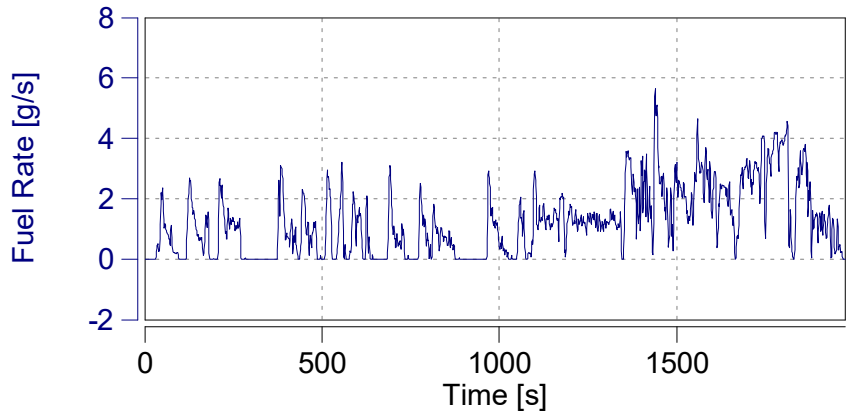
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

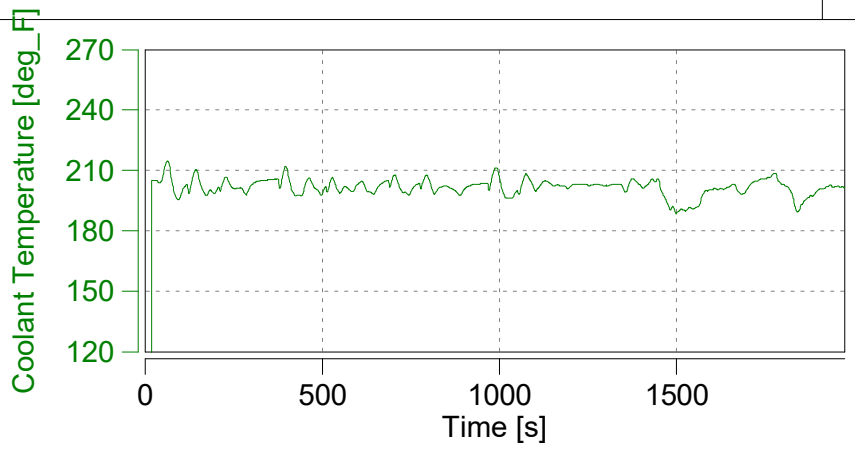
Case: C118-1270
Page: Engine (3)

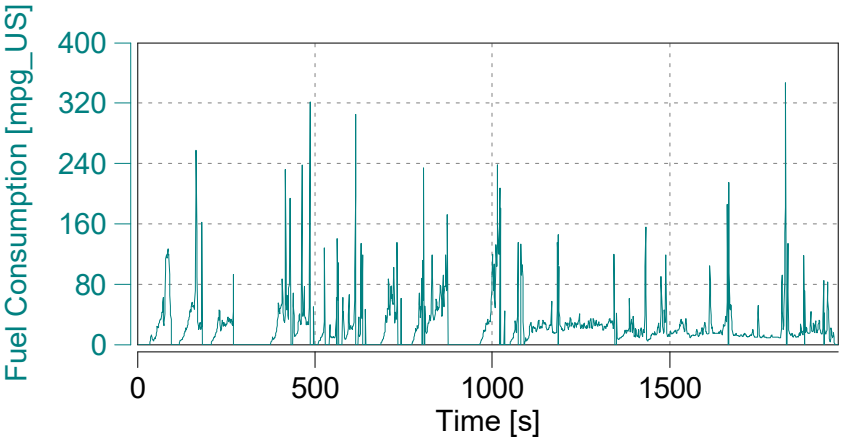
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

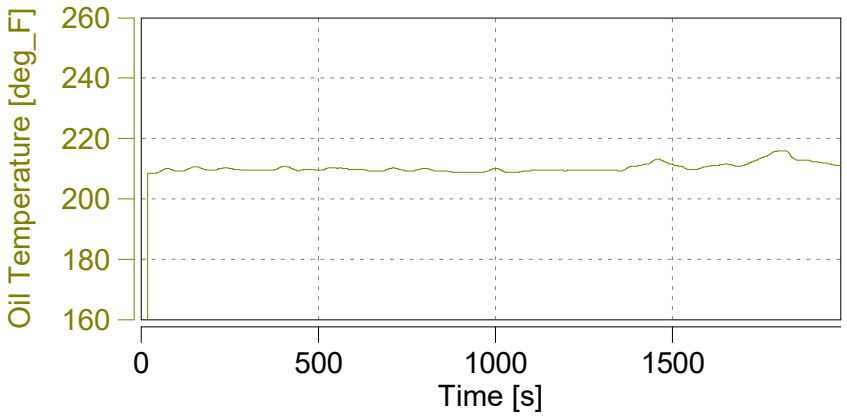
AVL

Concerto M.O.V.E, 2019









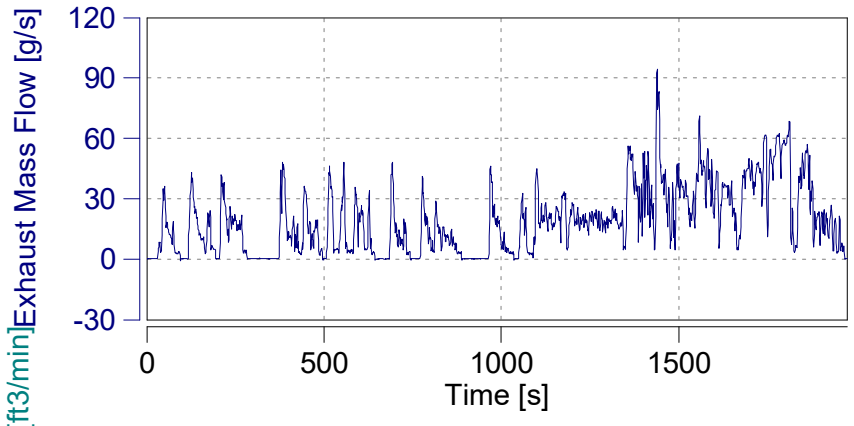
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

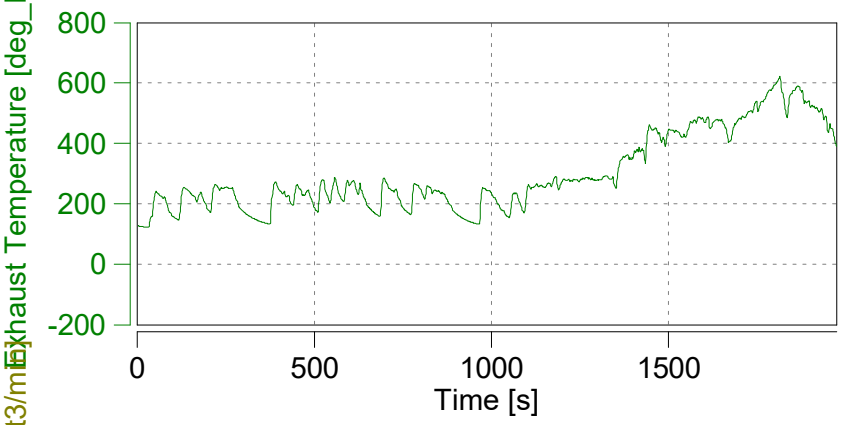
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

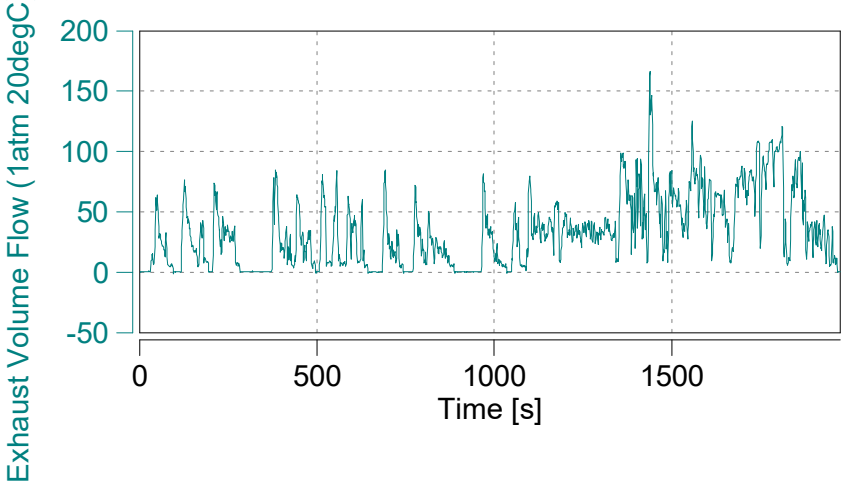
Case: C118-1270
Page: Exhaust Flow (1)

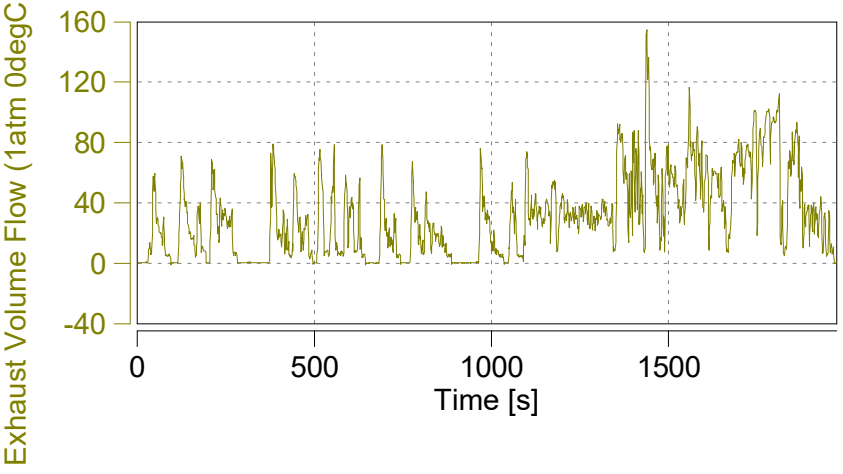
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









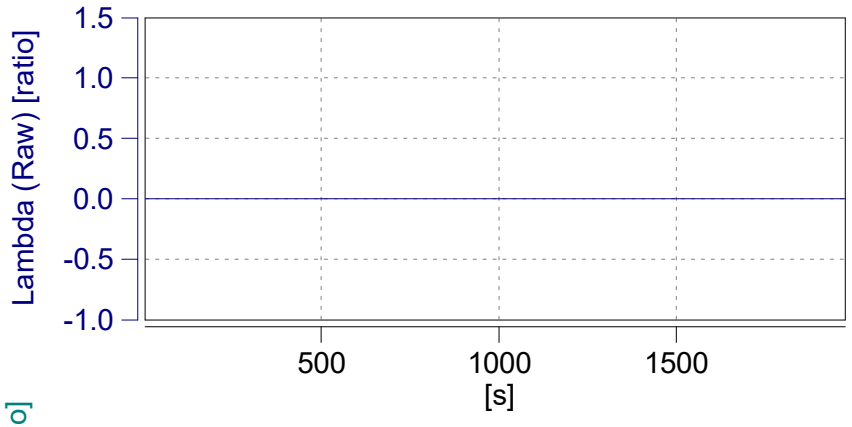
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

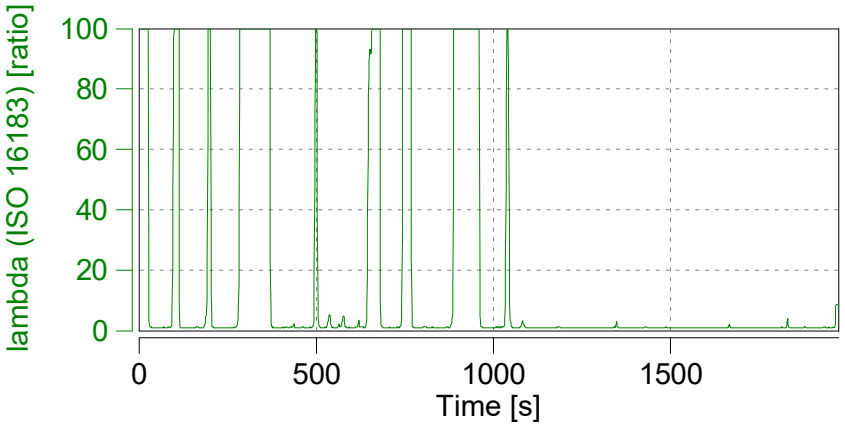
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

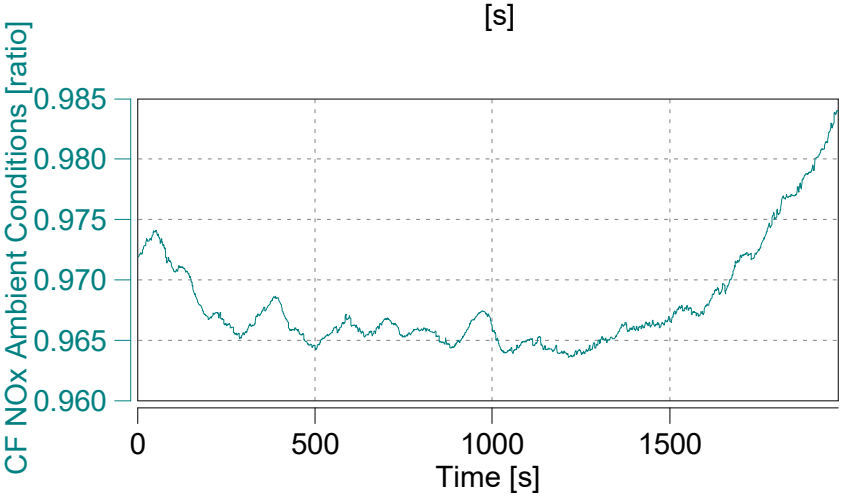
Case: C118-1270
Page: Exhaust Flow (2)

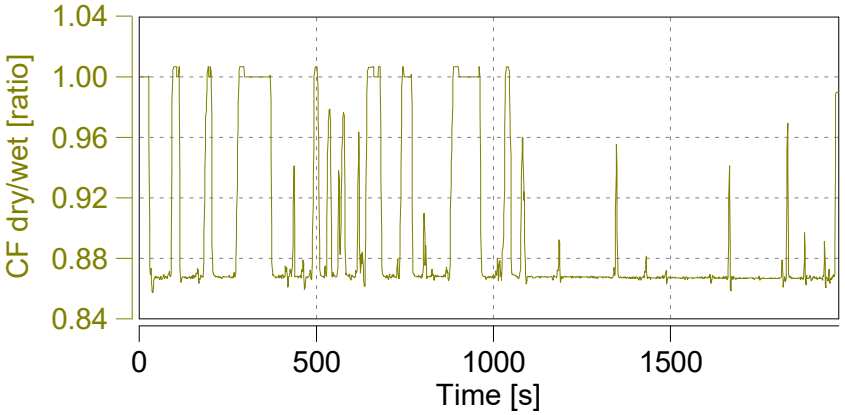
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









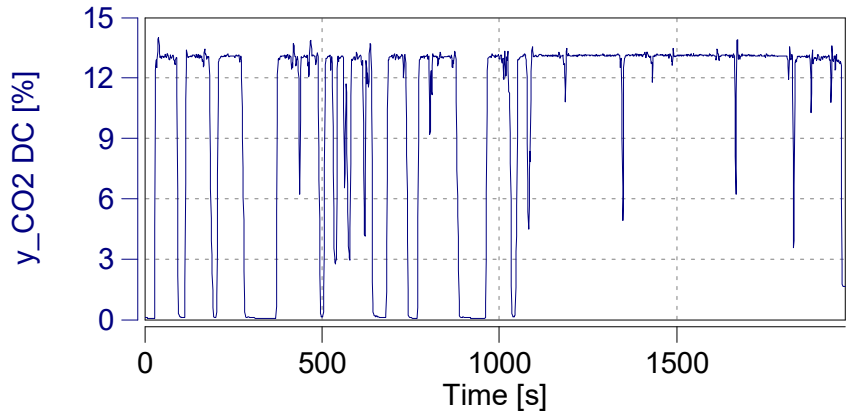
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

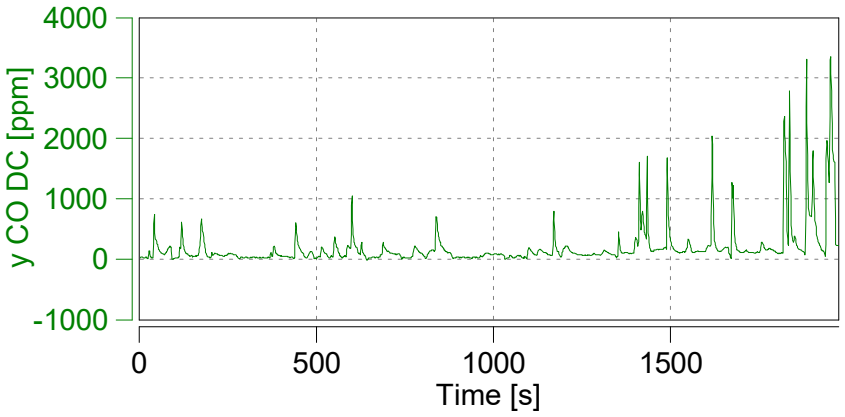
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

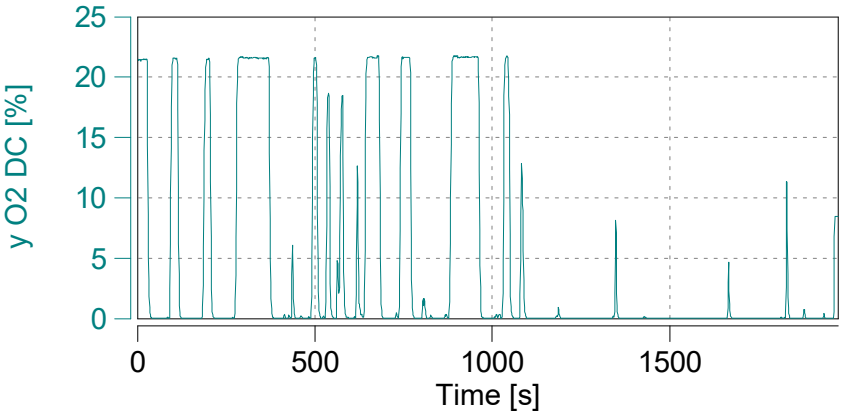
Case: C118-1270
Page: Corrected Emissions (1)

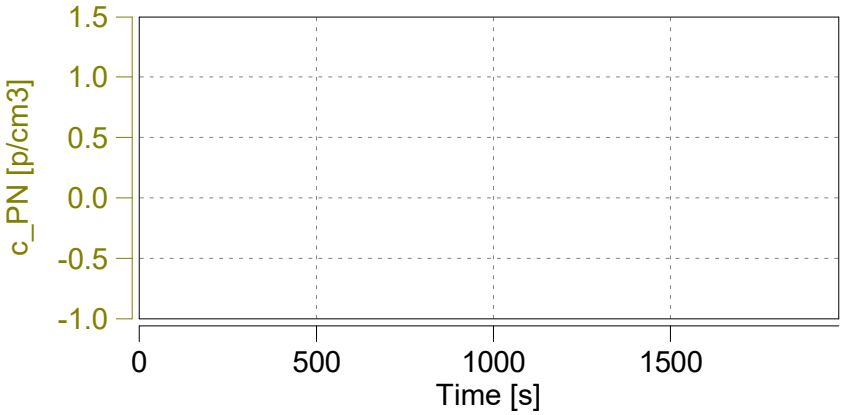
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









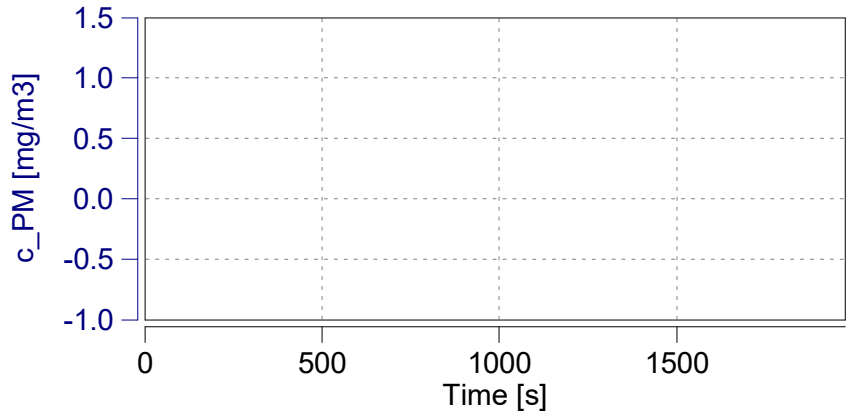
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

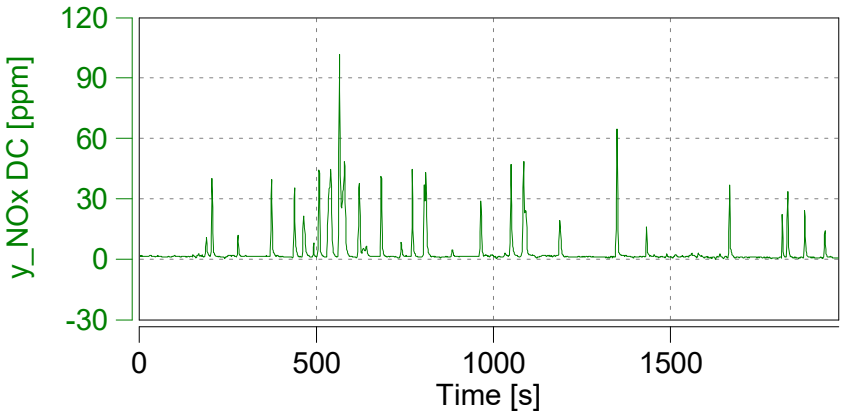
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

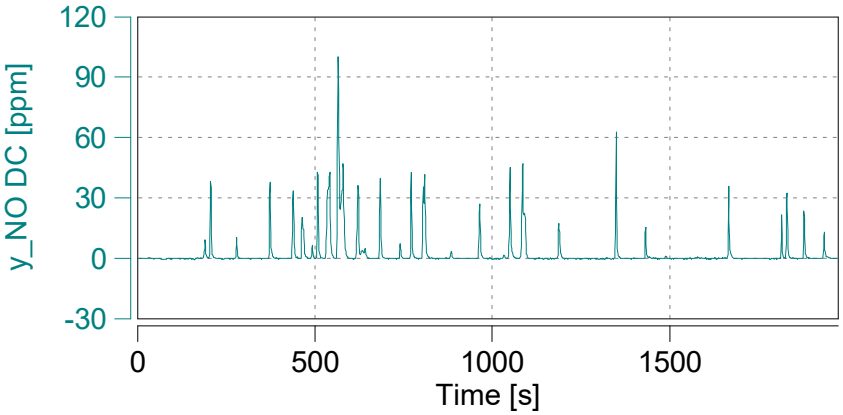
Case: C118-1270
Page: Corrected Emissions (2)

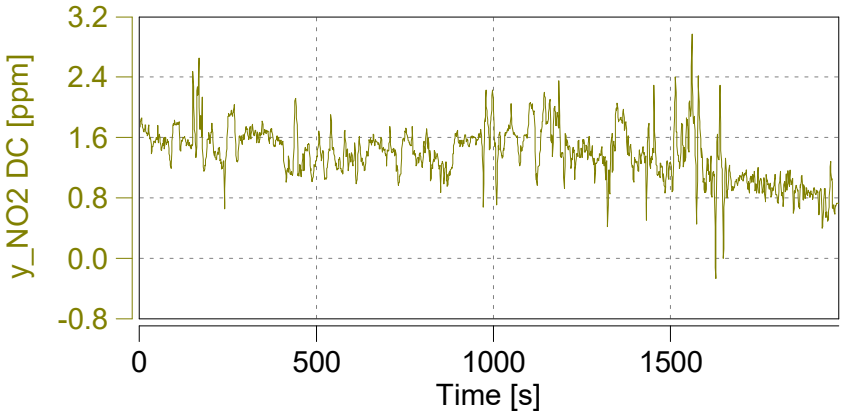
'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









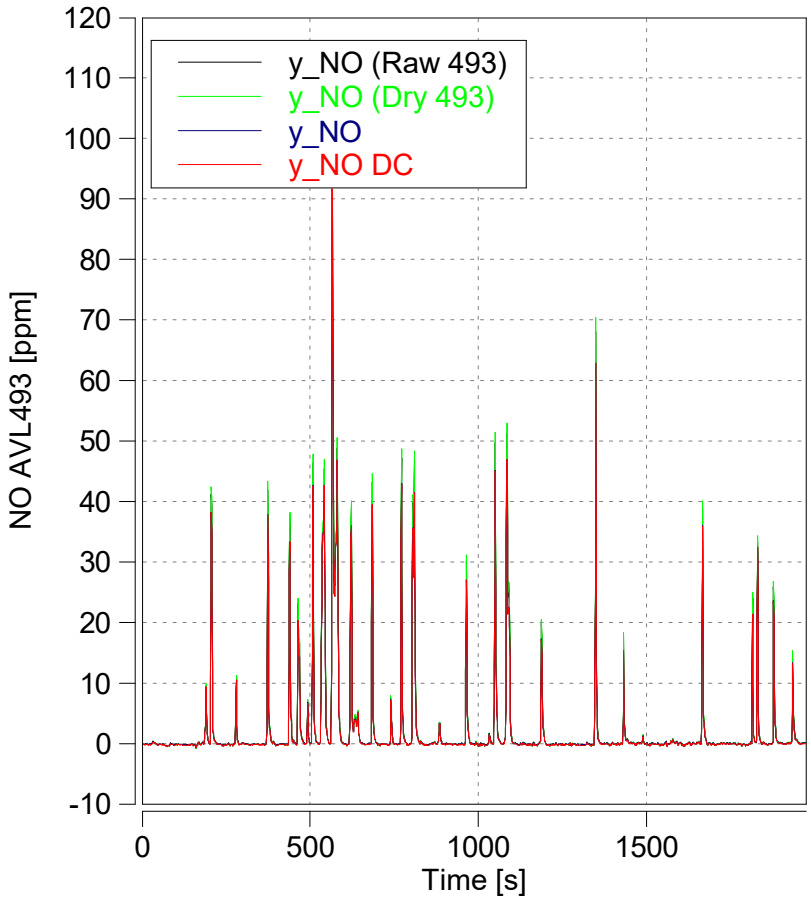
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

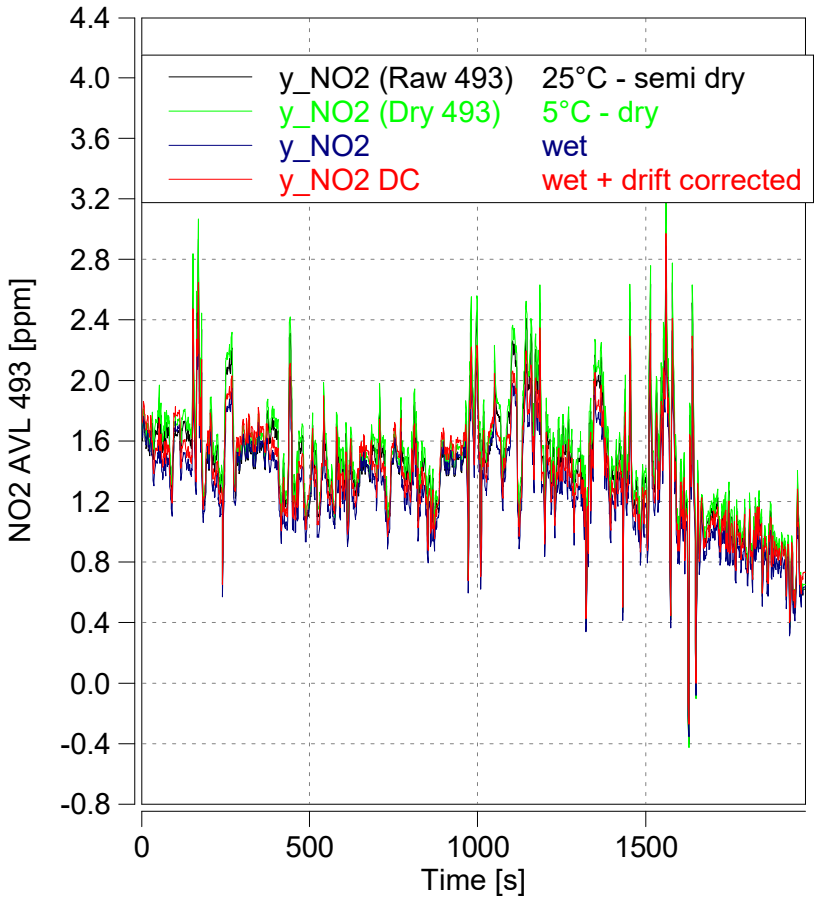
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019





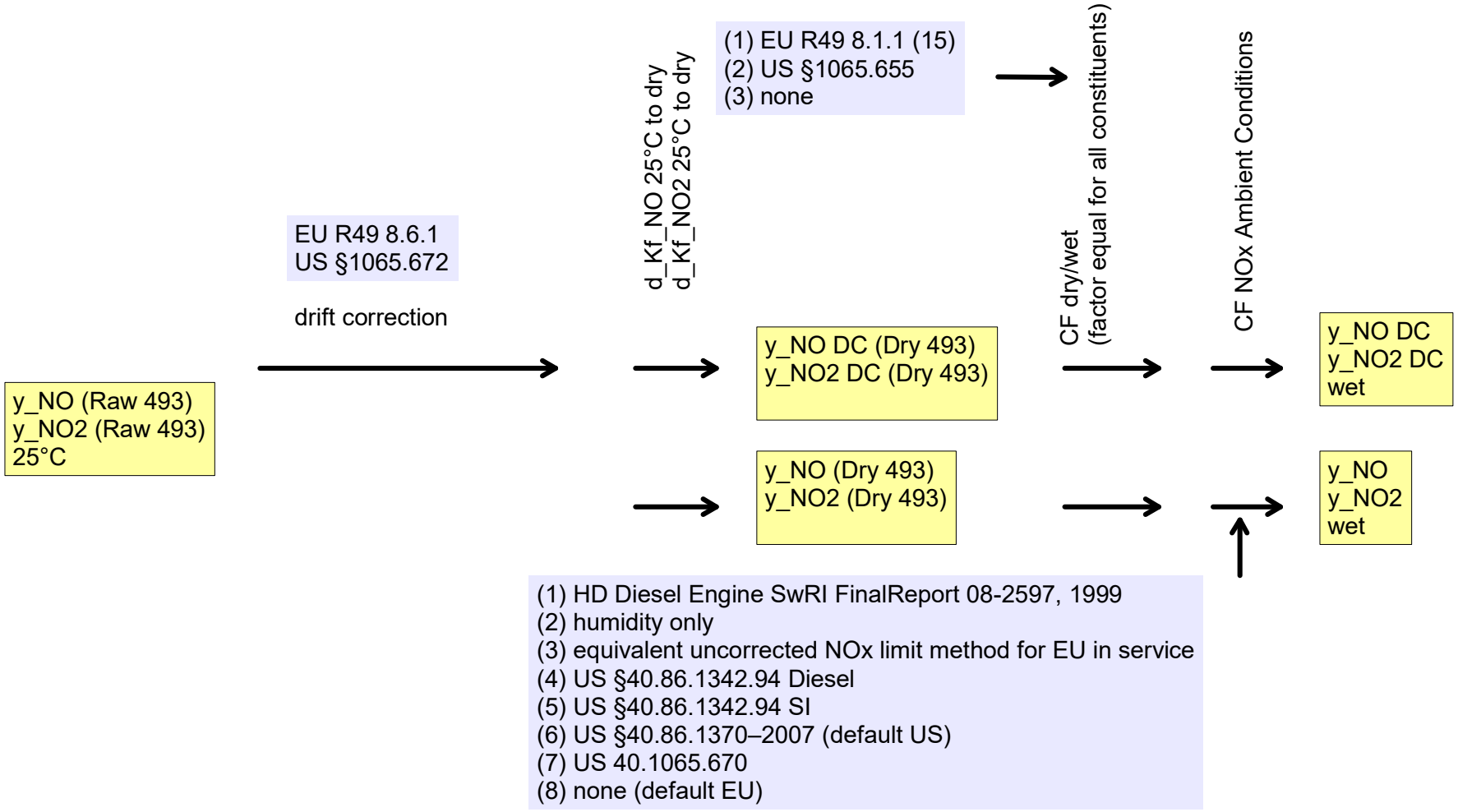
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

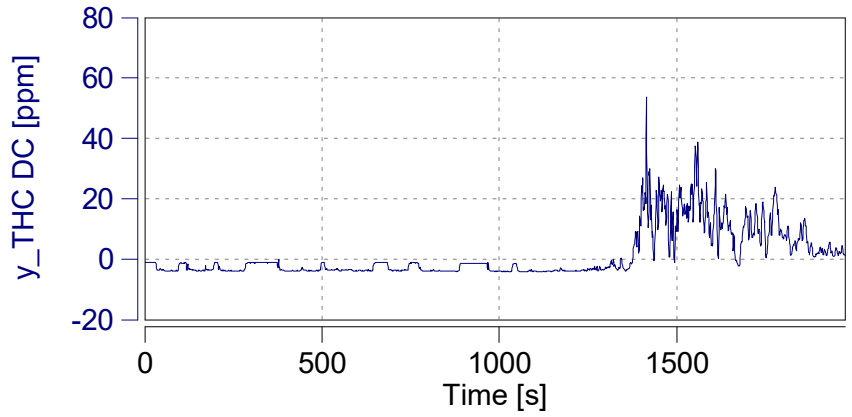
NOx - AVL 493

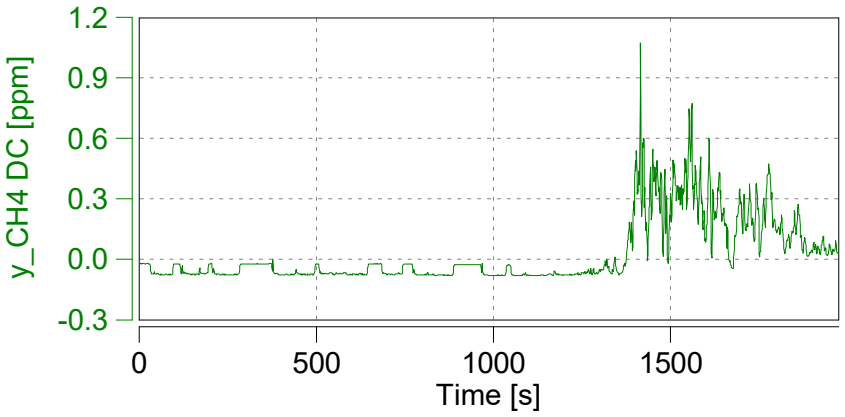


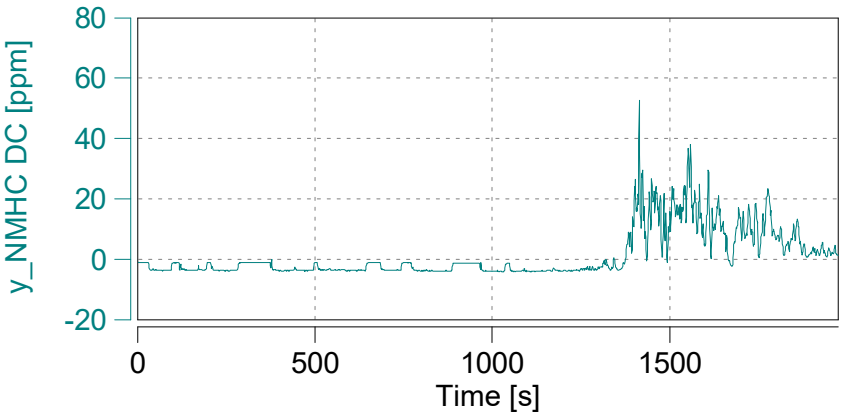
Case: C118-1270
Page: Corrected Emissions (5)

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019







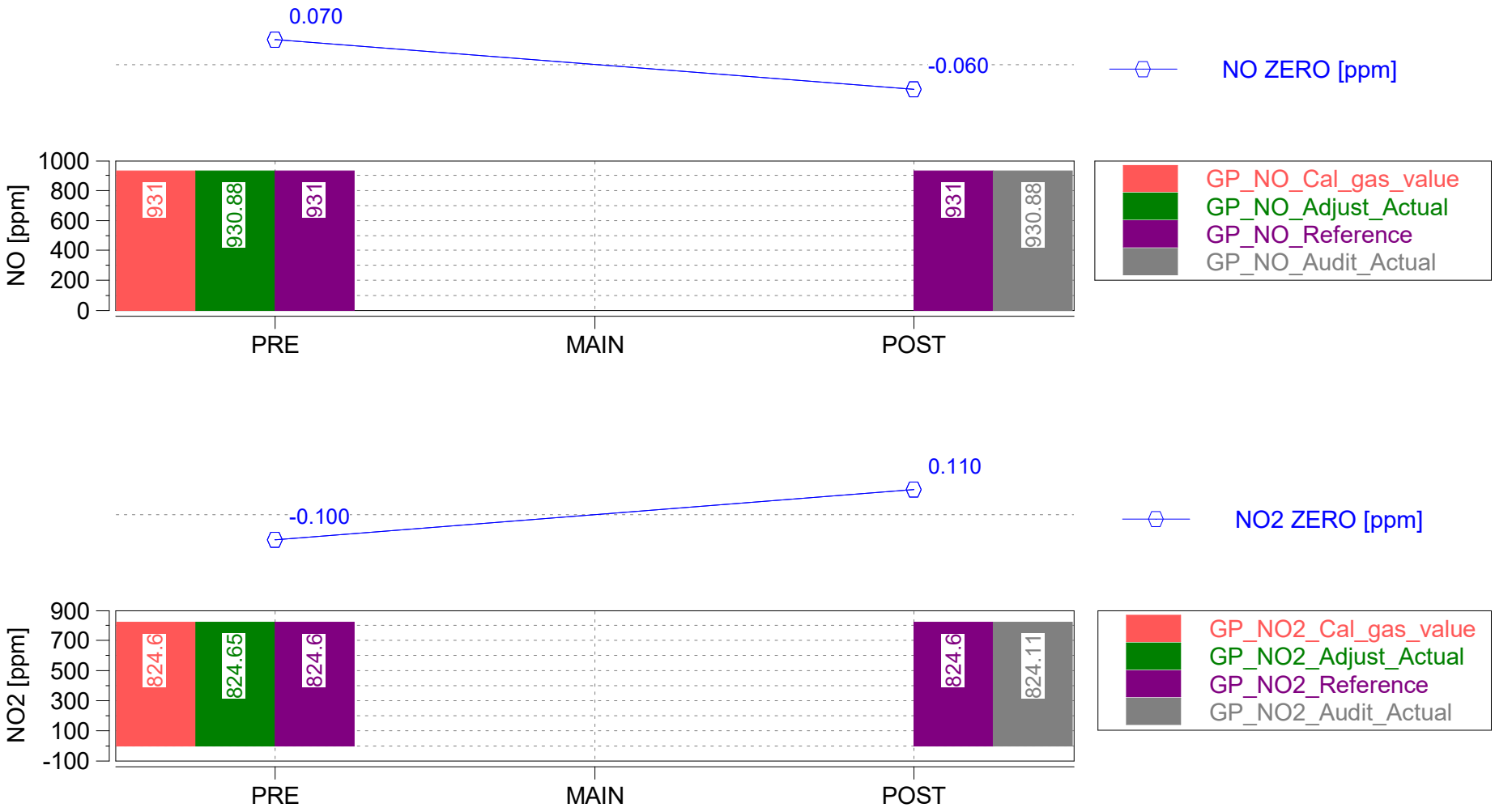
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



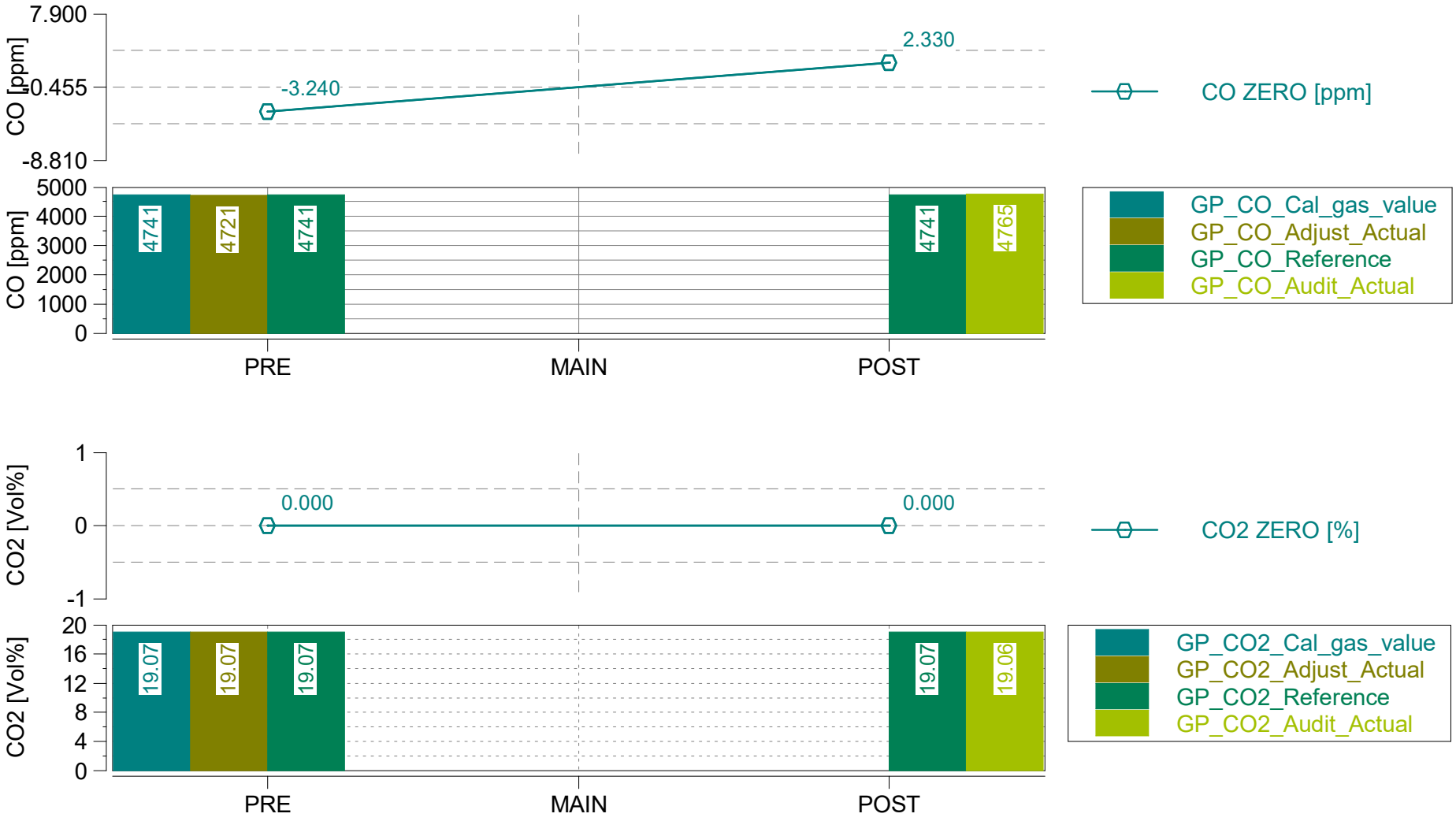
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



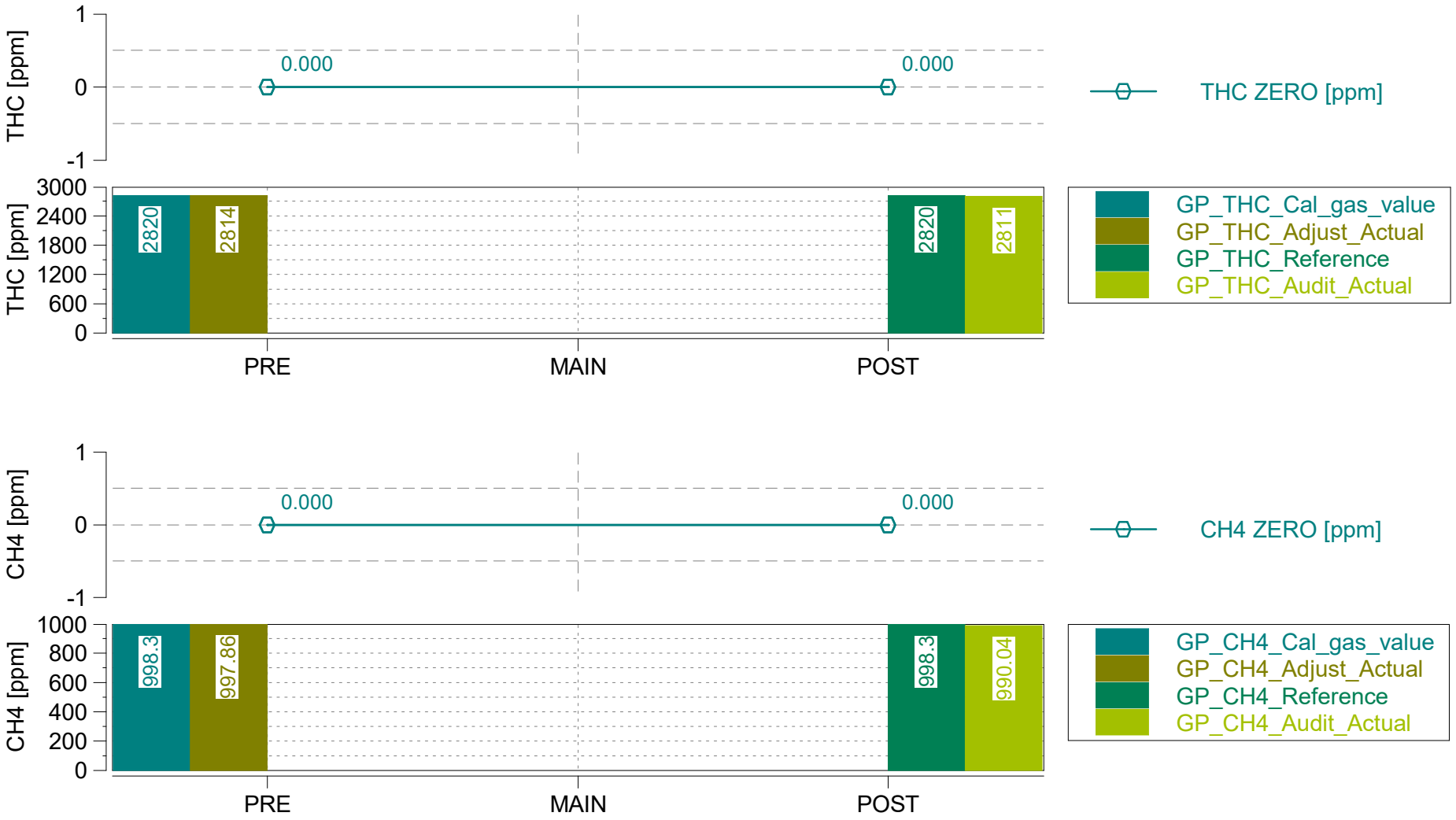
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-02)	**0.08**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-02
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

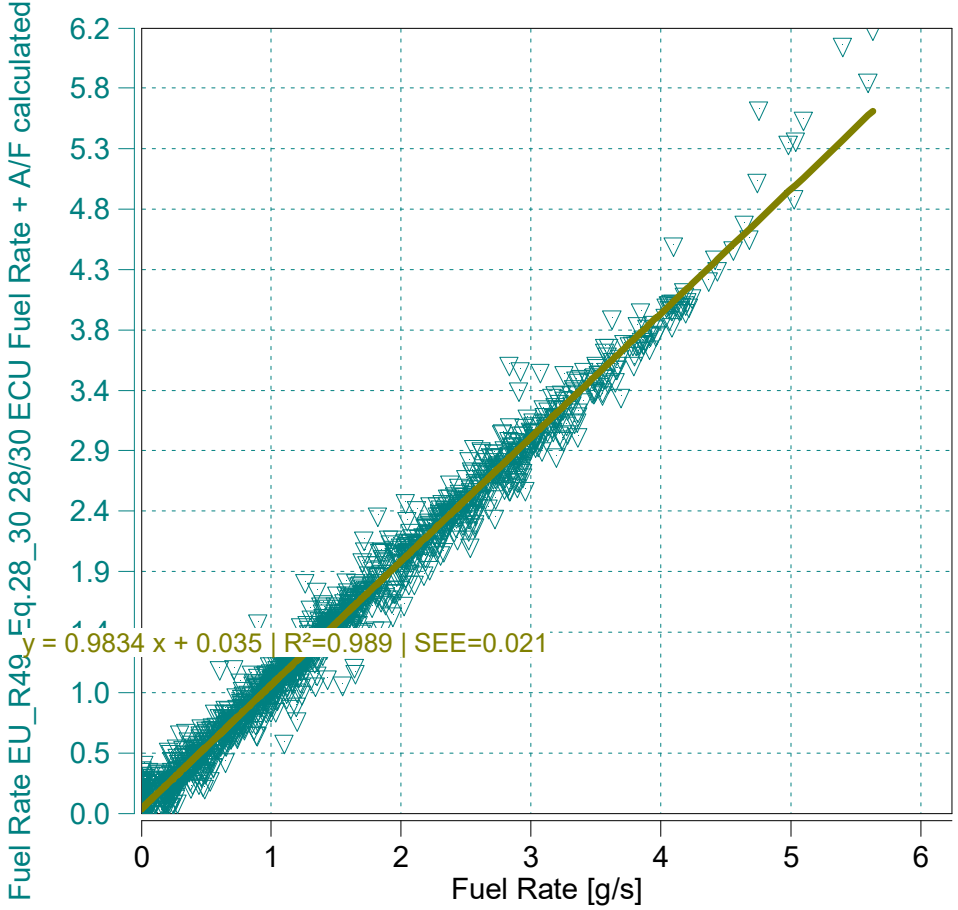
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 - Uphill (A2)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



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

y = 0.9834 x + 0.035 | R²=0.989 | SEE=0.021
m = 0.98 (0.9 - 1.1 recommended)
R² = 0.99 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	2291.00	s
Trip Duration (a)	2291.00	s
Trip Distance	17.99	mi
Trip Distance (a)	17.99	mi
Trip Fuel Cons. (b)	0.86	kg
Trip Fuel Cons. (ab)	0.86	kg
Trip Fuel Cons. EU (ac)	0.96	kg
Trip Fuel Cons. US (ac)	0.95	kg
Trip Fuel Economy (b)	59.14	mpg_US
Trip Fuel Economy (ab)	59.14	mpg_US
Trip Fuel Economy EU (ac)	53.22	mpg_US
Trip Fuel Economy US (ac)	53.63	mpg_US
Trip Fuel Economy GGE (b)	59.14	mpg_US
Trip Fuel Economy GGE (ab)	59.14	mpg_US
Trip Fuel Economy EU GGE (ac)	53.22	mpg_US
Trip Fuel Economy US GGE (ac)	53.63	mpg_US
Trip Av. Eng. Speed	1430.22	rpm
Trip Av. Torque	15.60	lbft
Trip Av. Power	5.19	hp
Trip Work		
Trip Work (a)	3.30	hphr
Trip Exhaust Mass	18.93	kg
Trip Exhaust Mass EU (ac)	17.60	kg
Trip Exhaust Mass US (ac)	18.15	kg
Trip Av. Amb. Temperature	71.14	deg_F
Trip Av. Humidity	53.64	%
Trip Av. GPS Altitude	541.51	m
Fuel Type	Petrol (E10)	

ave THC	-0.73487	ppm
ave NMHC	-0.72018	ppm
ave CH4	-0.01470	ppm
ave CO	101.36065	ppm
ave CO2	7.63784	%
ave NOx	4.55388	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	0.02471	g
tot NMHC	0.02286	g
tot CH4	0.00055	g
tot CO	2.51152	g
tot CO2	2884.63528	g
tot NO (d)	0.08119	g
tot NO2	0.03962	g
tot NOx	0.11879	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	28.27497	mi/hr
Trip Distance Share Urban	26.25947	% distanc
Trip Distance Share Rural	58.02806	% distanc
Trip Distance Share Motorway	15.71248	% distanc

BS CO2	873.64912	g/hphr
BS CO	0.76065	g/hphr
BS THC	0.00748	g/hphr
BS NMHC	0.00692	g/hphr
BS CH4	0.00017	g/hphr
BS NO (d)	0.02459	g/hphr
BS NO2	0.01200	g/hphr
BS NOx	0.03598	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	160.31207	g/mi
DS CO	0.13958	g/mi
DS THC	0.00137	g/mi
DS NMHC	0.00127	g/mi
DS CH4	0.00003	g/mi
DS NO (d)	0.00451	g/mi
DS NO2	0.00220	g/mi
DS NOx	0.00660	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	3350.67790	g/kg
FS CO	2.91728	g/kg
FS THC	0.02870	g/kg
FS NMHC	0.02655	g/kg
FS CH4	0.00064	g/kg
FS NO (d)	0.09430	g/kg
FS NO2	0.04602	g/kg
FS NOx	0.13799	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: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary Drift Corrected

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

Trip Duration	2291.00	s
Trip Duration (a)	2291.00	s
Trip Distance	17.99	mi
Trip Distance (a)	17.99	mi
Trip Fuel Cons. (b)	0.86	kg
Trip Fuel Cons. (ab)	0.86	kg
Trip Fuel Cons. EU (ac)	0.96	kg
Trip Fuel Cons. US (ac)	0.95	kg
Trip Fuel Economy (b)	59.14	mpg_US
Trip Fuel Economy (ab)	59.14	mpg_US
Trip Fuel Economy EU (ac)	53.22	mpg_US
Trip Fuel Economy US (ac)	53.63	mpg_US
Trip Fuel Economy GGE (b)	59.14	mpg_US
Trip Fuel Economy GGE (ab)	59.14	mpg_US
Trip Fuel Economy EU GGE (ac)	53.22	mpg_US
Trip Fuel Economy US GGE (ac)	53.63	mpg_US
Trip Av. Eng. Speed	1430.22	rpm
Trip Av. Torque	15.60	lbft
Trip Av. Power	5.19	hp
Trip Work		
Trip Work (a)	3.30	hphr
Trip Exhaust Mass	18.93	kg
Trip Exhaust Mass EU (ac)	17.60	kg
Trip Exhaust Mass US (ac)	18.15	kg
Trip Av. Amb. Temperature	71.14	deg_F
Trip Av. Humidity	53.64	%
Trip Av. GPS Altitude	541.51	m
Fuel Type	Petrol (E10)	

ave THC DC	-0.73680	ppm
ave NMHC DC	-0.72207	ppm
ave CH4 DC	-0.01474	ppm
ave CO DC	104.23366	ppm
ave CO2 DC	7.63985	%
ave NOx DC	4.58181	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	0.02478	g
tot NMHC DC	0.02292	g
tot CH4 DC	0.00055	g
tot CO DC	2.56051	g
tot CO2 DC	2885.39181	g
tot NO DC (d)	0.07996	g
tot NO2 DC	0.04226	g
tot NOx DC	0.11961	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	28.27497	mi/hr
Trip Distance Share Urban	26.25947	% distanc
Trip Distance Share Rural	58.02806	% distanc
Trip Distance Share Motorway	15.71248	% distanc

BS CO2 DC	873.87824	g/hphr
BS CO DC	0.77548	g/hphr
BS THC DC	0.00750	g/hphr
BS NMHC DC	0.00694	g/hphr
BS CH4 DC	0.00017	g/hphr
BS NO DC (d)	0.02422	g/hphr
BS NO2 DC	0.01280	g/hphr
BS NOx DC	0.03622	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	160.35411	g/mi
DS CO DC	0.14230	g/mi
DS THC DC	0.00138	g/mi
DS NMHC DC	0.00127	g/mi
DS CH4 DC	0.00003	g/mi
DS NO DC (d)	0.00444	g/mi
DS NO2 DC	0.00235	g/mi
DS NOx DC	0.00665	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	3351.55665	g/kg
FS CO DC	2.97419	g/kg
FS THC DC	0.02878	g/kg
FS NMHC DC	0.02662	g/kg
FS CH4 DC	0.00064	g/kg
FS NO DC (d)	0.09288	g/kg
FS NO2 DC	0.04909	g/kg
FS NOx DC	0.13893	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

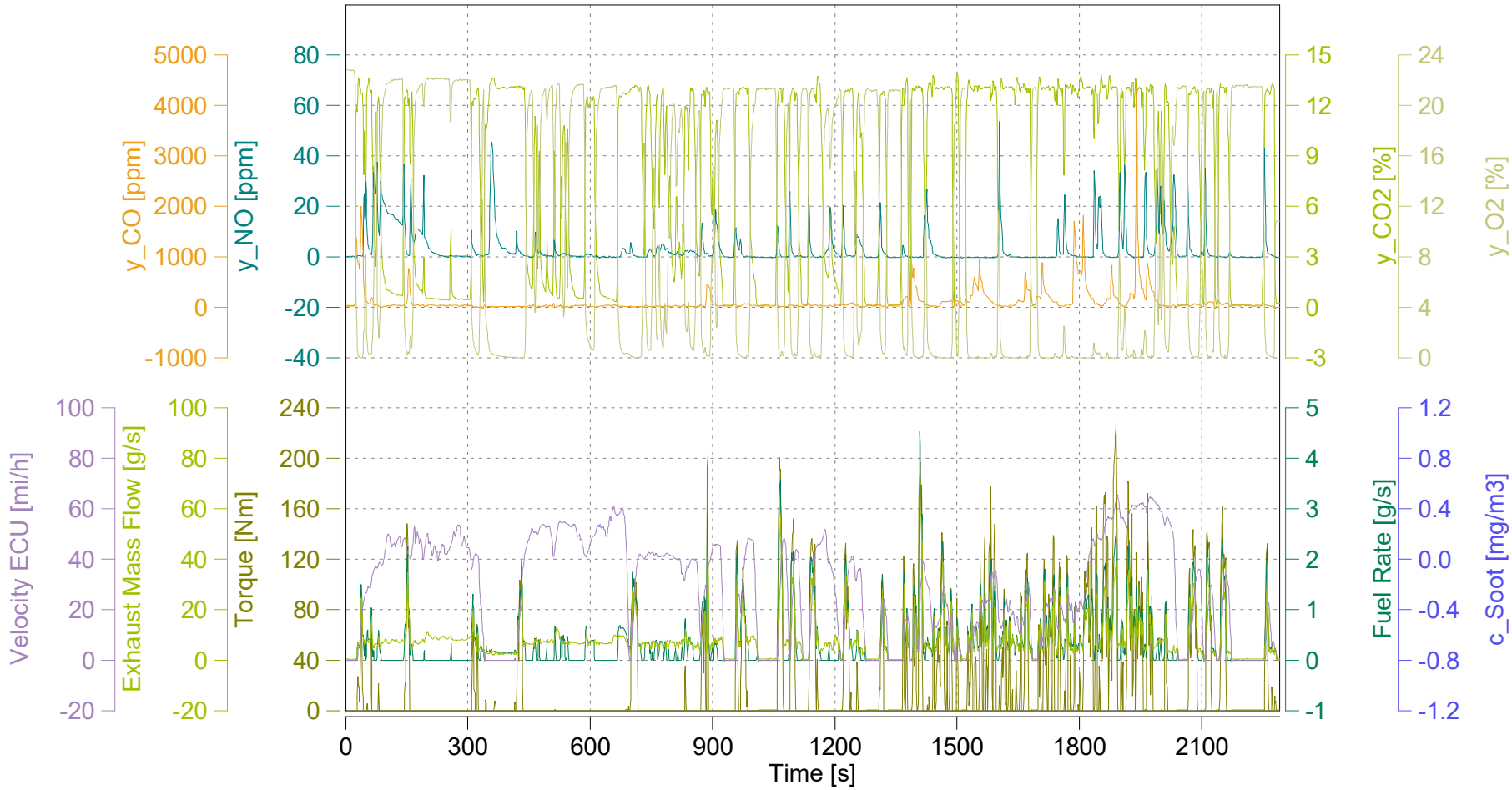
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment Check

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



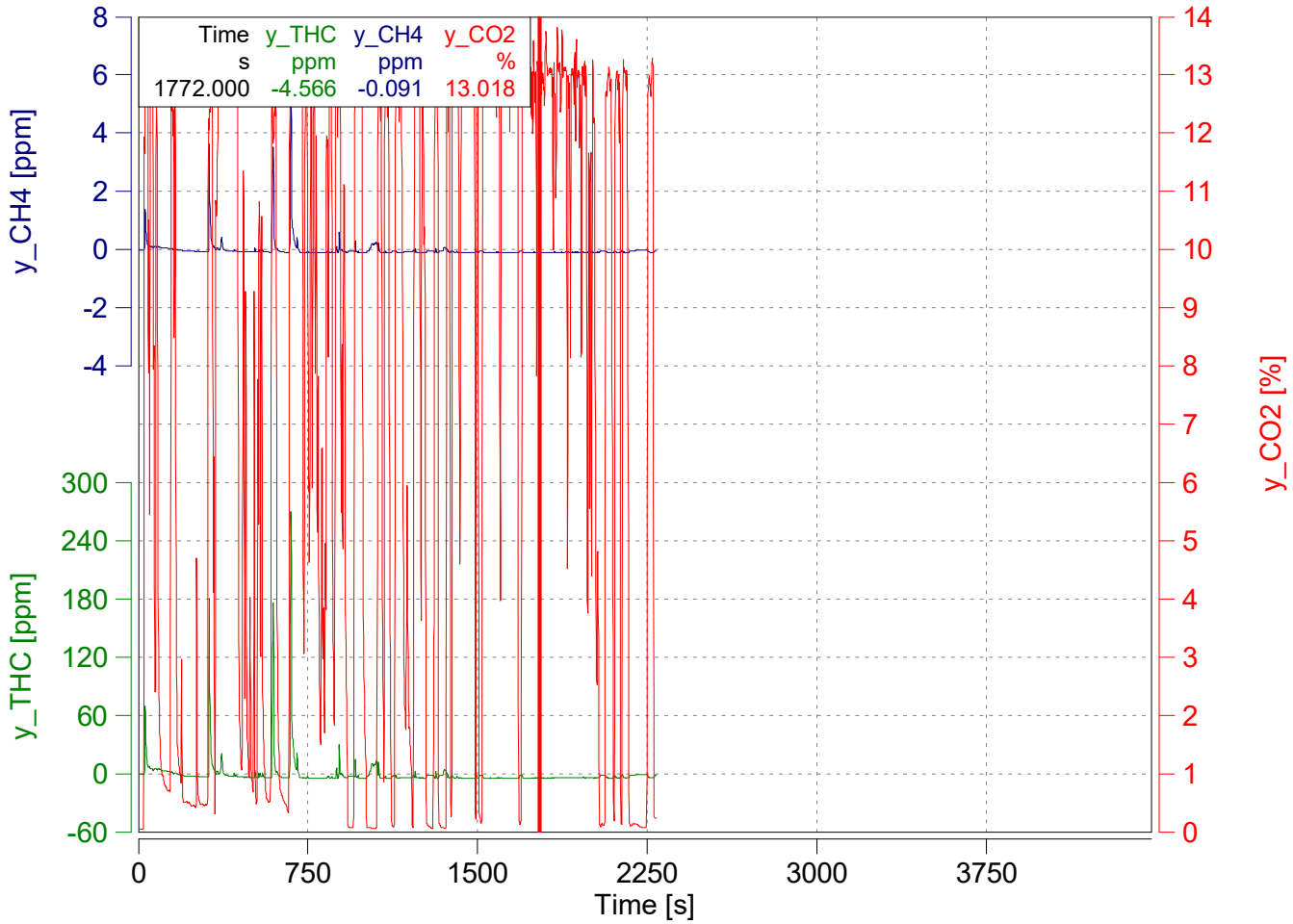
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment of Gas Concentrations

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

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

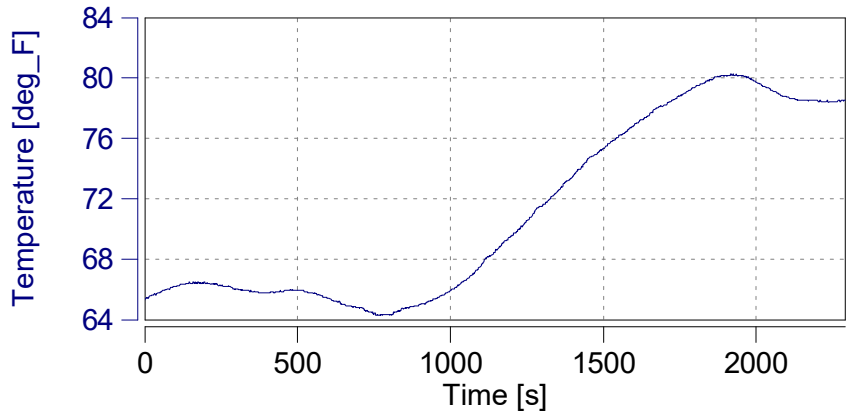
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

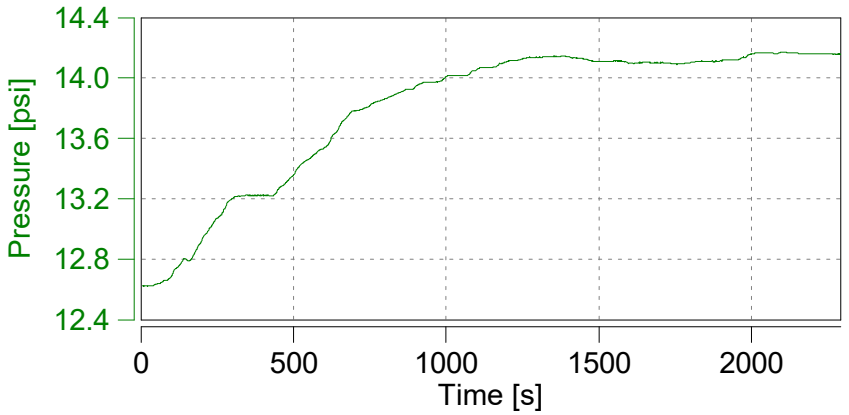
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

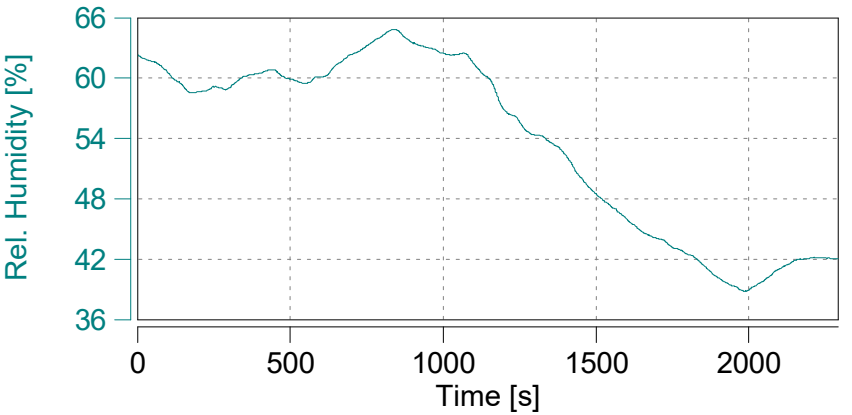
Case: C118-1270
Page: Ambient Conditions

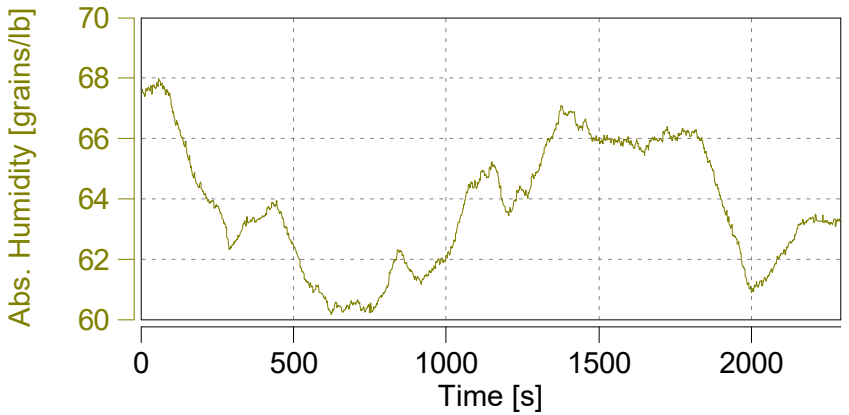
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









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Legislation:

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Engine: /
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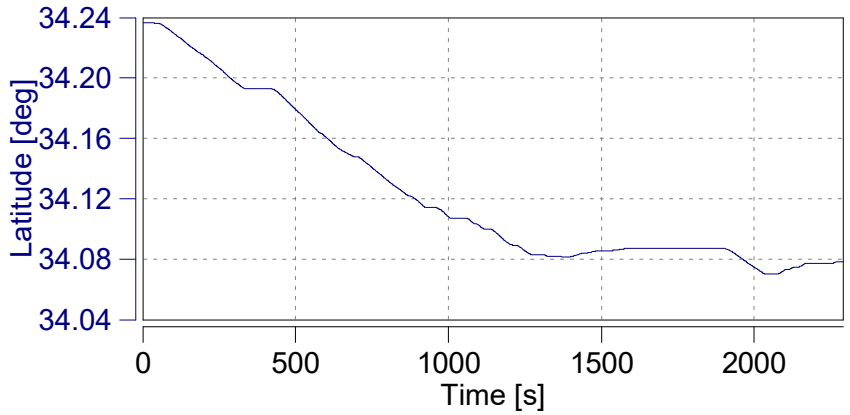
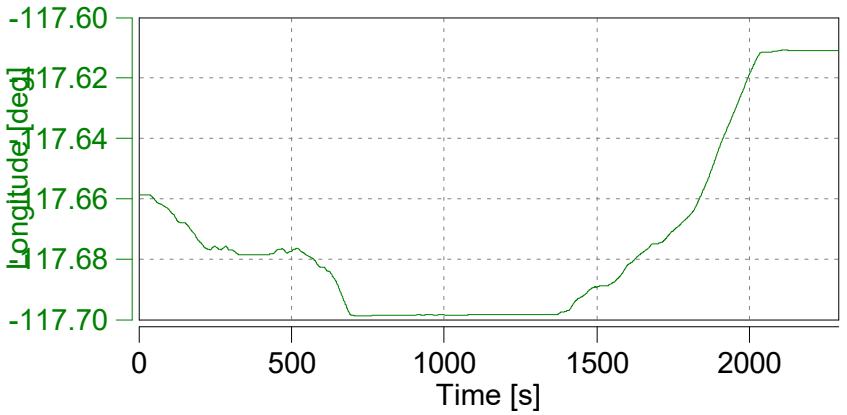
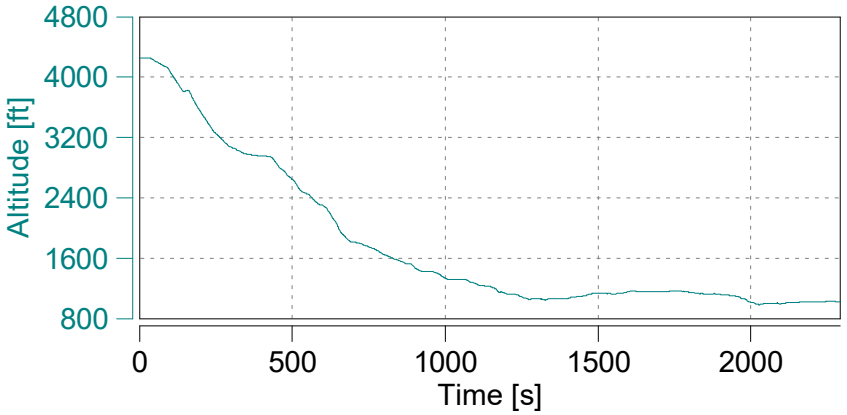
Case: C118-1270
Page: GPS

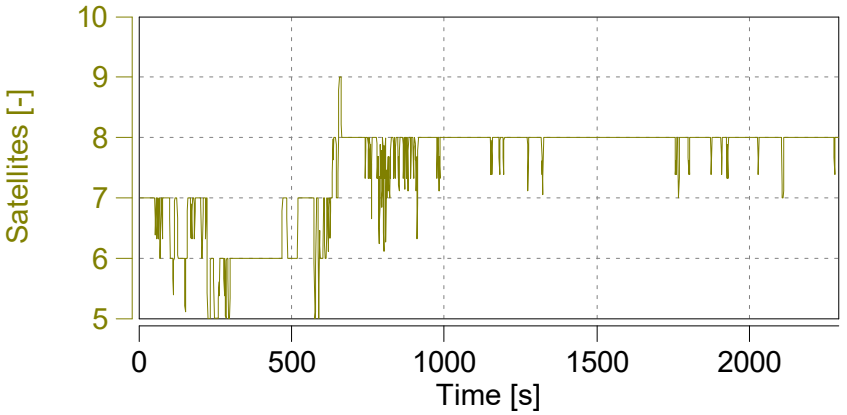
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









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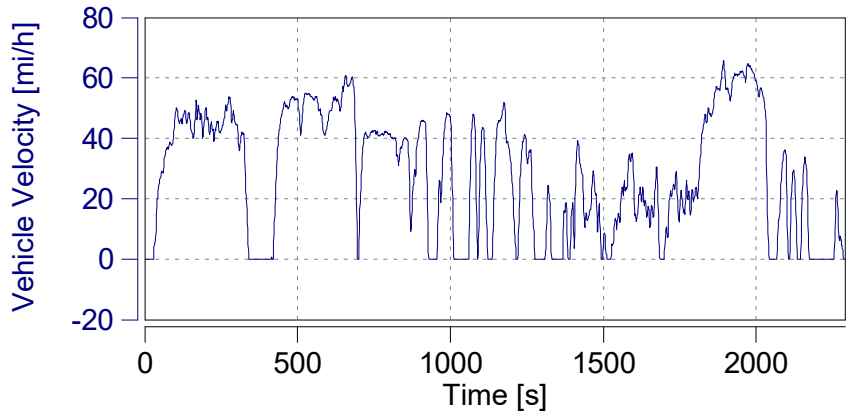
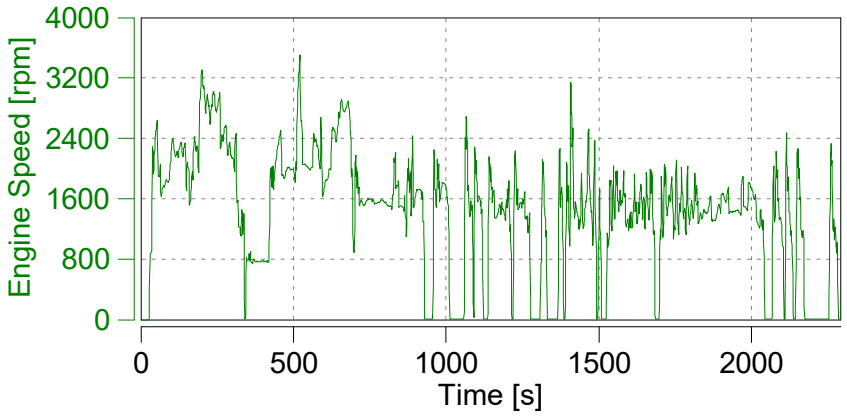
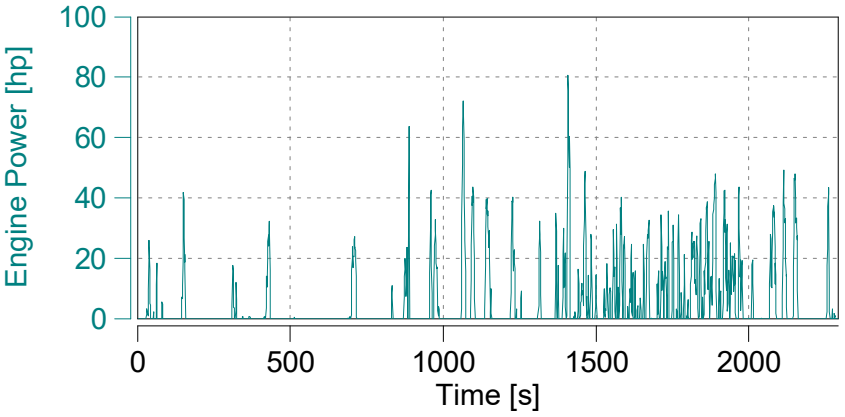
Case: C118-1270
Page: Engine (1)

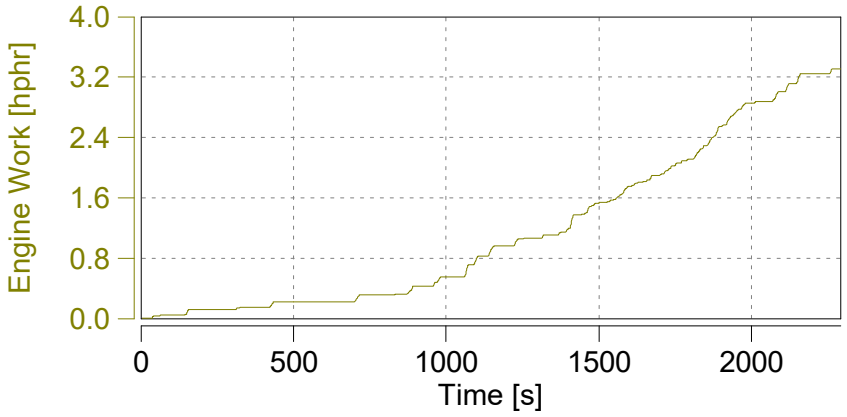
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
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Vehicle: C118-1270 /
Engine: /
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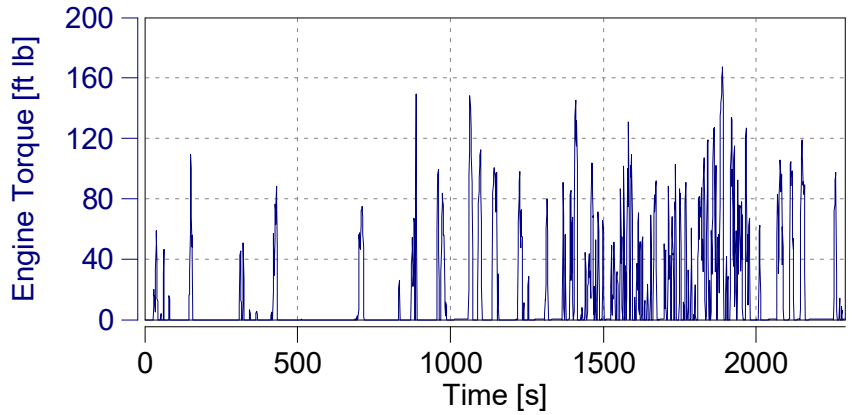
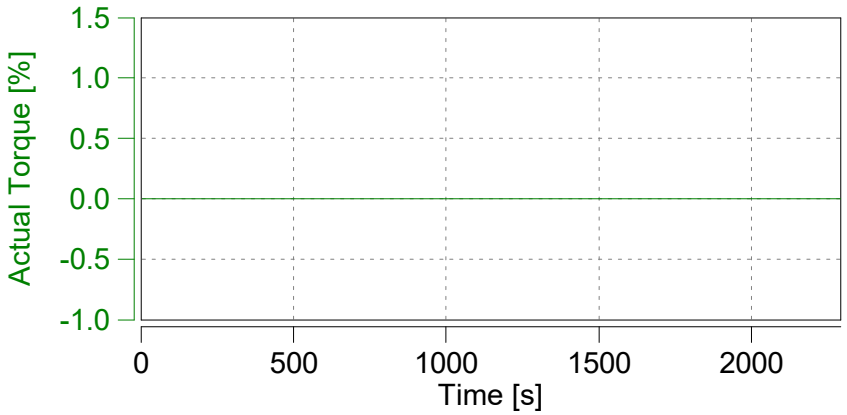
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

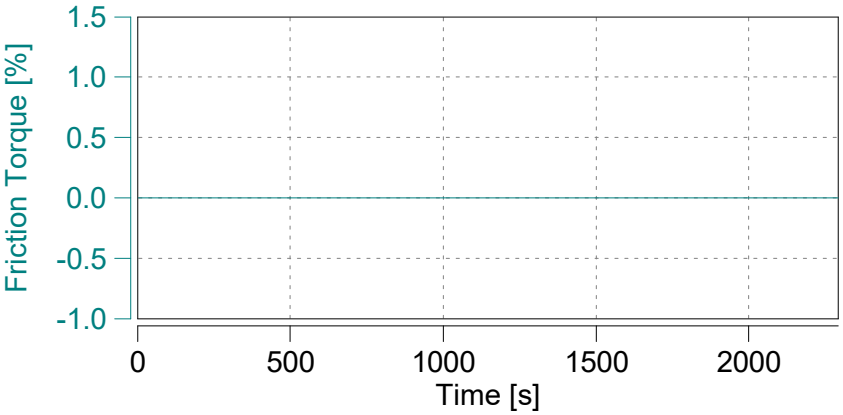
Case: C118-1270
Page: Engine (2)

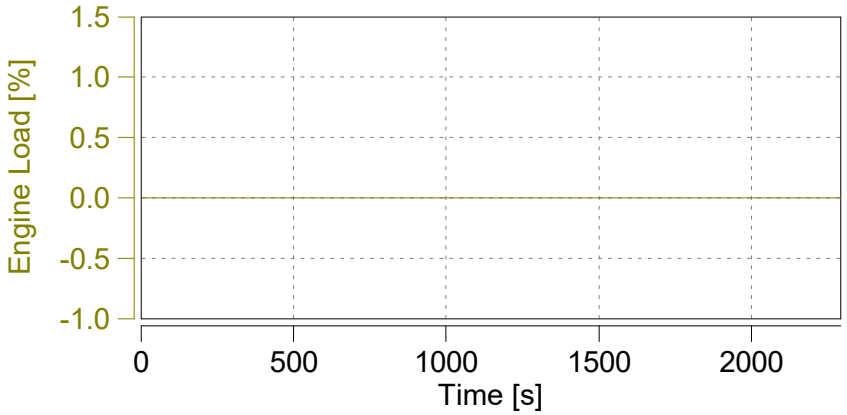
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









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M.O.V.E Post-Processing: DT_1R4.3_B360a
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Vehicle: C118-1270 /
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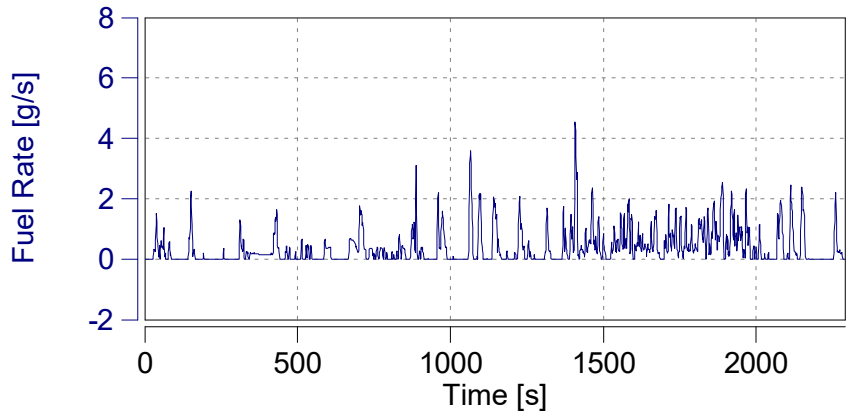
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

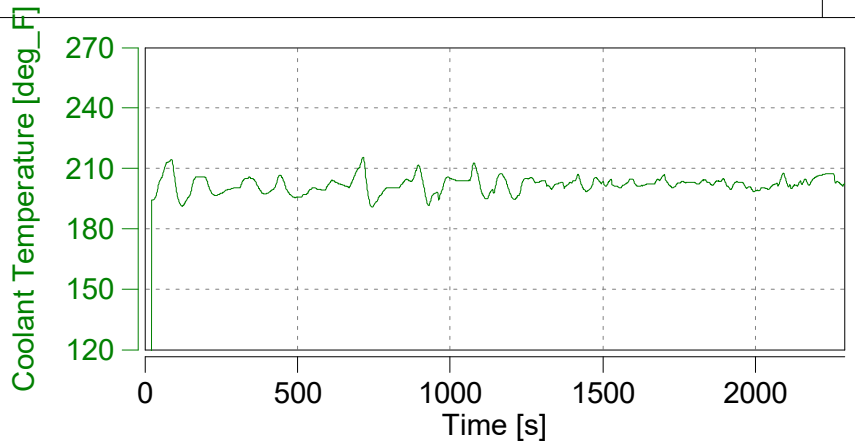
Case: C118-1270
Page: Engine (3)

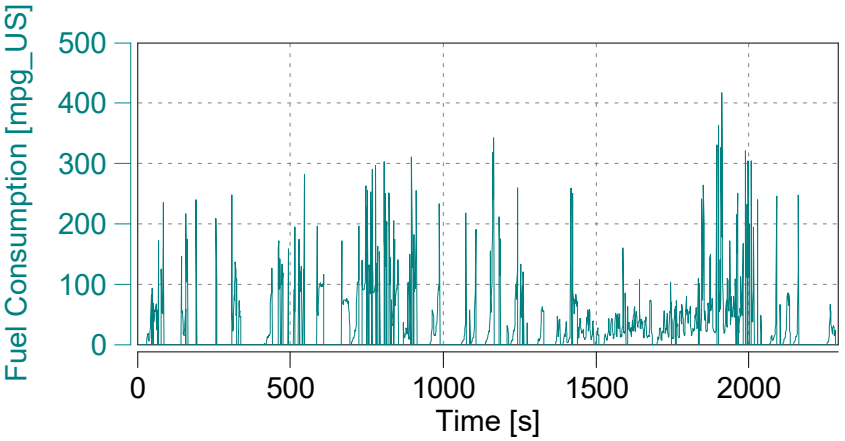
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

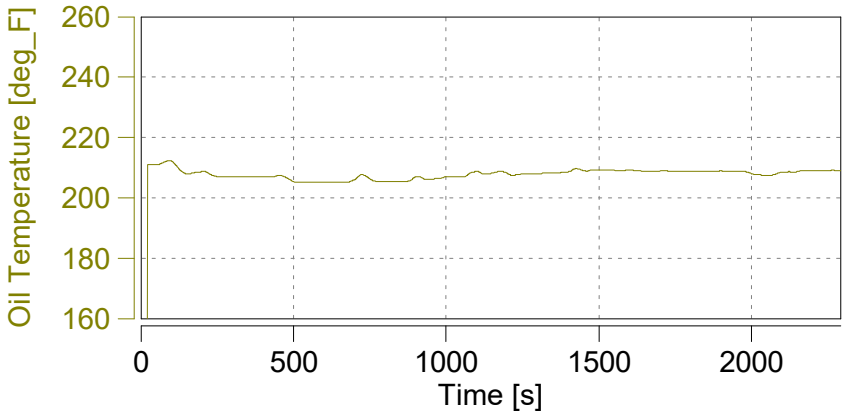
AVL

Concerto M.O.V.E, 2019









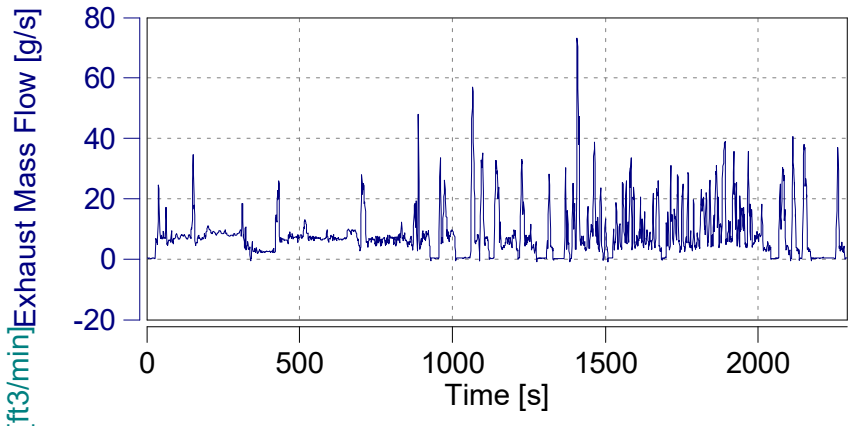
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

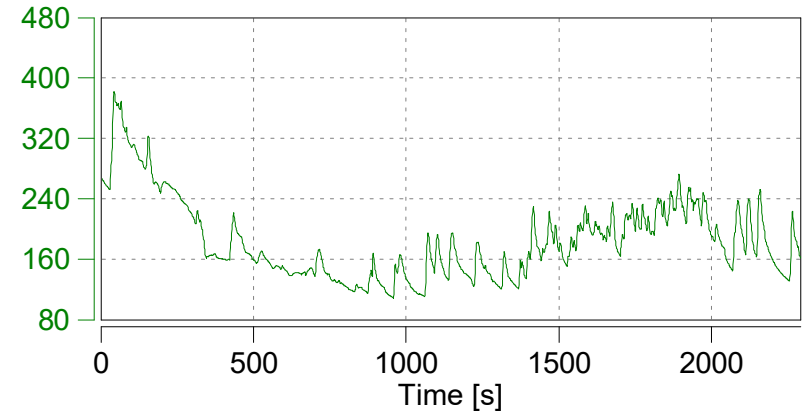
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

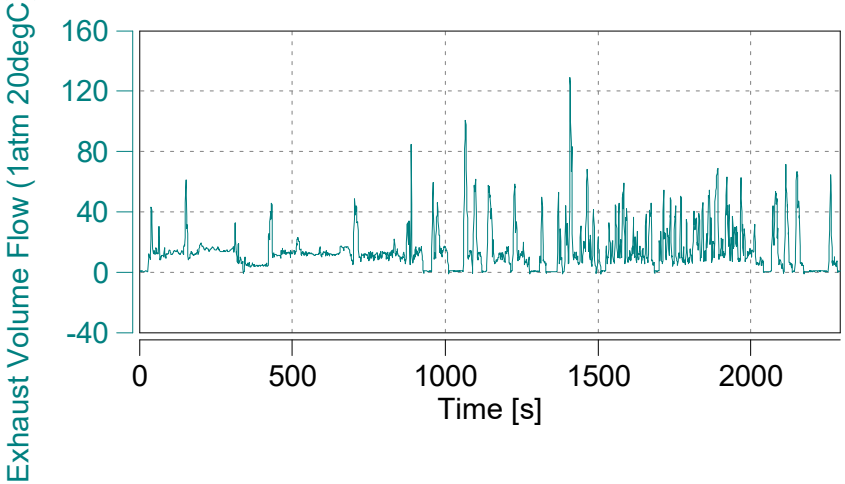
Case: C118-1270
Page: Exhaust Flow (1)

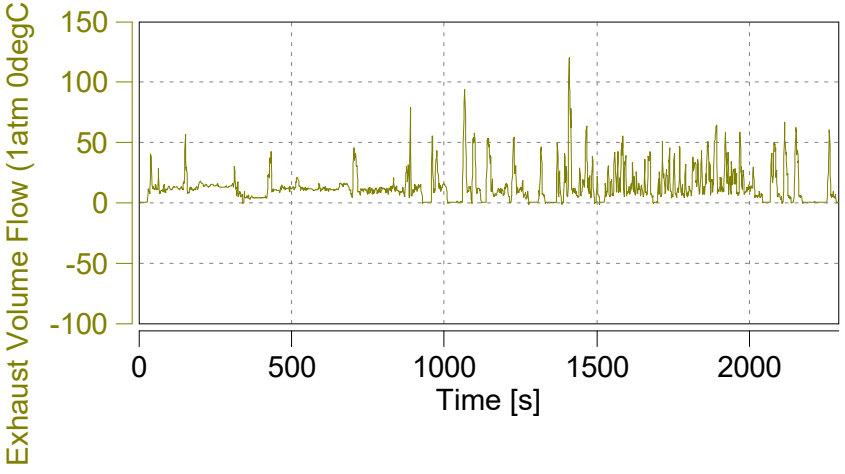
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









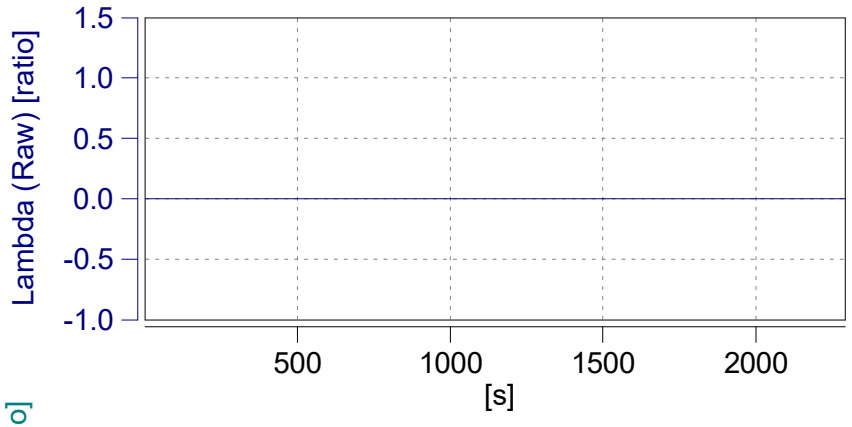
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

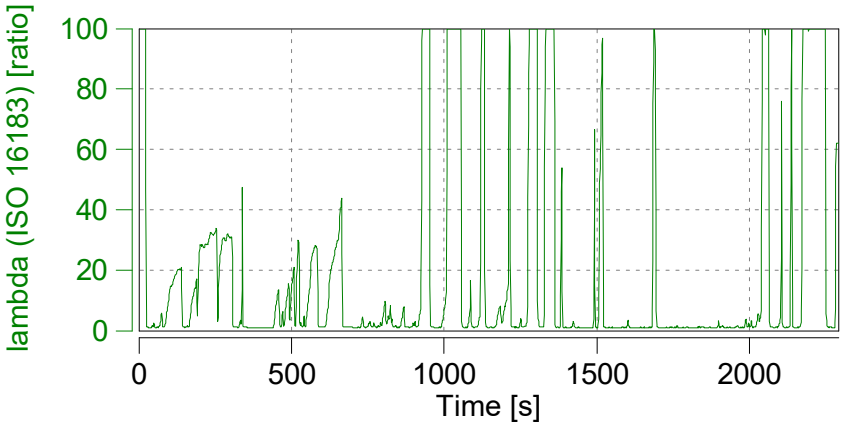
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

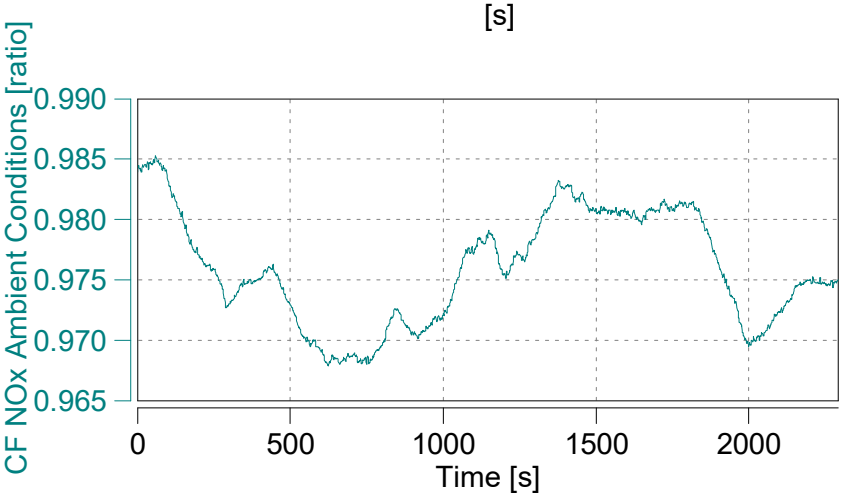
Case: C118-1270
Page: Exhaust Flow (2)

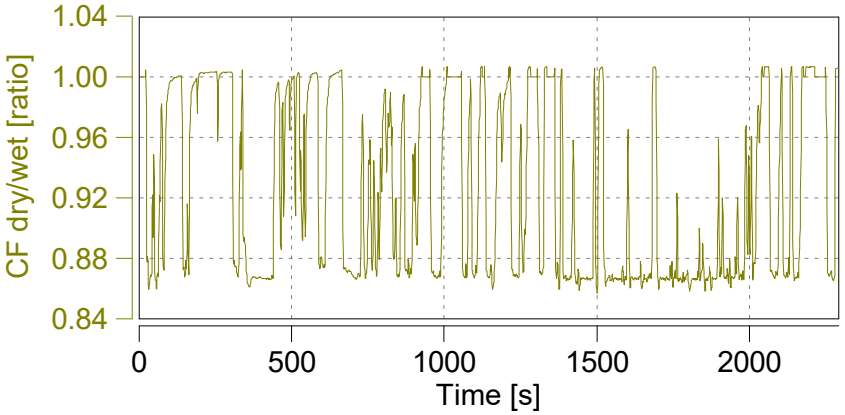
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

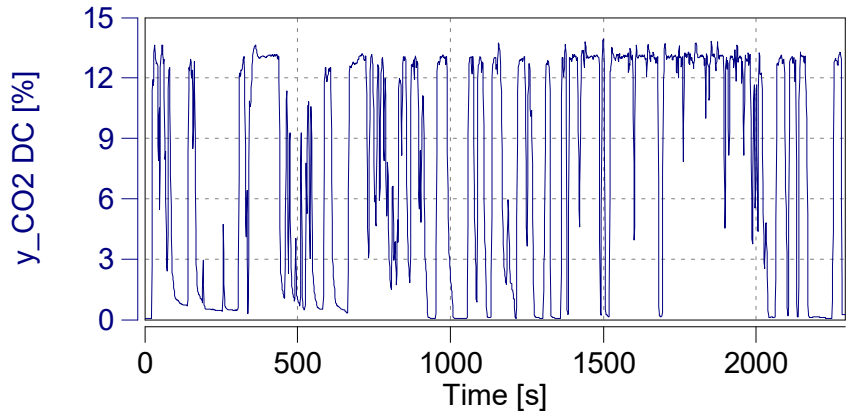
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

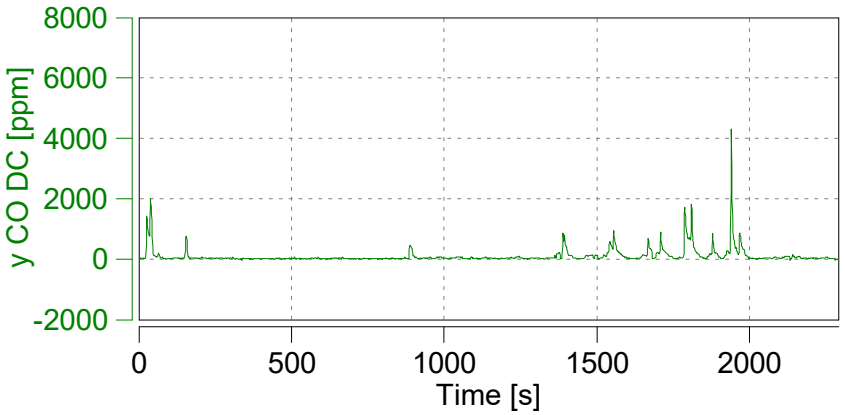
Case: C118-1270
Page: Corrected Emissions (1)

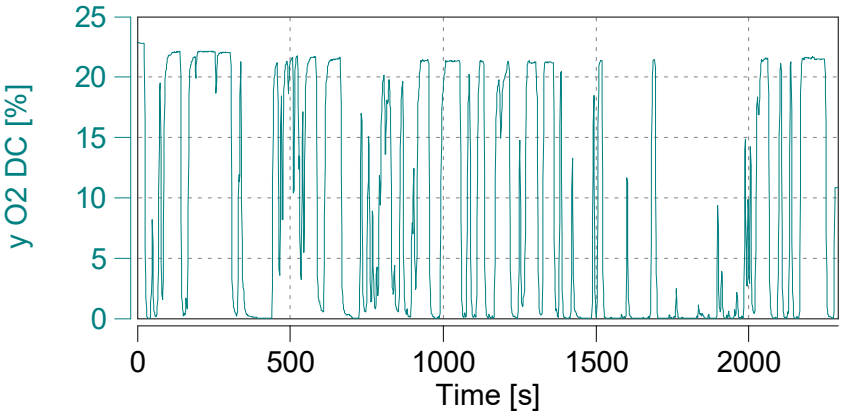
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

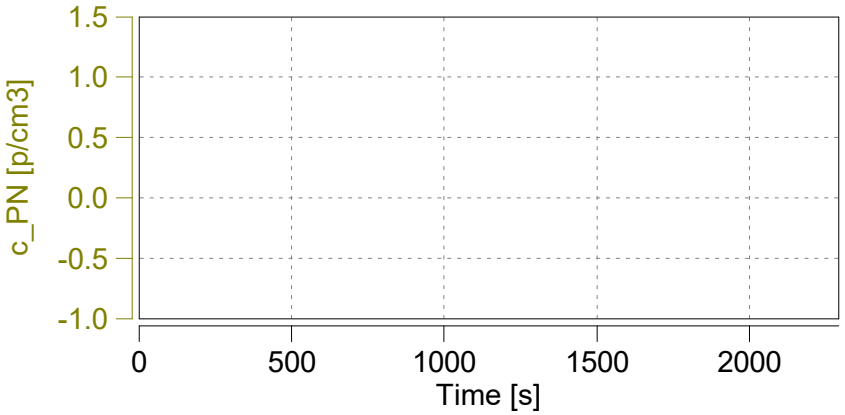
AVL

Concerto M.O.V.E, 2019









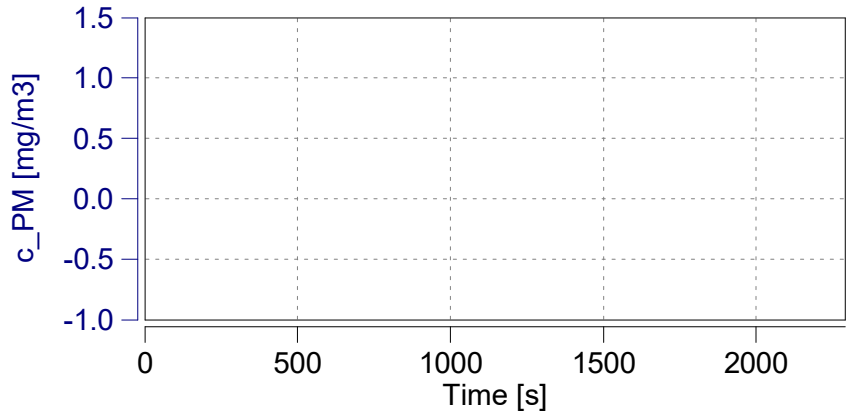
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

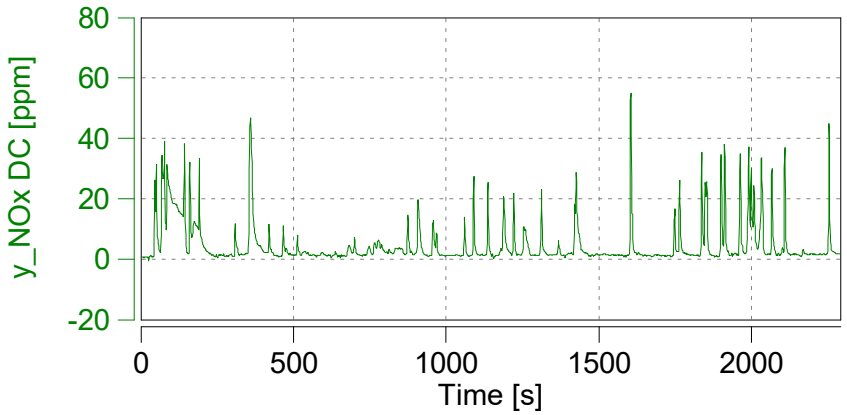
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

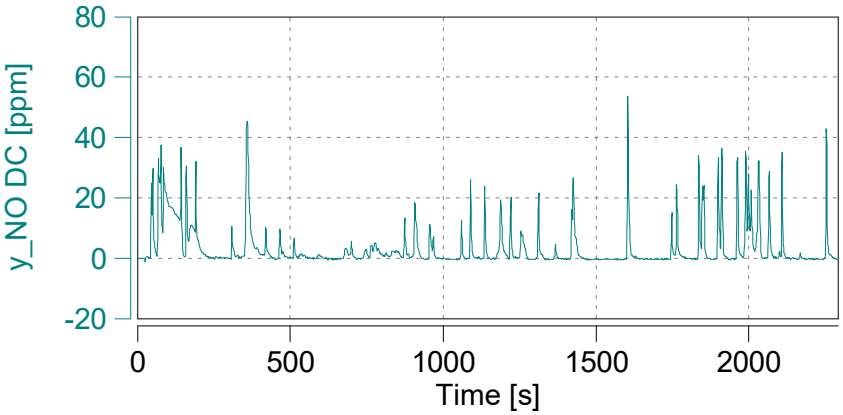
Case: C118-1270
Page: Corrected Emissions (2)

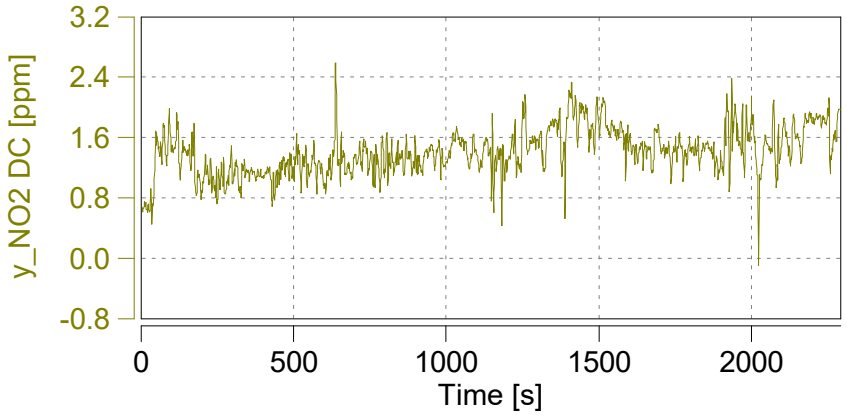
'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









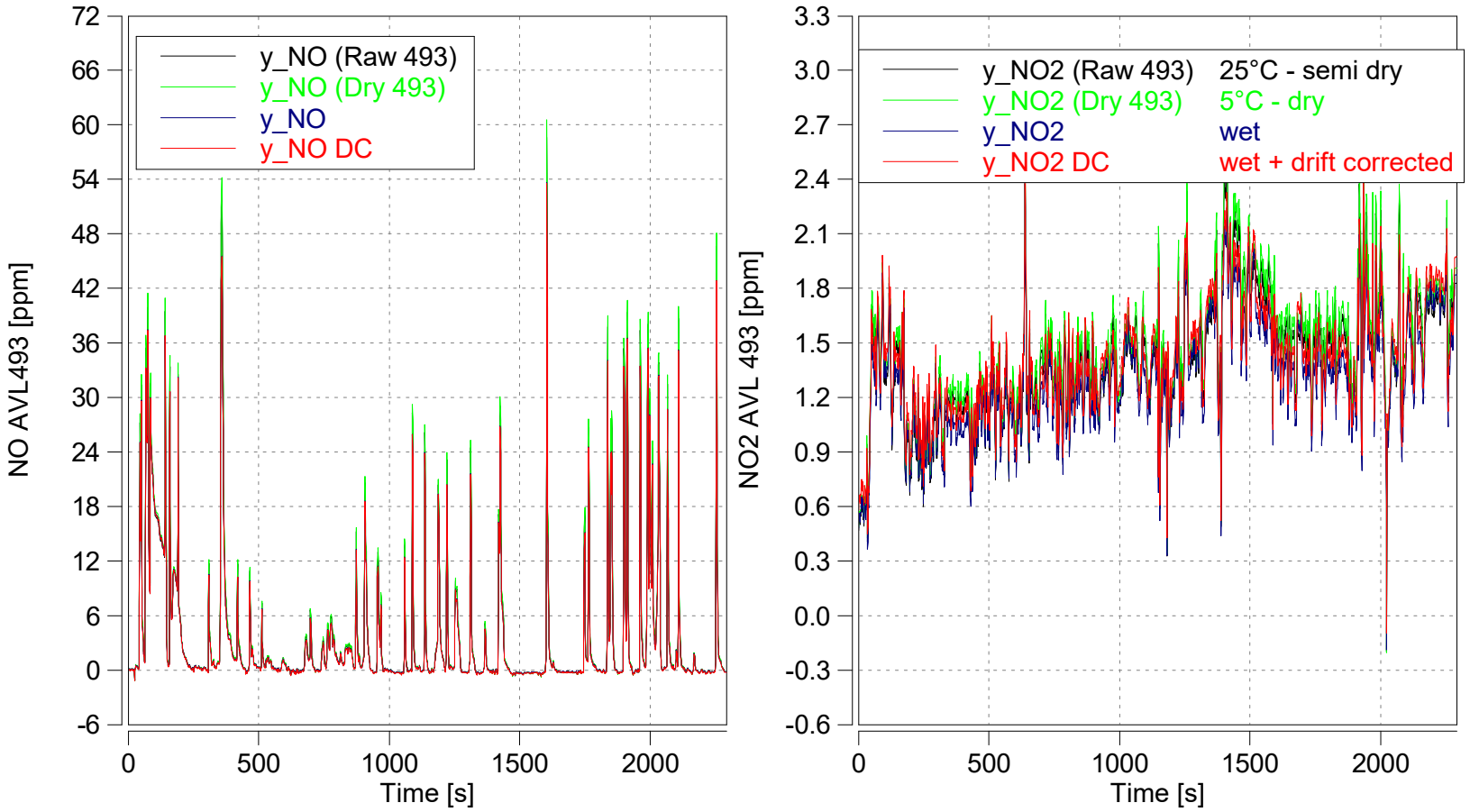
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

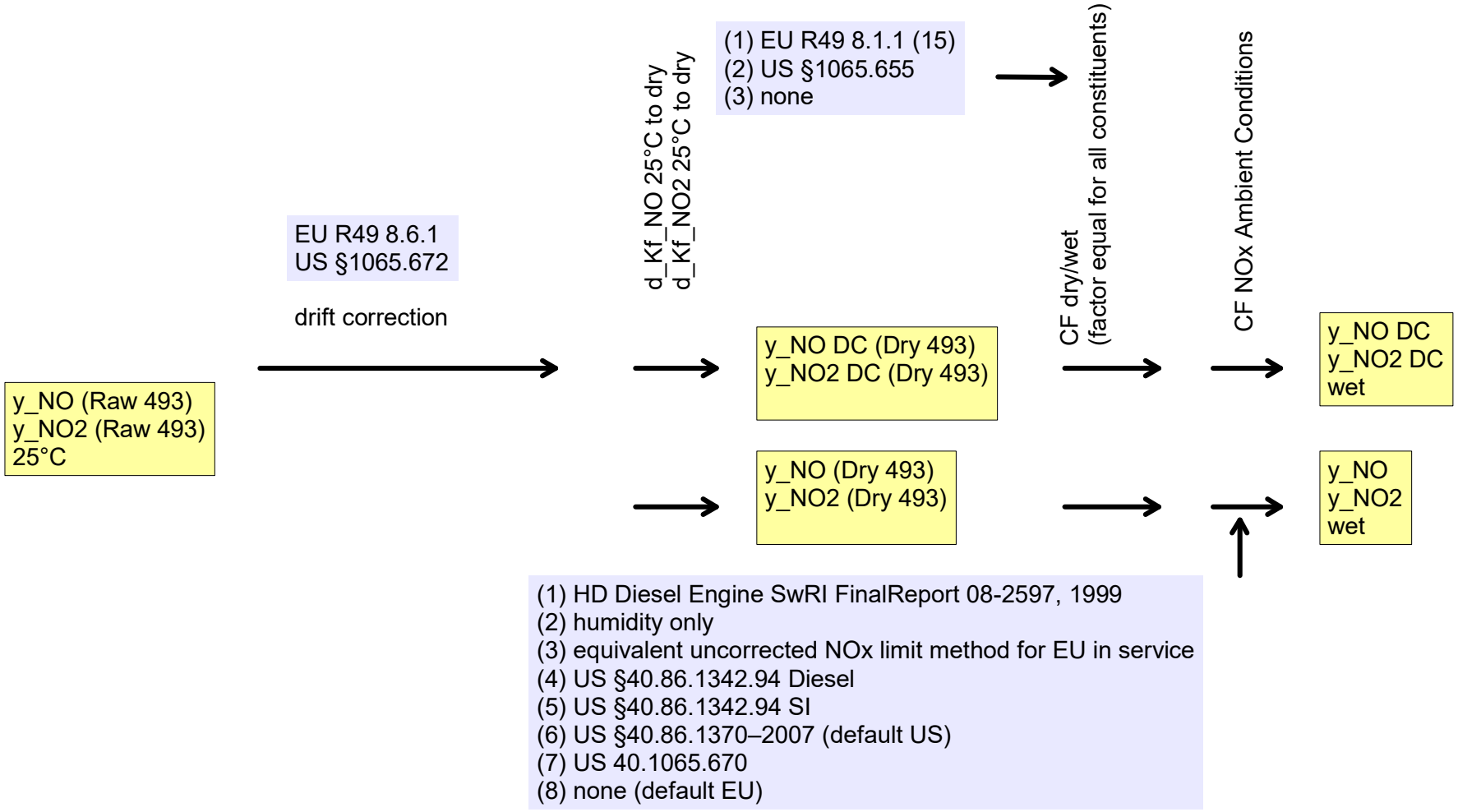
AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

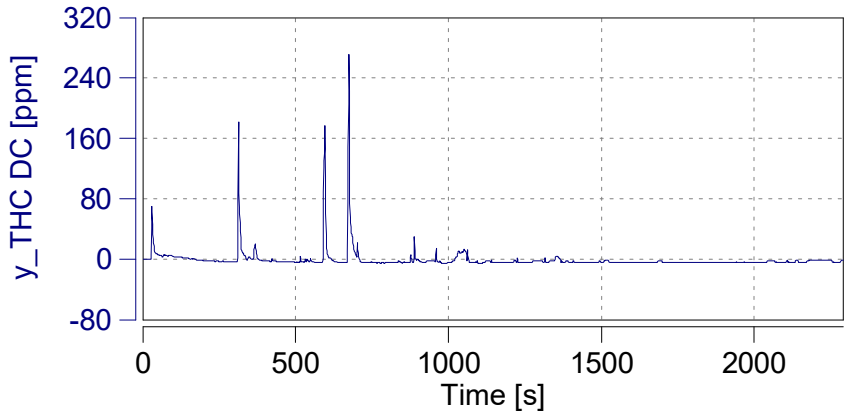
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

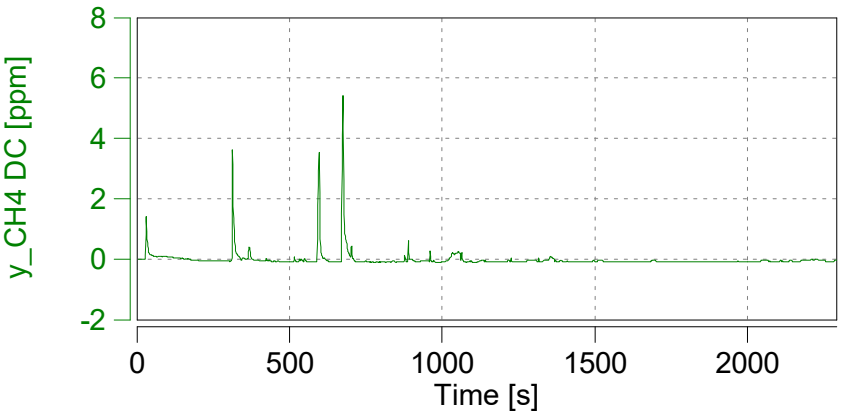
NOx - AVL 493

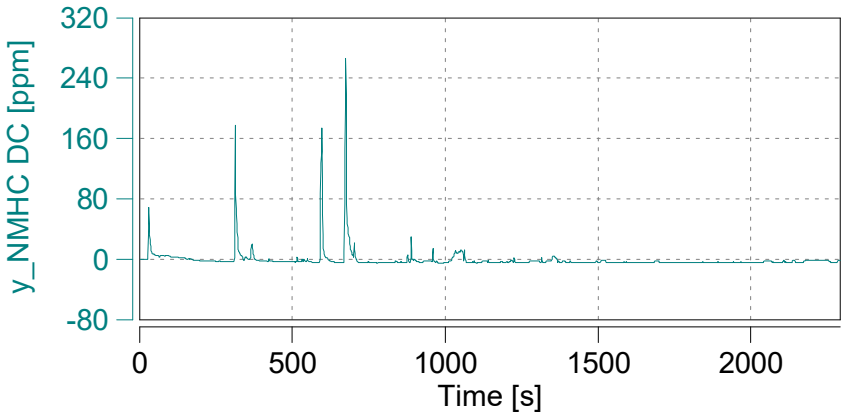

y_NO (Raw 493)
y_NO2 (Raw 493)
25°C
EU R49 8.6.1
US §1065.672
drift correction
d_Kf_NO 25°C to dry
d_Kf_NO2 25°C to dry
(1) EU R49 8.1.1 (15)
(2) US §1065.655
(3) none
y_NO DC (Dry 493)
y_NO2 DC (Dry 493)
y_NO (Dry 493)
y_NO2 (Dry 493)
CF dry/wet
(factor equal for all constituents)
CF NOx Ambient Conditions
y_NO DC
y_NO2 DC
wet
y_NO
y_NO2
wet
(1) HD Diesel Engine SwRI FinalReport 08-2597, 1999
(2) humidity only
(3) equivalent uncorrected NOx limit method for EU in service
(4) US §40.86.1342.94 Diesel
(5) US §40.86.1342.94 SI
(6) US §40.86.1370–2007 (default US)
(7) US 40.1065.670
(8) none (default EU)

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019







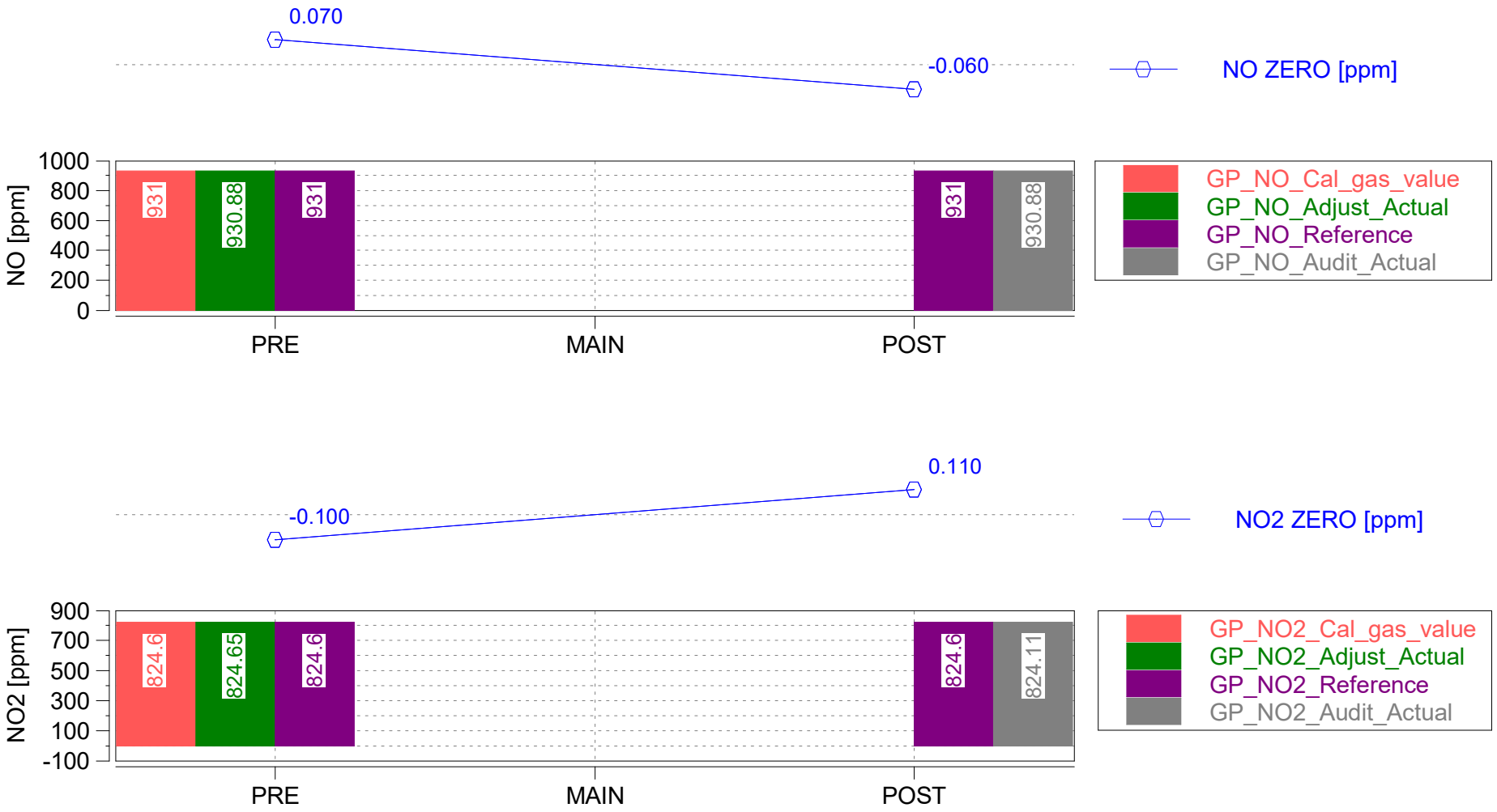
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



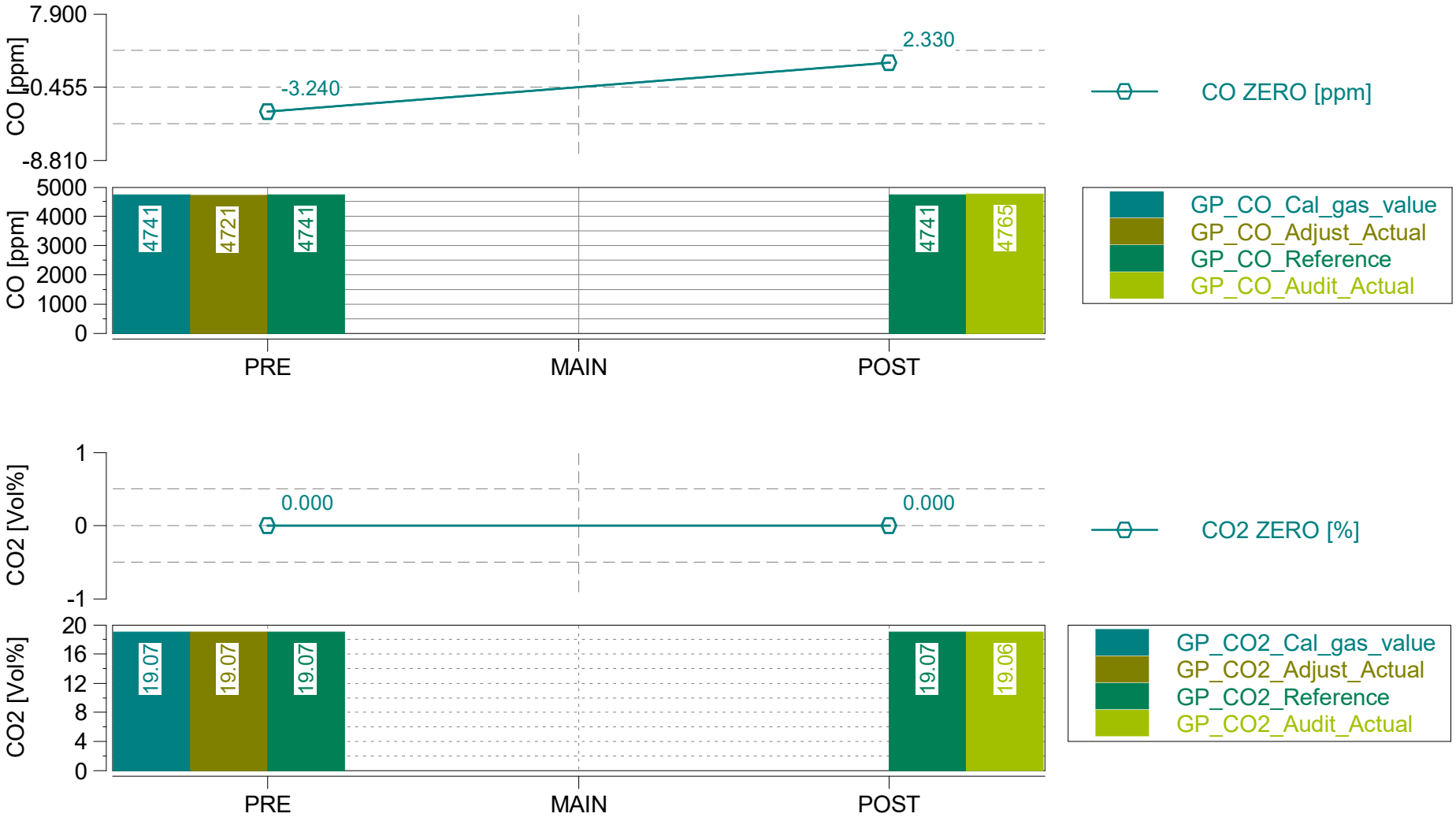
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



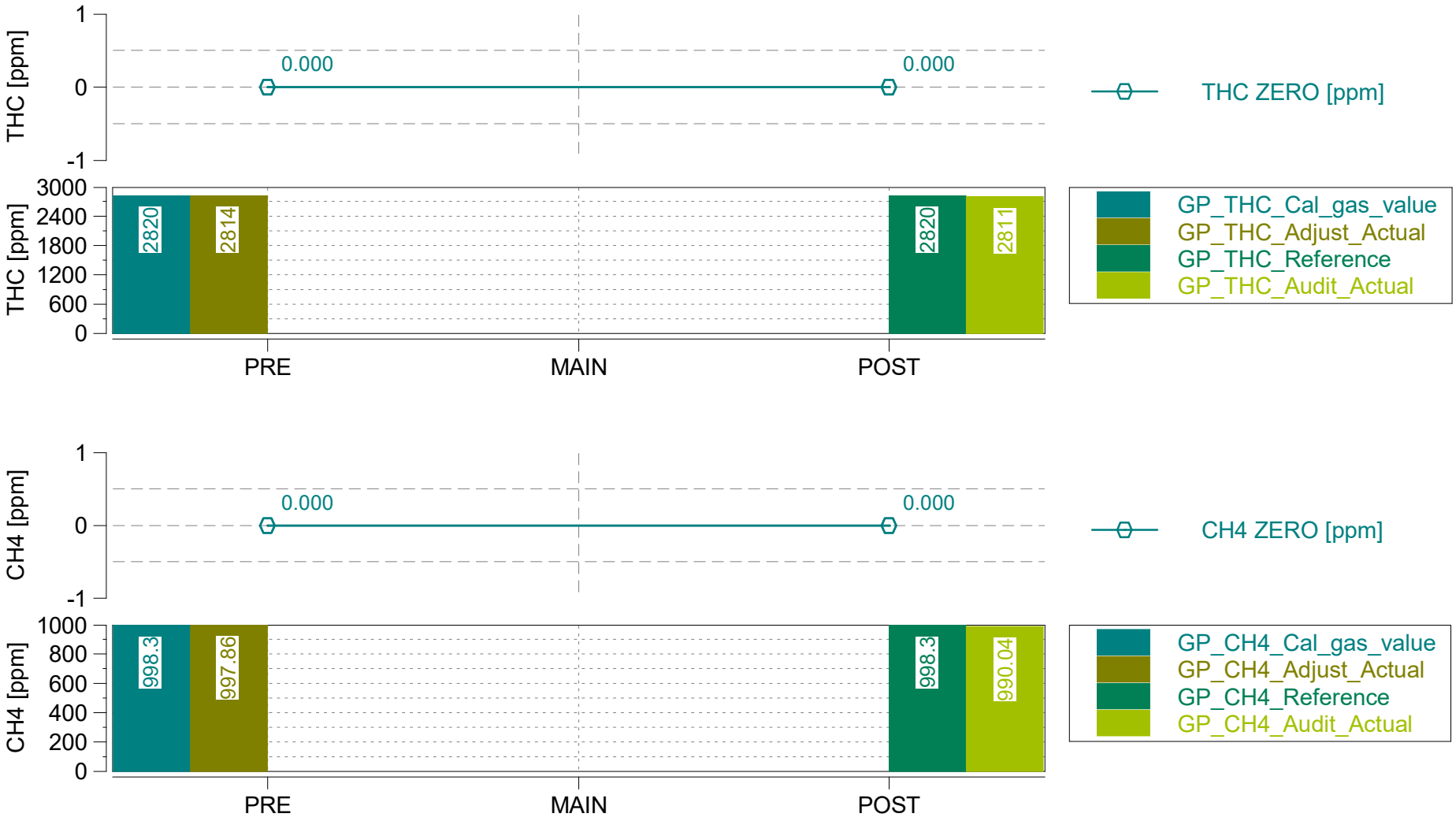
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-02)	**0.08**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-02
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

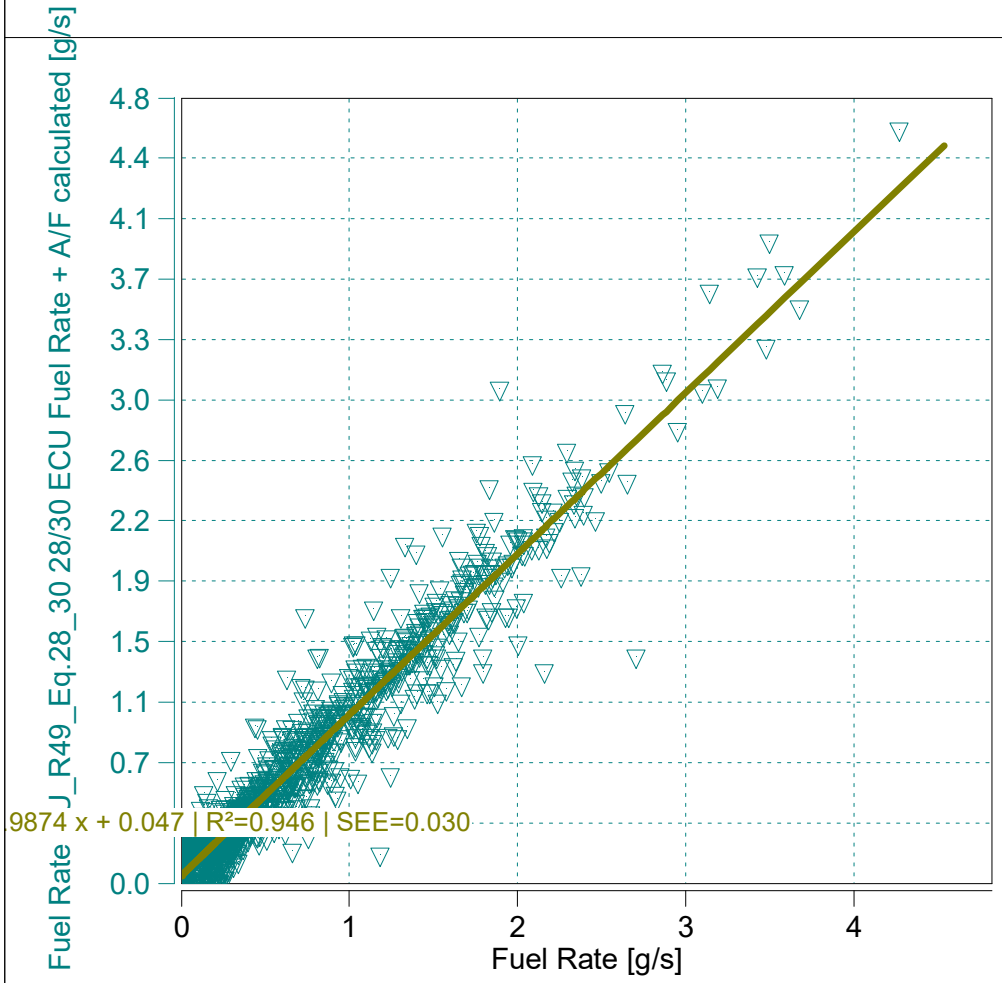
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 - Downhill (B1)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



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

y = 0.9874 x + 0.047 | R²=0.946 | SEE=0.030
m = 0.99 (0.9 - 1.1 recommended)
R² = 0.95 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 | 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

Trip Duration	1888.00	s
Trip Duration (a)	1888.00	s
Trip Distance	24.22	mi
Trip Distance (a)	24.22	mi
Trip Fuel Cons. (b)	1.84	kg
Trip Fuel Cons. (ab)	1.84	kg
Trip Fuel Cons. EU (ac)	1.90	kg
Trip Fuel Cons. US (ac)	1.89	kg
Trip Fuel Economy (b)	37.17	mpg_US
Trip Fuel Economy (ab)	37.17	mpg_US
Trip Fuel Economy EU (ac)	36.08	mpg_US
Trip Fuel Economy US (ac)	36.34	mpg_US
Trip Fuel Economy GGE (b)	37.17	mpg_US
Trip Fuel Economy GGE (ab)	37.17	mpg_US
Trip Fuel Economy EU GGE (ac)	36.08	mpg_US
Trip Fuel Economy US GGE (ac)	36.34	mpg_US
Trip Av. Eng. Speed	1449.62	rpm
Trip Av. Torque	54.35	lbft
Trip Av. Power	16.59	hp
Trip Work		
Trip Work (a)	8.70	hphr
Trip Exhaust Mass	29.54	kg
Trip Exhaust Mass EU (ac)	28.52	kg
Trip Exhaust Mass US (ac)	28.74	kg
Trip Av. Amb. Temperature	73.17	deg_F
Trip Av. Humidity	48.50	%
Trip Av. GPS Altitude	53.01	m
Fuel Type	Petrol (E10)	

ave THC	15.71958	ppm
ave NMHC	15.40519	ppm
ave CH4	0.31439	ppm
ave CO	230.03187	ppm
ave CO2	11.99074	%
ave NOx	5.17254	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	0.23987	g
tot NMHC	0.22188	g
tot CH4	0.00532	g
tot CO	7.40689	g
tot CO2	5724.85004	g
tot NO (d)	0.09738	g
tot NO2	0.06154	g
tot NOx	0.15803	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	46.18079	mi/hr
Trip Distance Share Urban	9.89884	% distanc
Trip Distance Share Rural	20.07077	% distanc
Trip Distance Share Motorway	70.03039	% distanc

BS CO2	657.82114	g/hphr
BS CO	0.85110	g/hphr
BS THC	0.02756	g/hphr
BS NMHC	0.02550	g/hphr
BS CH4	0.00061	g/hphr
BS NO (d)	0.01119	g/hphr
BS NO2	0.00707	g/hphr
BS NOx	0.01816	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	236.37592	g/mi
DS CO	0.30583	g/mi
DS THC	0.00990	g/mi
DS NMHC	0.00916	g/mi
DS CH4	0.00022	g/mi
DS NO (d)	0.00402	g/mi
DS NO2	0.00254	g/mi
DS NOx	0.00653	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	3105.47214	g/kg
FS CO	4.01790	g/kg
FS THC	0.13012	g/kg
FS NMHC	0.12036	g/kg
FS CH4	0.00288	g/kg
FS NO (d)	0.05282	g/kg
FS NO2	0.03338	g/kg
FS NOx	0.08572	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

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

Trip Duration	1888.00	s
Trip Duration (a)	1888.00	s
Trip Distance	24.22	mi
Trip Distance (a)	24.22	mi
Trip Fuel Cons. (b)	1.84	kg
Trip Fuel Cons. (ab)	1.84	kg
Trip Fuel Cons. EU (ac)	1.90	kg
Trip Fuel Cons. US (ac)	1.89	kg
Trip Fuel Economy (b)	37.17	mpg_US
Trip Fuel Economy (ab)	37.17	mpg_US
Trip Fuel Economy EU (ac)	36.08	mpg_US
Trip Fuel Economy US (ac)	36.34	mpg_US
Trip Fuel Economy GGE (b)	37.17	mpg_US
Trip Fuel Economy GGE (ab)	37.17	mpg_US
Trip Fuel Economy EU GGE (ac)	36.08	mpg_US
Trip Fuel Economy US GGE (ac)	36.34	mpg_US
Trip Av. Eng. Speed	1449.62	rpm
Trip Av. Torque	54.35	lbft
Trip Av. Power	16.59	hp
Trip Work		
Trip Work (a)	8.70	hphr
Trip Exhaust Mass	29.54	kg
Trip Exhaust Mass EU (ac)	28.52	kg
Trip Exhaust Mass US (ac)	28.74	kg
Trip Av. Amb. Temperature	73.17	deg_F
Trip Av. Humidity	48.50	%
Trip Av. GPS Altitude	53.01	m
Fuel Type	Petrol (E10)	

ave THC DC	15.76088	ppm
ave NMHC DC	15.44566	ppm
ave CH4 DC	0.31522	ppm
ave CO DC	232.60515	ppm
ave CO2 DC	11.99388	%
ave NOx DC	5.19899	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	0.24050	g
tot NMHC DC	0.22246	g
tot CH4 DC	0.00533	g
tot CO DC	7.47838	g
tot CO2 DC	5726.35144	g
tot NO DC (d)	0.09510	g
tot NO2 DC	0.06549	g
tot NOx DC	0.15924	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	46.18079	mi/hr
Trip Distance Share Urban	9.89884	% distanc
Trip Distance Share Rural	20.07077	% distanc
Trip Distance Share Motorway	70.03039	% distanc

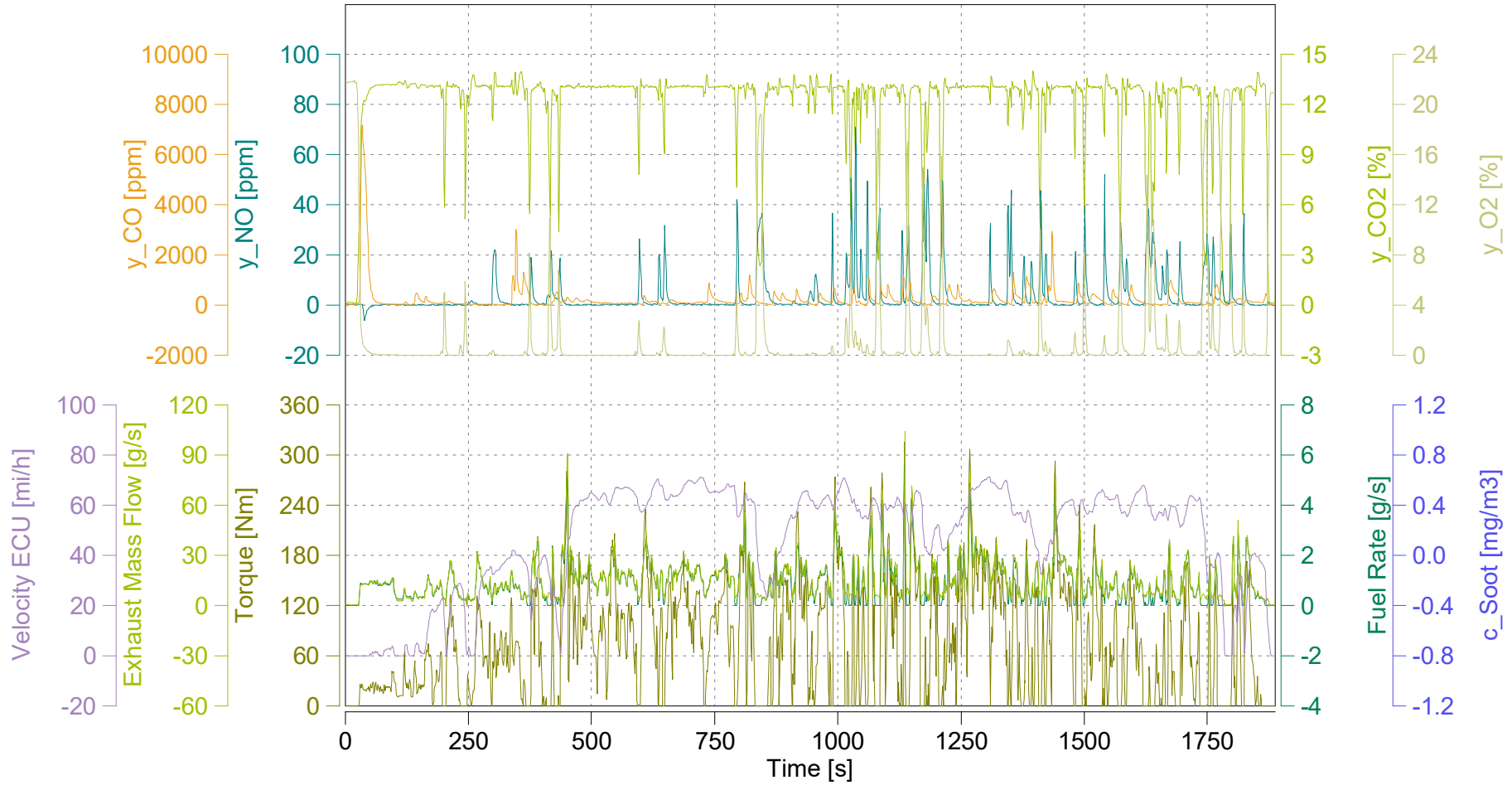
BS CO2 DC	657.99366	g/hphr
BS CO DC	0.85931	g/hphr
BS THC DC	0.02763	g/hphr
BS NMHC DC	0.02556	g/hphr
BS CH4 DC	0.00061	g/hphr
BS NO DC (d)	0.01093	g/hphr
BS NO2 DC	0.00753	g/hphr
BS NOx DC	0.01830	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC		
DS CO2 DC	236.43791	g/mi
DS CO DC	0.30878	g/mi
DS THC DC	0.00993	g/mi
DS NMHC DC	0.00919	g/mi
DS CH4 DC	0.00022	g/mi
DS NO DC (d)	0.00393	g/mi
DS NO2 DC	0.00270	g/mi
DS NOx DC	0.00657	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	3106.28658	g/kg
FS CO DC	4.05668	g/kg
FS THC DC	0.13046	g/kg
FS NMHC DC	0.12067	g/kg
FS CH4 DC	0.00289	g/kg
FS NO DC (d)	0.05159	g/kg
FS NO2 DC	0.03553	g/kg
FS NOx DC	0.08638	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

Case: C118-1270
Page: Time Alignment Check

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



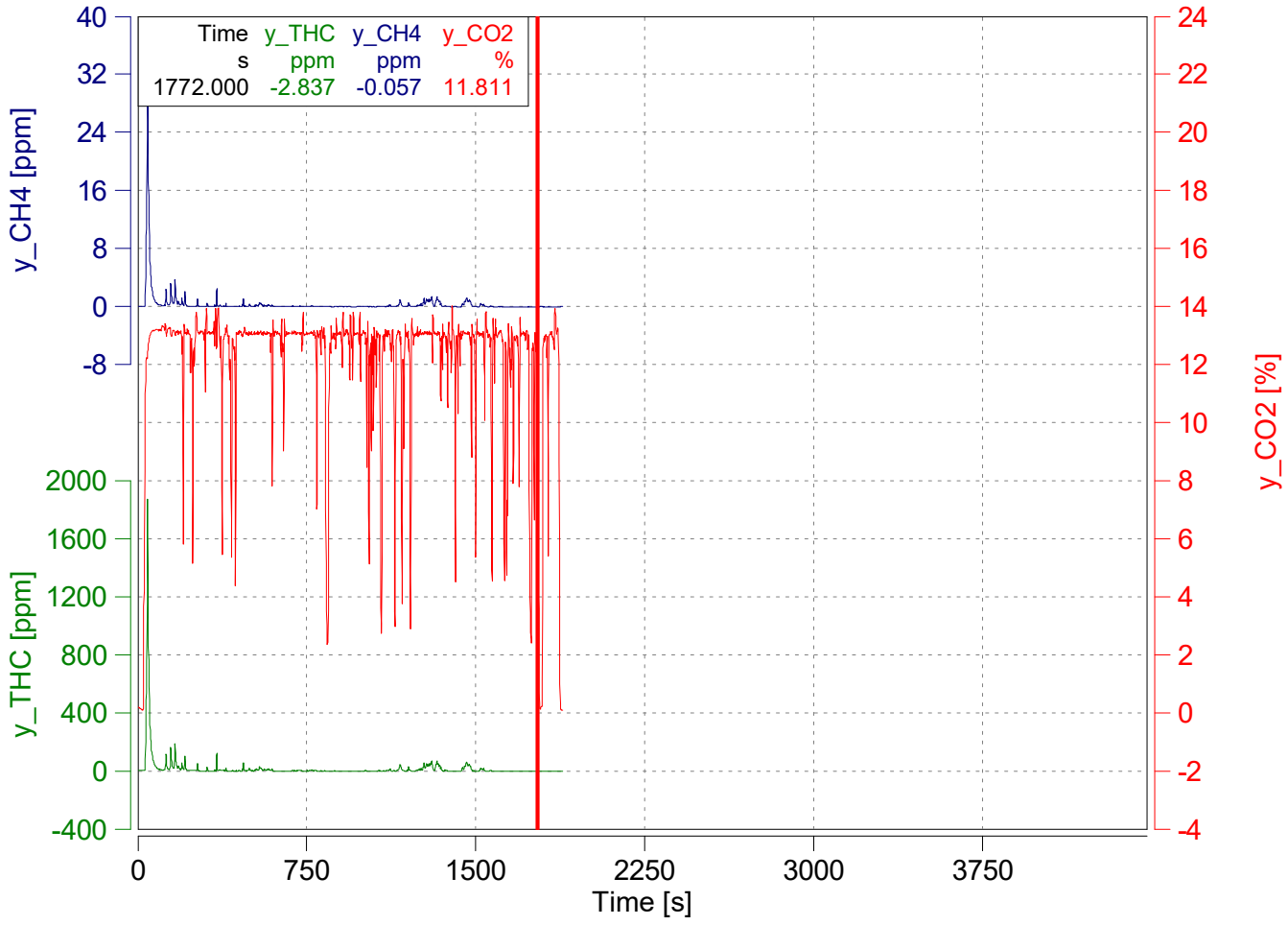
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Time Alignment of Gas Concentrations

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

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

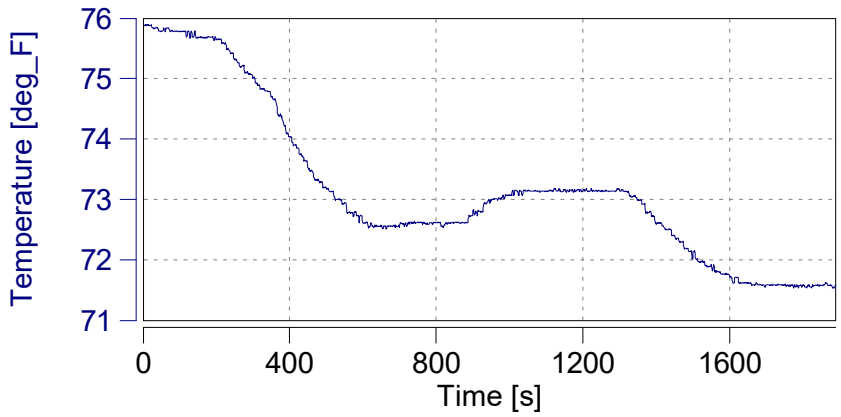
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

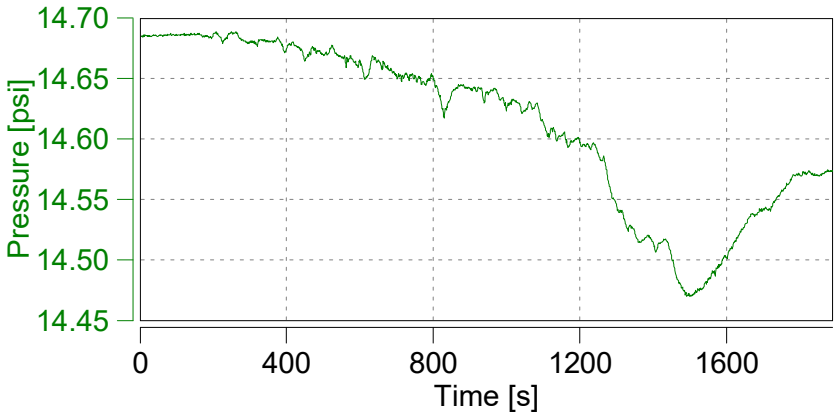
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

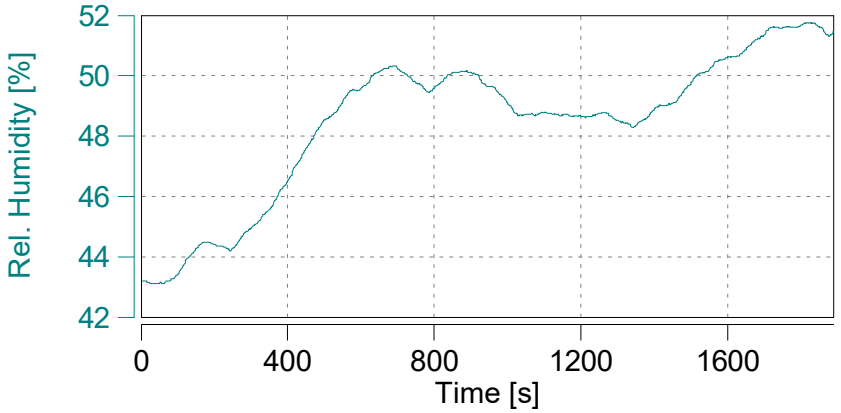
Case: C118-1270
Page: Ambient Conditions

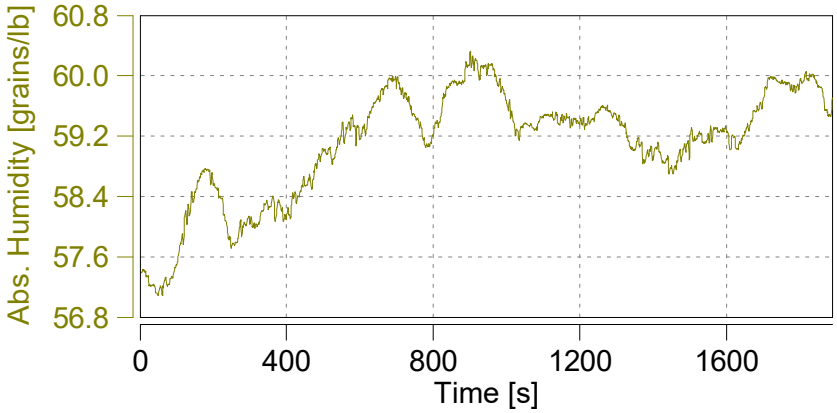
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









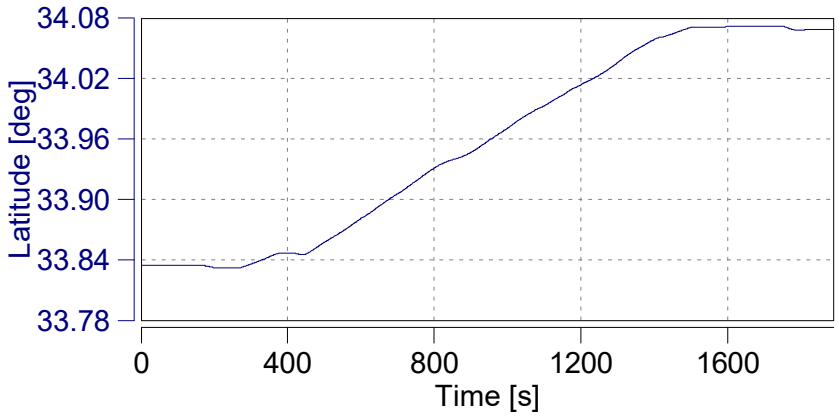
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

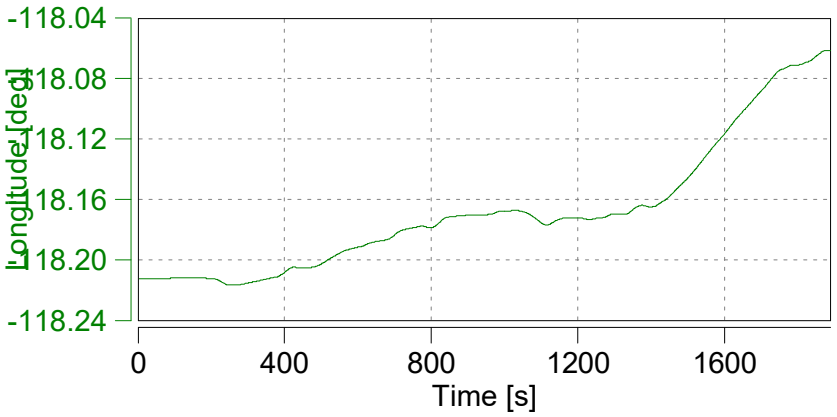
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

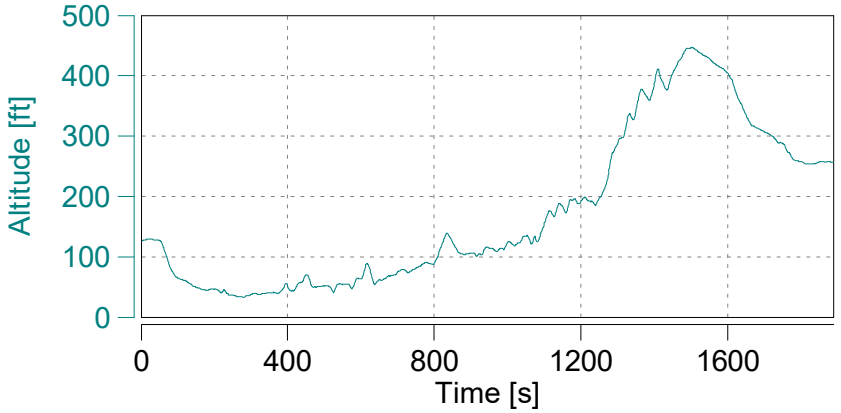
Case: C118-1270
Page: GPS

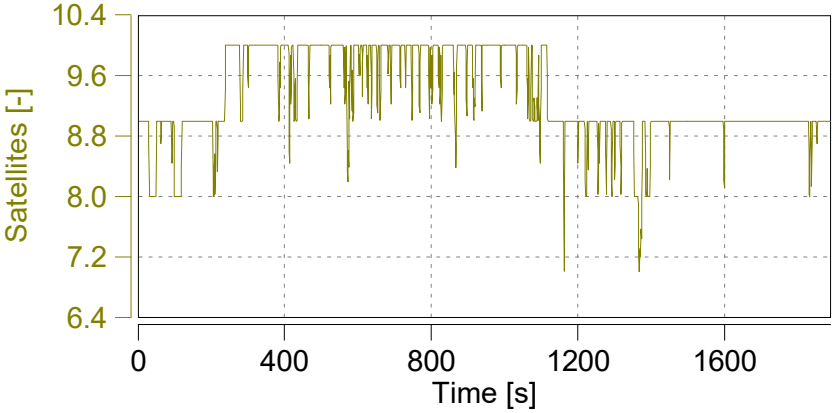
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









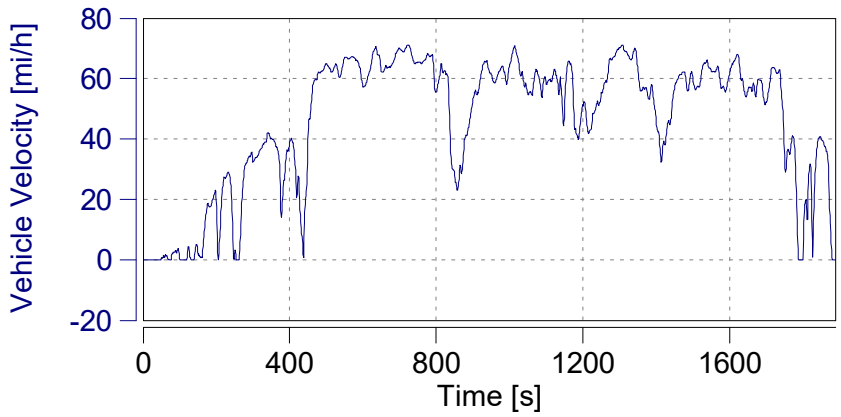
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

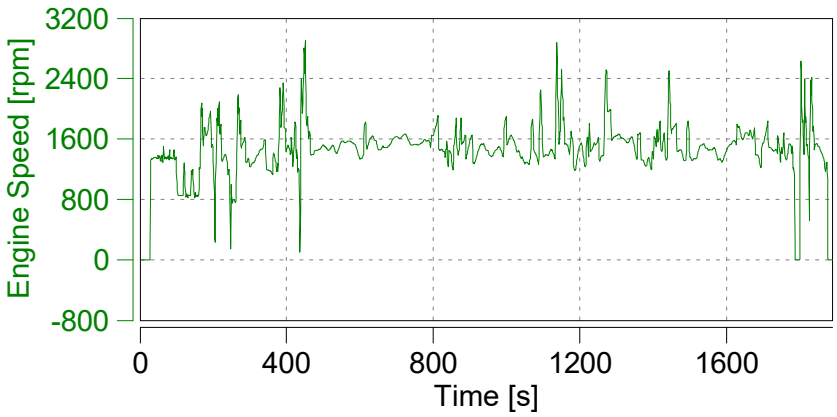
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

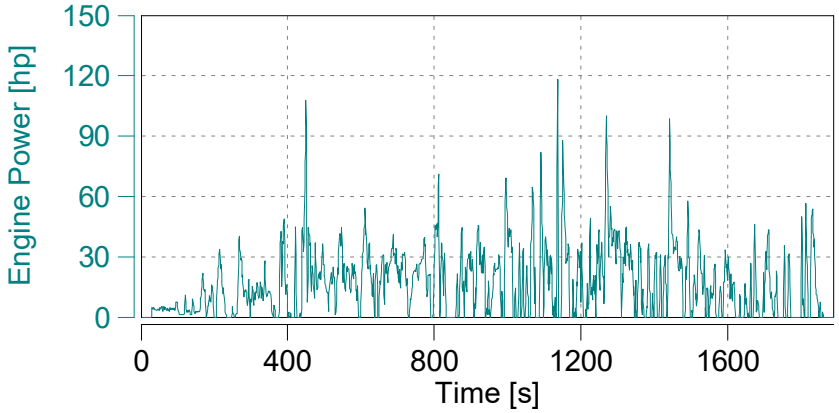
Case: C118-1270
Page: Engine (1)

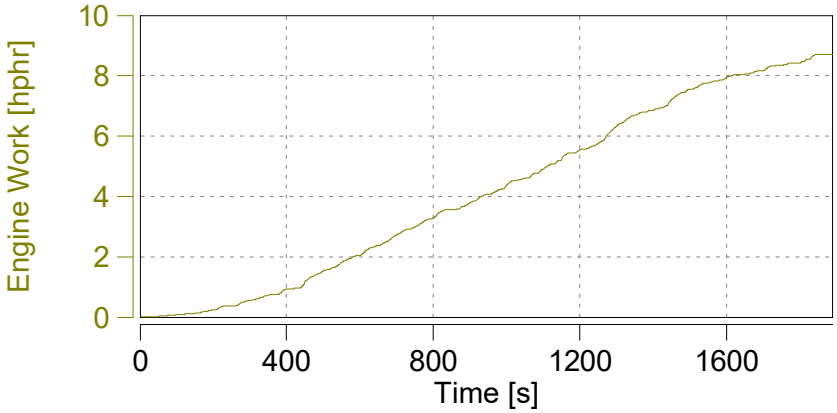
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









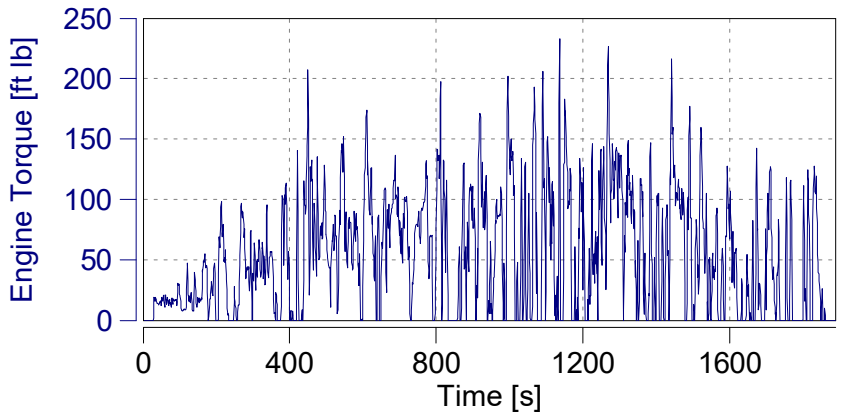
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

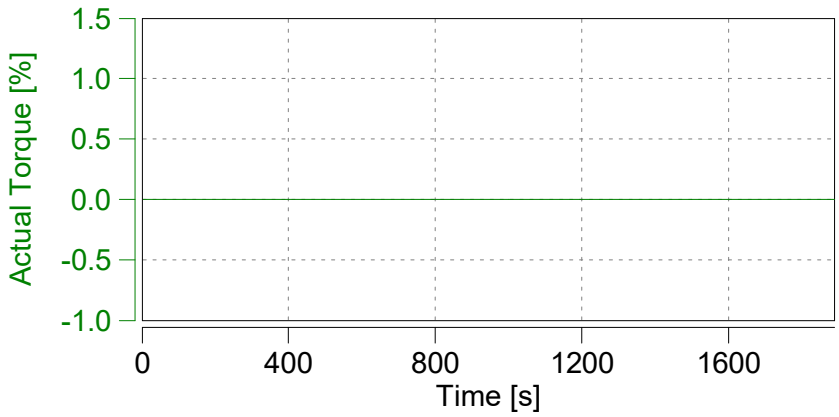
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

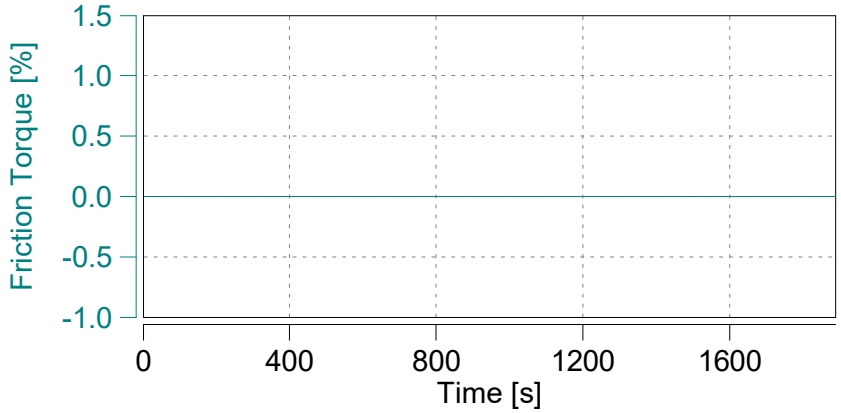
Case: C118-1270
Page: Engine (2)

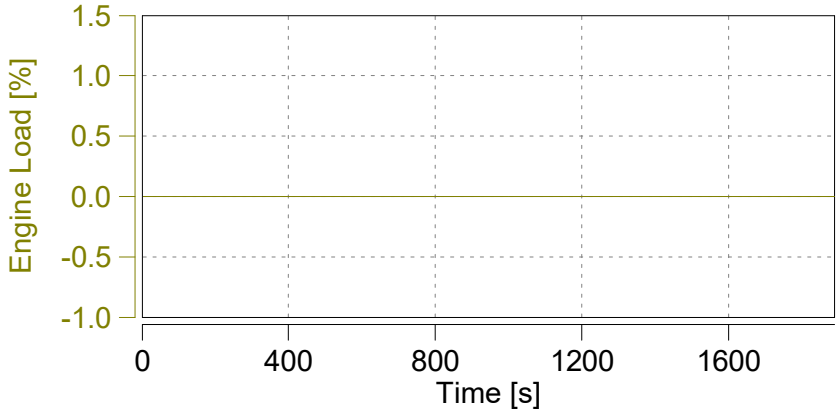
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









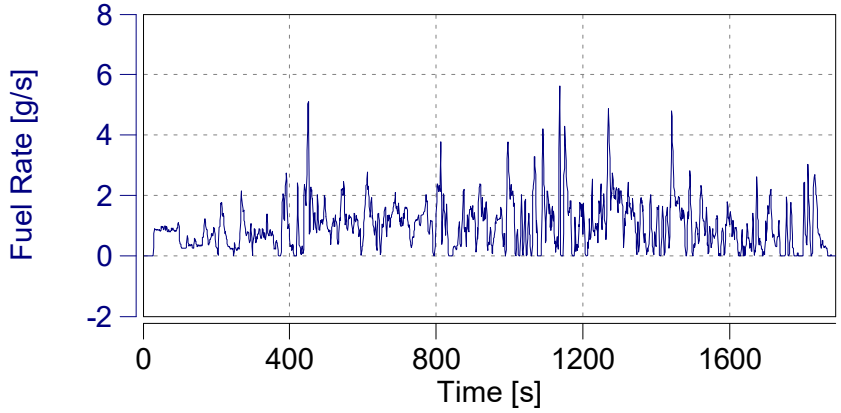
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

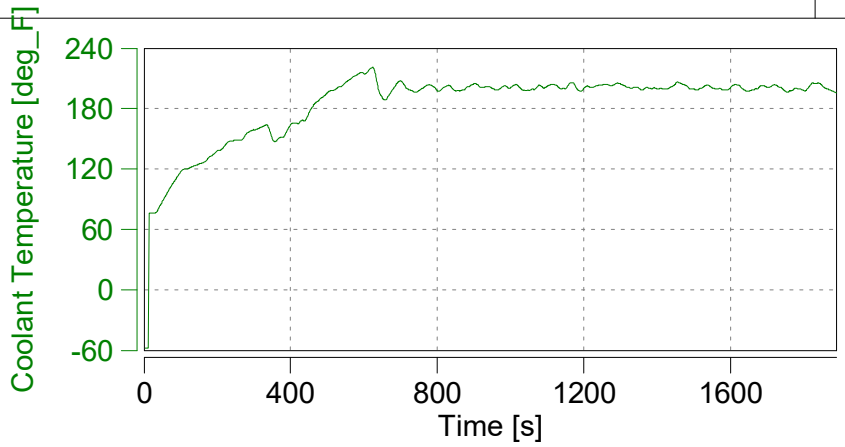
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

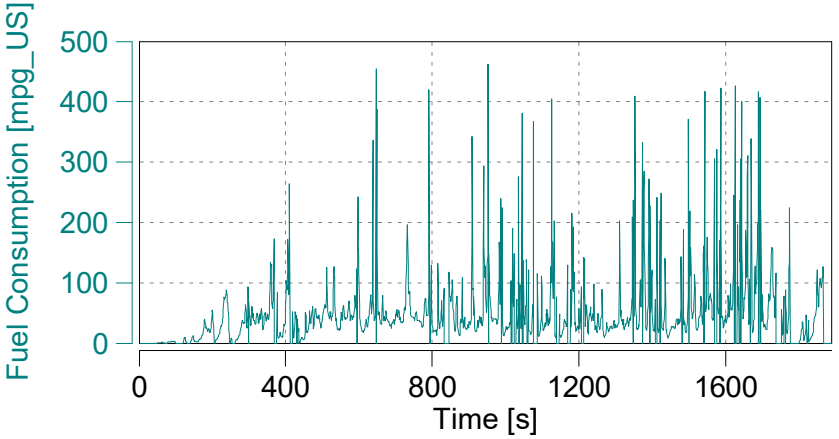
Case: C118-1270
Page: Engine (3)

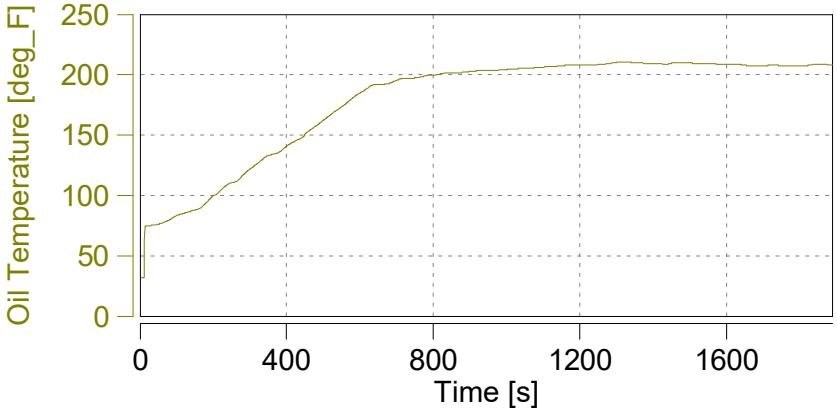
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









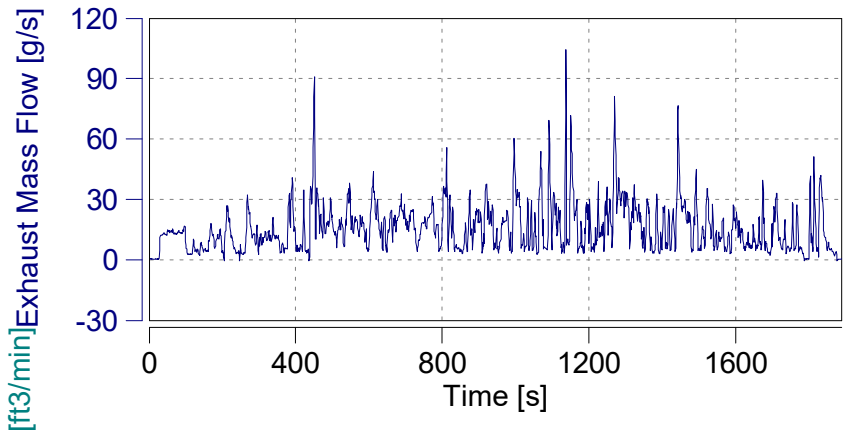
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

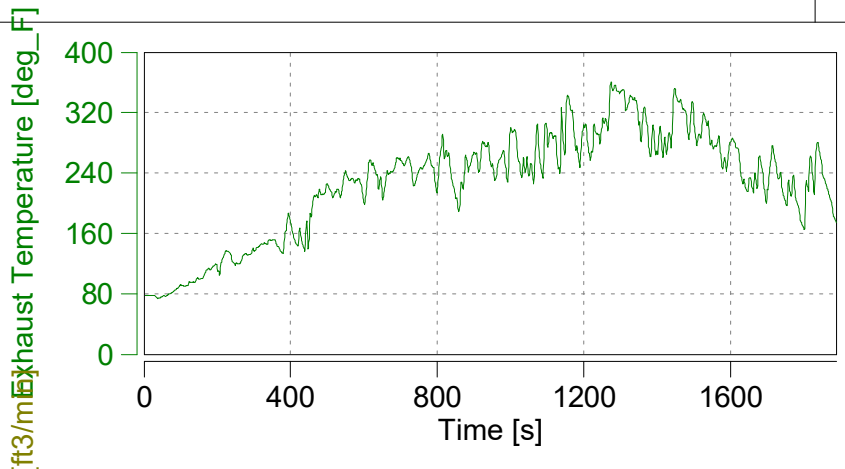
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

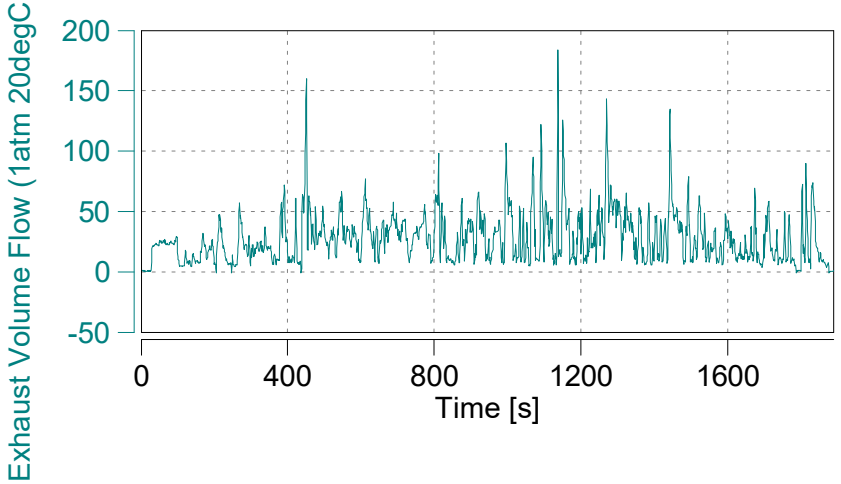
Case: C118-1270
Page: Exhaust Flow (1)

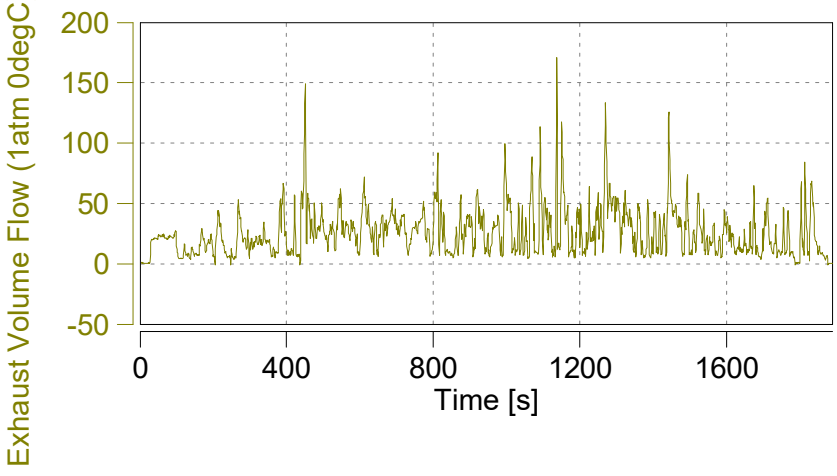
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









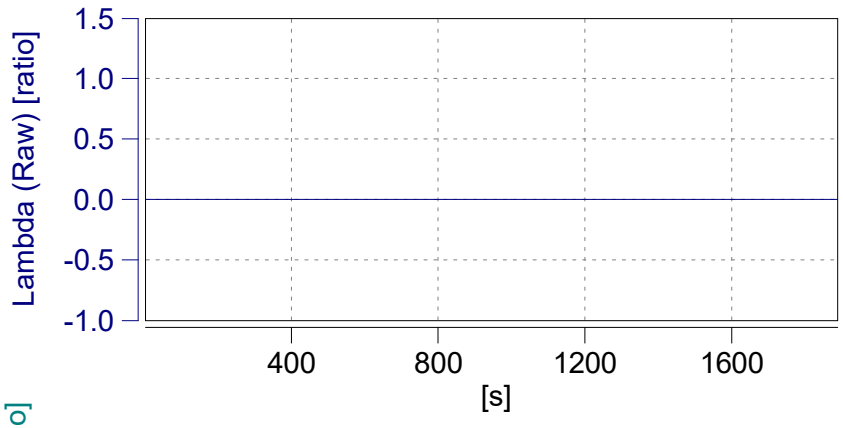
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

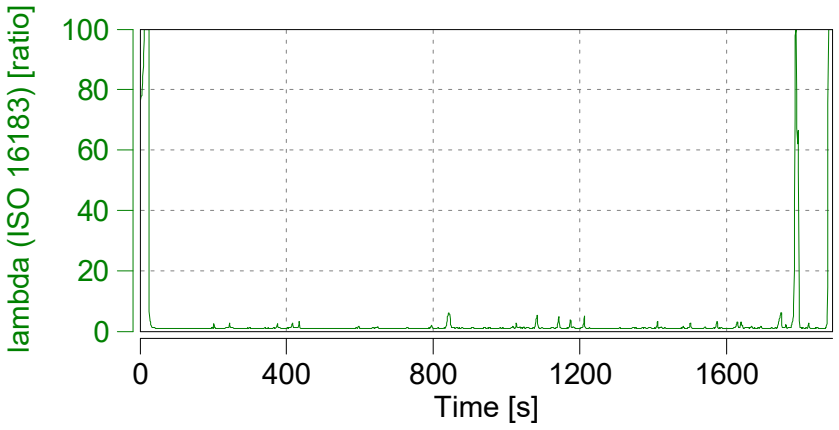
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

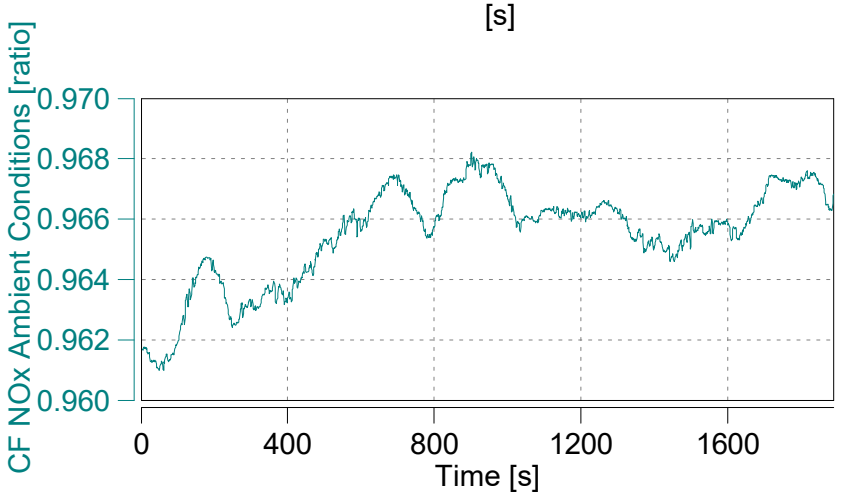
Case: C118-1270
Page: Exhaust Flow (2)

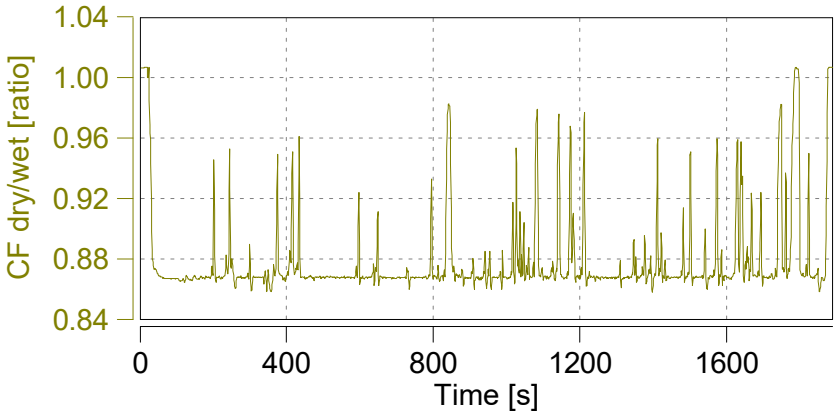
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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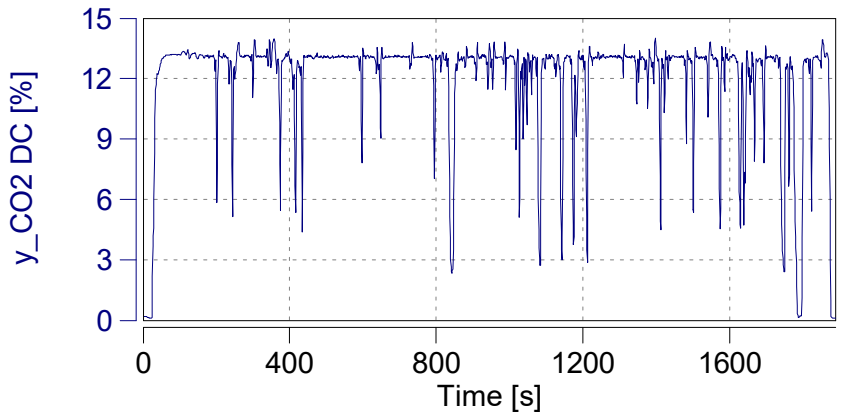
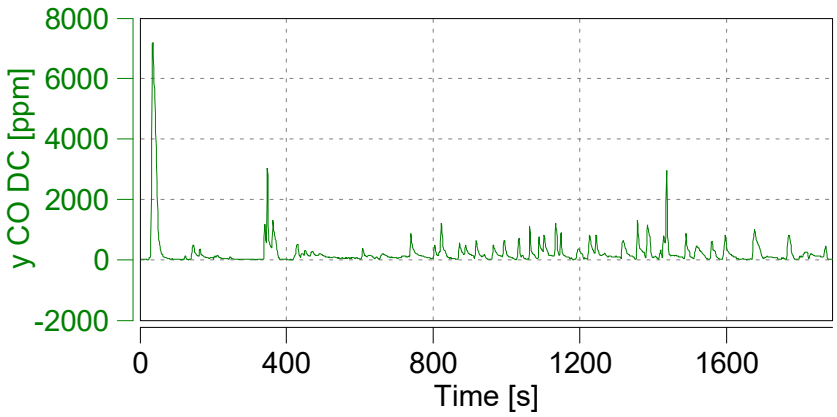
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

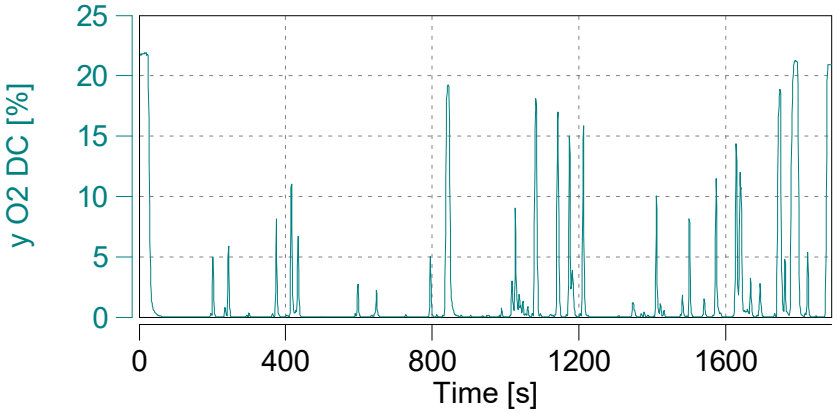
Case: C118-1270
Page: Corrected Emissions (1)

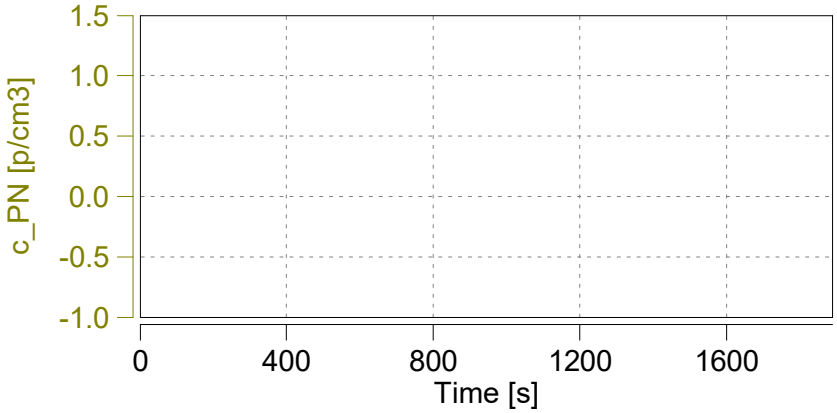
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









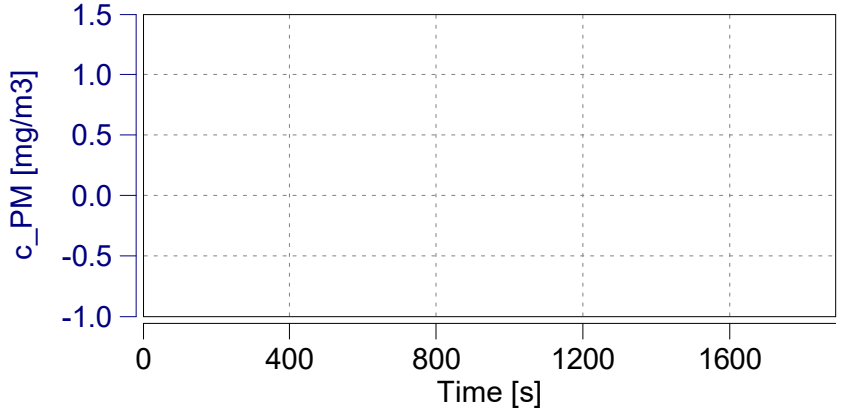
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

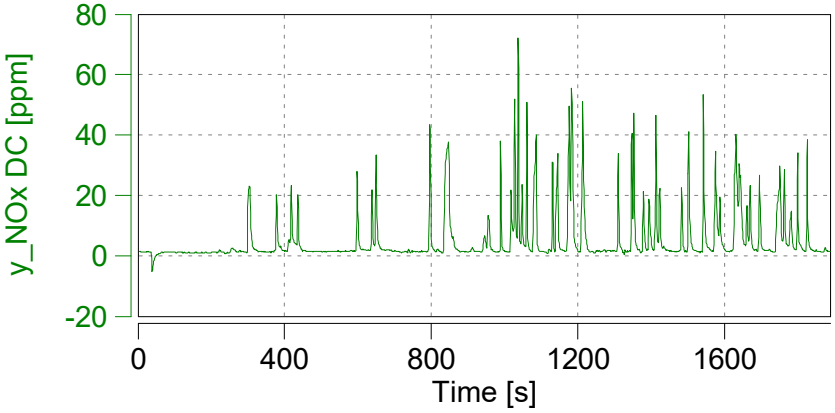
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

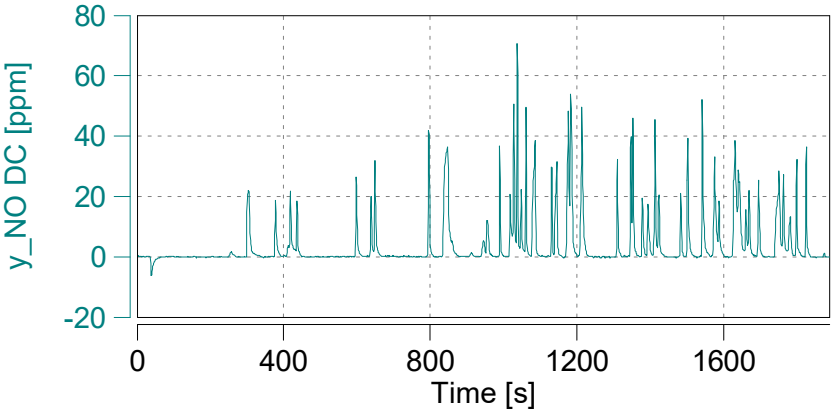
Case: C118-1270
Page: Corrected Emissions (2)

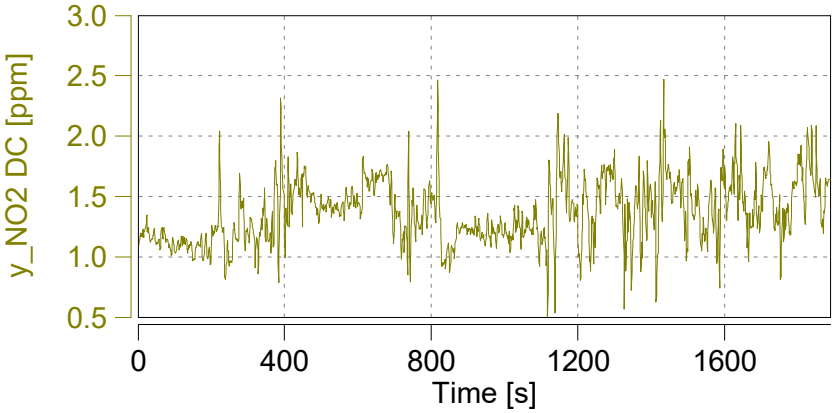
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019









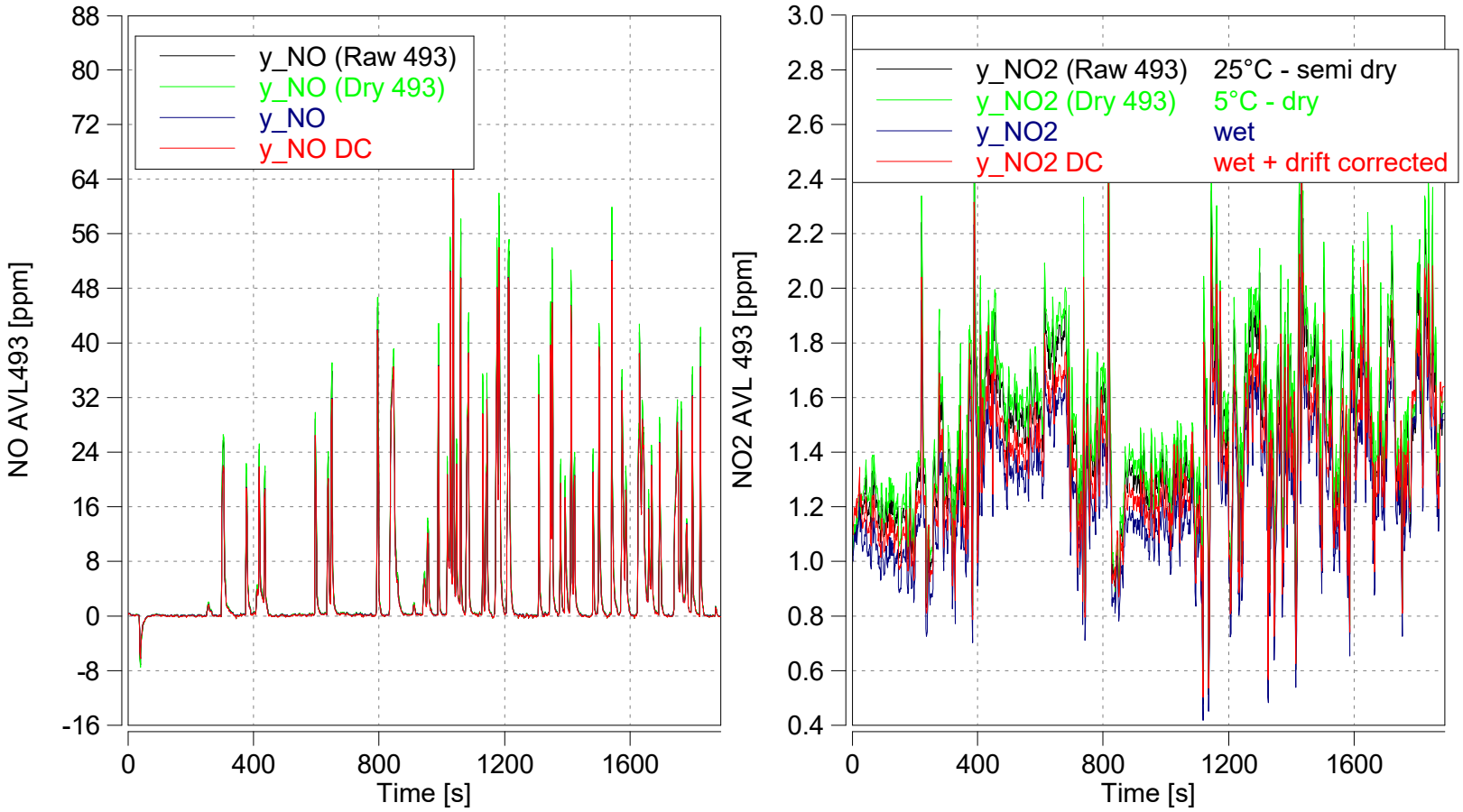
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019

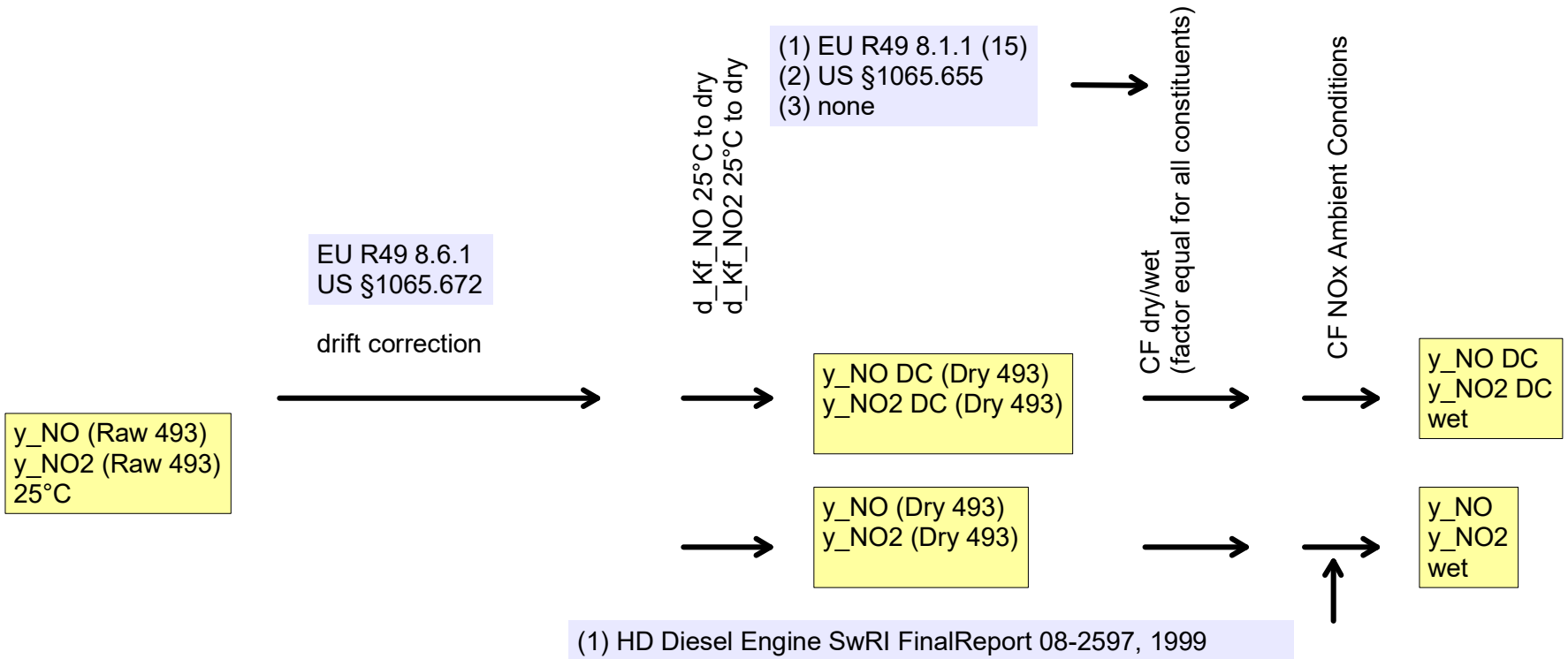


Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

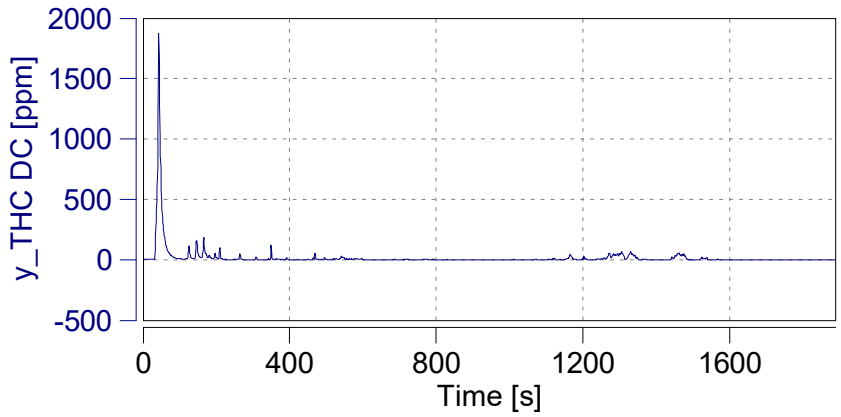
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

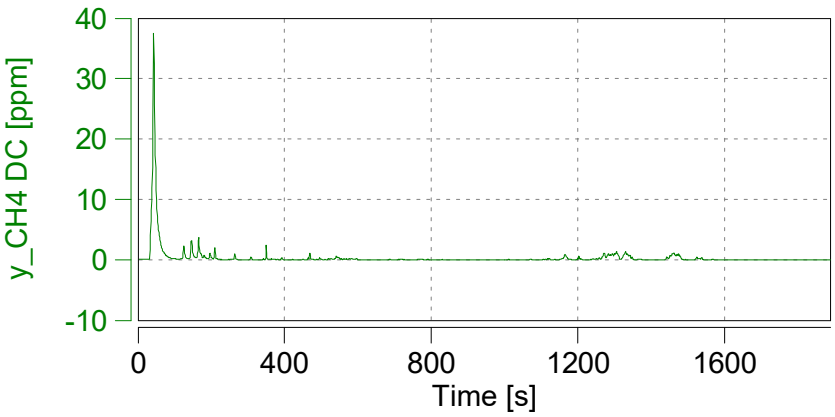
'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

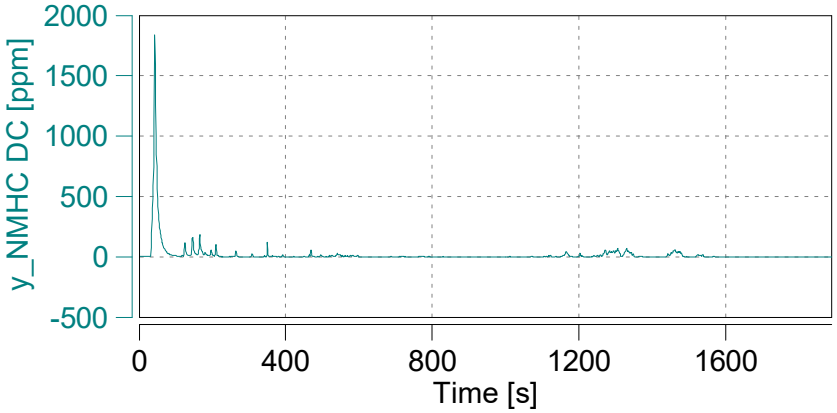
NOx - AVL 493



'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0







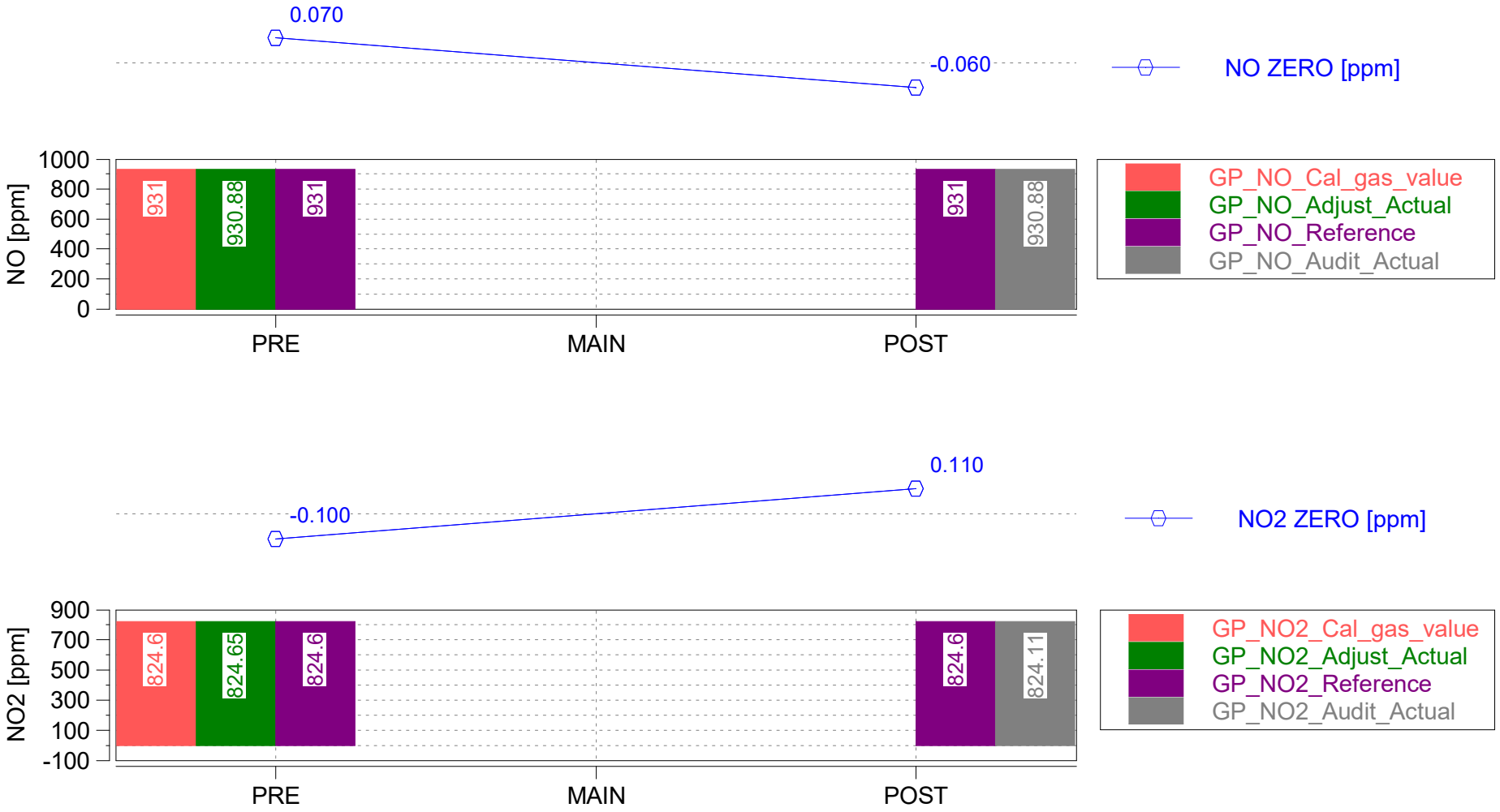
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



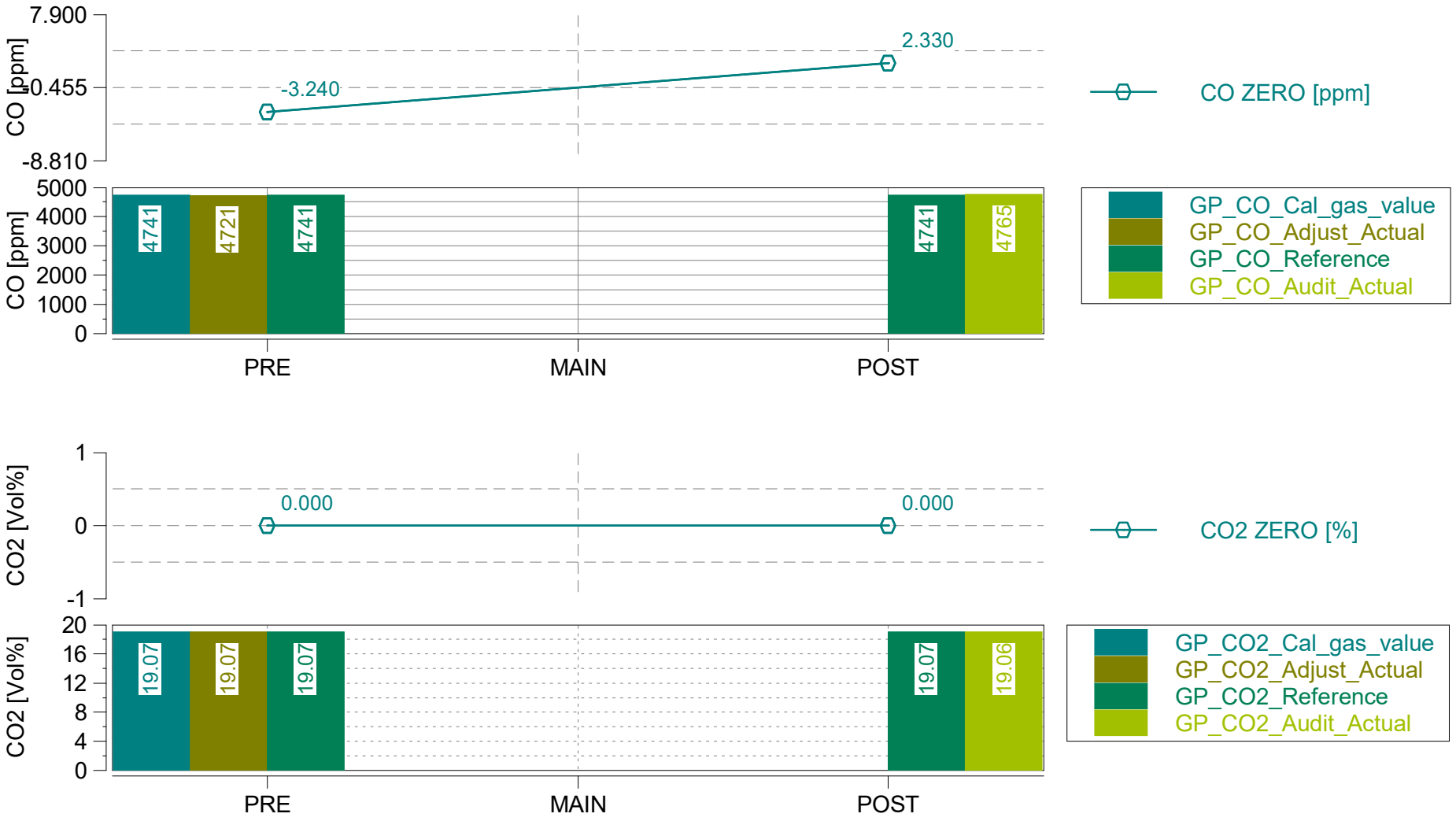
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



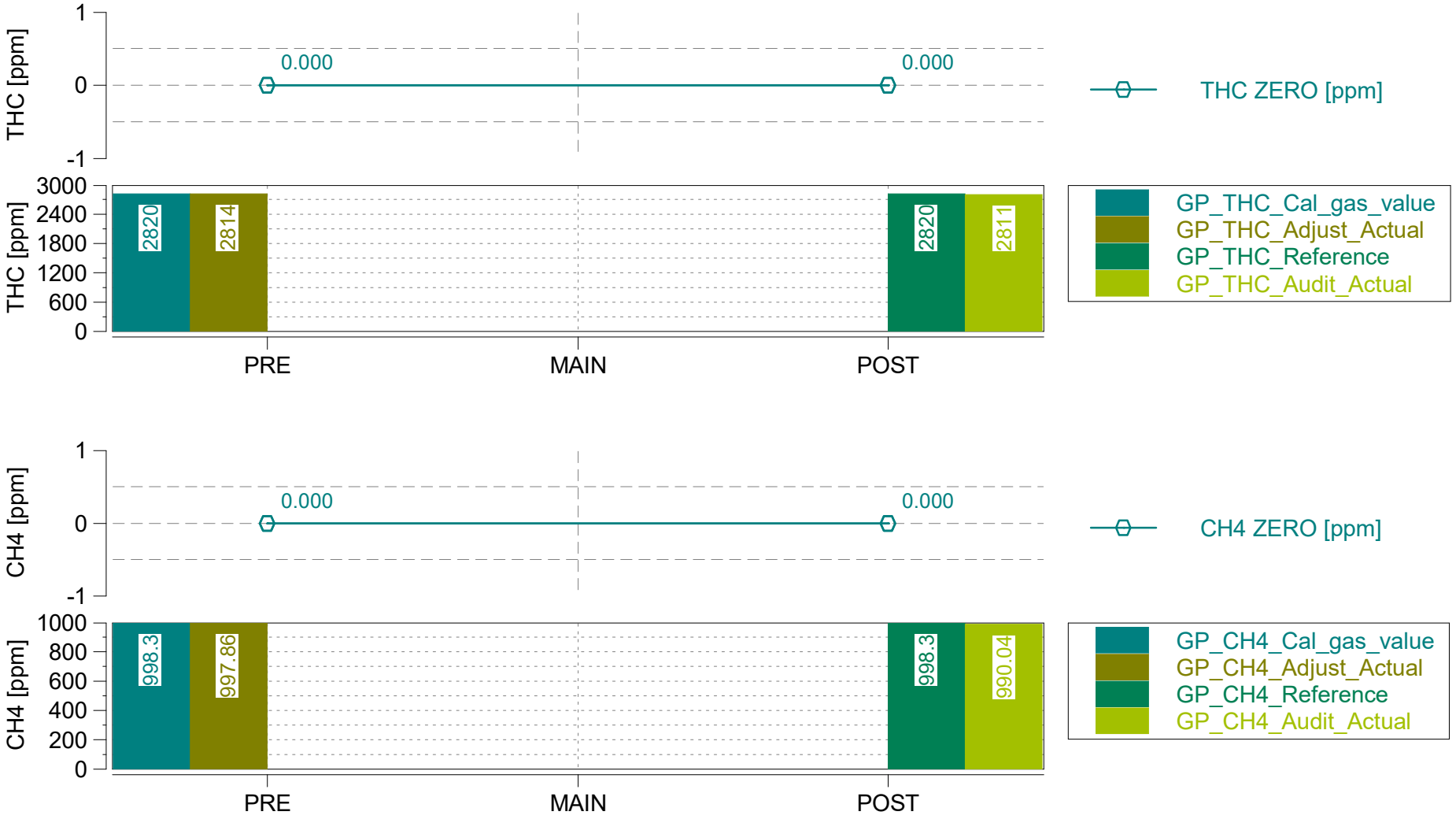
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-02)	**0.08**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-02
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

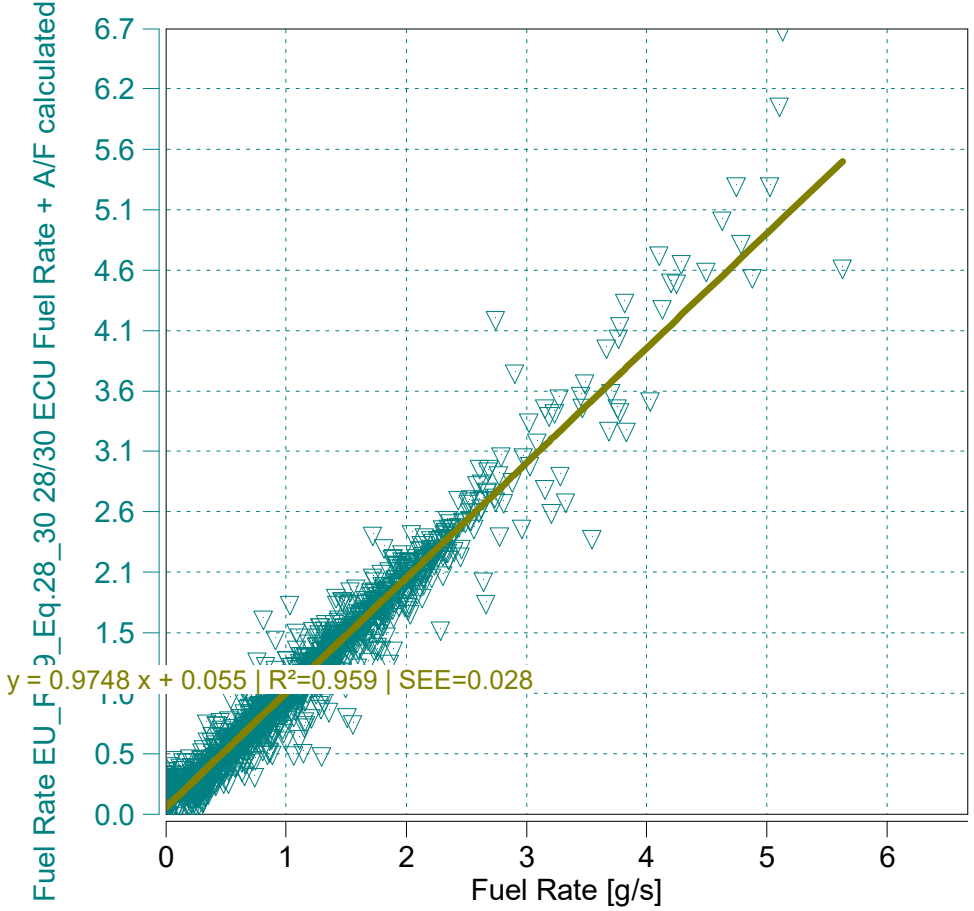
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 - Transfer LATC to CARB (A0)'
Start Date: 06/02/2023
Start Time: 09:42:37.0

AVL
Concerto M.O.V.E, 2019



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

y = 0.9748 x + 0.055 | R²=0.959 | SEE=0.028
m = 0.97 (0.9 - 1.1 recommended)
R² = 0.96 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Trip Summary

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20

Trip Duration	3378.00	s
Trip Duration (a)	3378.00	s
Trip Distance	16.01	mi
Trip Distance (a)	16.01	mi
Trip Fuel Cons. (b)	1.66	kg
Trip Fuel Cons. (ab)	1.66	kg
Trip Fuel Cons. EU (ac)	1.73	kg
Trip Fuel Cons. US (ac)	1.72	kg
Trip Fuel Economy (b)	27.36	mpg_US
Trip Fuel Economy (ab)	27.36	mpg_US
Trip Fuel Economy EU (ac)	26.16	mpg_US
Trip Fuel Economy US (ac)	26.35	mpg_US
Trip Fuel Economy GGE (b)	27.36	mpg_US
Trip Fuel Economy GGE (ab)	27.36	mpg_US
Trip Fuel Economy EU GGE (ac)	26.16	mpg_US
Trip Fuel Economy US GGE (ac)	26.35	mpg_US
Trip Av. Eng. Speed	1032.43	rpm
Trip Av. Torque	22.30	lbft
Trip Av. Power	7.19	hp
Trip Work		
Trip Work (a)	6.74	hphr
Trip Exhaust Mass	27.18	kg
Trip Exhaust Mass EU (ac)	27.22	kg
Trip Exhaust Mass US (ac)	27.51	kg
Trip Av. Amb. Temperature	66.74	deg_F
Trip Av. Humidity	61.21	%
Trip Av. GPS Altitude	73.84	m
Fuel Type	Petrol (E10)	

ave THC	-3.41423	ppm
ave NMHC	-3.34594	ppm
ave CH4	-0.06828	ppm
ave CO	114.73269	ppm
ave CO2	8.89126	%
ave NOx	4.40267	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	0.00034	g
tot NMHC	0.00031	g
tot CH4	0.00001	g
tot CO	4.64788	g
tot CO2	5224.13548	g
tot NO (d)	0.14681	g
tot NO2	0.07211	g
tot NOx	0.21463	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	17.06497	mi/hr
Trip Distance Share Urban	71.18310	% distance
Trip Distance Share Rural	15.86199	% distance
Trip Distance Share Motorway	12.95491	% distance

BS CO2	774.60356	g/hphr
BS CO	0.68916	g/hphr
BS THC	0.00005	g/hphr
BS NMHC	0.00005	g/hphr
BS CH4	0.00000	g/hphr
BS NO (d)	0.02177	g/hphr
BS NO2	0.01069	g/hphr
BS NOx	0.03182	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	326.25093	g/mi
DS CO	0.29026	g/mi
DS THC	0.00002	g/mi
DS NMHC	0.00002	g/mi
DS CH4	0.00000	g/mi
DS NO (d)	0.00917	g/mi
DS NO2	0.00450	g/mi
DS NOx	0.01340	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	3154.59175	g/kg
FS CO	2.80662	g/kg
FS THC	0.00020	g/kg
FS NMHC	0.00019	g/kg
FS CH4	0.00000	g/kg
FS NO (d)	0.08865	g/kg
FS NO2	0.04354	g/kg
FS NOx	0.12961	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: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

Trip Duration	3378.00	s
Trip Duration (a)	3378.00	s
Trip Distance	16.01	mi
Trip Distance (a)	16.01	mi
Trip Fuel Cons. (b)	1.66	kg
Trip Fuel Cons. (ab)	1.66	kg
Trip Fuel Cons. EU (ac)	1.73	kg
Trip Fuel Cons. US (ac)	1.72	kg
Trip Fuel Economy (b)	27.36	mpg_US
Trip Fuel Economy (ab)	27.36	mpg_US
Trip Fuel Economy EU (ac)	26.16	mpg_US
Trip Fuel Economy US (ac)	26.35	mpg_US
Trip Fuel Economy GGE (b)	27.36	mpg_US
Trip Fuel Economy GGE (ab)	27.36	mpg_US
Trip Fuel Economy EU GGE (ac)	26.16	mpg_US
Trip Fuel Economy US GGE (ac)	26.35	mpg_US
Trip Av. Eng. Speed	1032.43	rpm
Trip Av. Torque	22.30	lbft
Trip Av. Power	7.19	hp
Trip Work		
Trip Work (a)	6.74	hphr
Trip Exhaust Mass	27.18	kg
Trip Exhaust Mass EU (ac)	27.22	kg
Trip Exhaust Mass US (ac)	27.51	kg
Trip Av. Amb. Temperature	66.74	deg_F
Trip Av. Humidity	61.21	%
Trip Av. GPS Altitude	73.84	m
Fuel Type	Petrol (E10)	

ave THC DC	-3.42418	ppm
ave NMHC DC	-3.35570	ppm
ave CH4 DC	-0.06848	ppm
ave CO DC	112.50509	ppm
ave CO2 DC	8.89592	%
ave NOx DC	4.46441	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	0.00034	g
tot NMHC DC	0.00031	g
tot CH4 DC	0.00001	g
tot CO DC	4.58644	g
tot CO2 DC	5226.87637	g
tot NO DC (d)	0.14725	g
tot NO2 DC	0.07391	g
tot NOx DC	0.21719	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	17.06497	mi/hr
Trip Distance Share Urban	71.18310	% distance
Trip Distance Share Rural	15.86199	% distance
Trip Distance Share Motorway	12.95491	% distance

BS CO2 DC	775.00996	g/hphr
BS CO DC	0.68005	g/hphr
BS THC DC	0.00005	g/hphr
BS NMHC DC	0.00005	g/hphr
BS CH4 DC	0.00000	g/hphr
BS NO DC (d)	0.02183	g/hphr
BS NO2 DC	0.01096	g/hphr
BS NOx DC	0.03220	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	326.42210	g/mi
DS CO DC	0.28643	g/mi
DS THC DC	0.00002	g/mi
DS NMHC DC	0.00002	g/mi
DS CH4 DC	0.00000	g/mi
DS NO DC (d)	0.00920	g/mi
DS NO2 DC	0.00462	g/mi
DS NOx DC	0.01356	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	3156.24684	g/kg
FS CO DC	2.76952	g/kg
FS THC DC	0.00020	g/kg
FS NMHC DC	0.00019	g/kg
FS CH4 DC	0.00000	g/kg
FS NO DC (d)	0.08891	g/kg
FS NO2 DC	0.04463	g/kg
FS NOx DC	0.13115	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

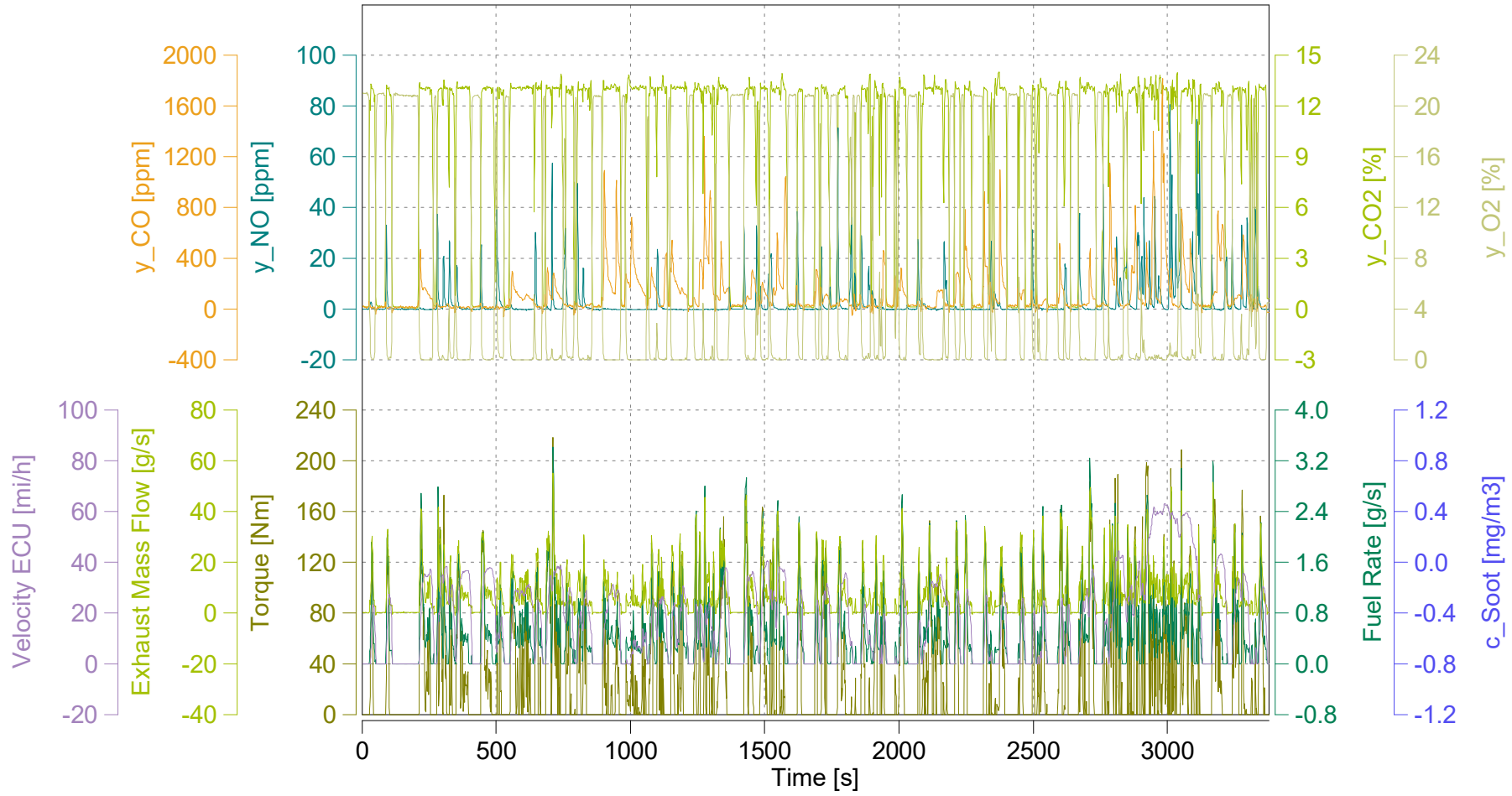
(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)
(d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents

Case: C118-1270
Page: Time Alignment Check

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL

Concerto M.O.V.E, 20

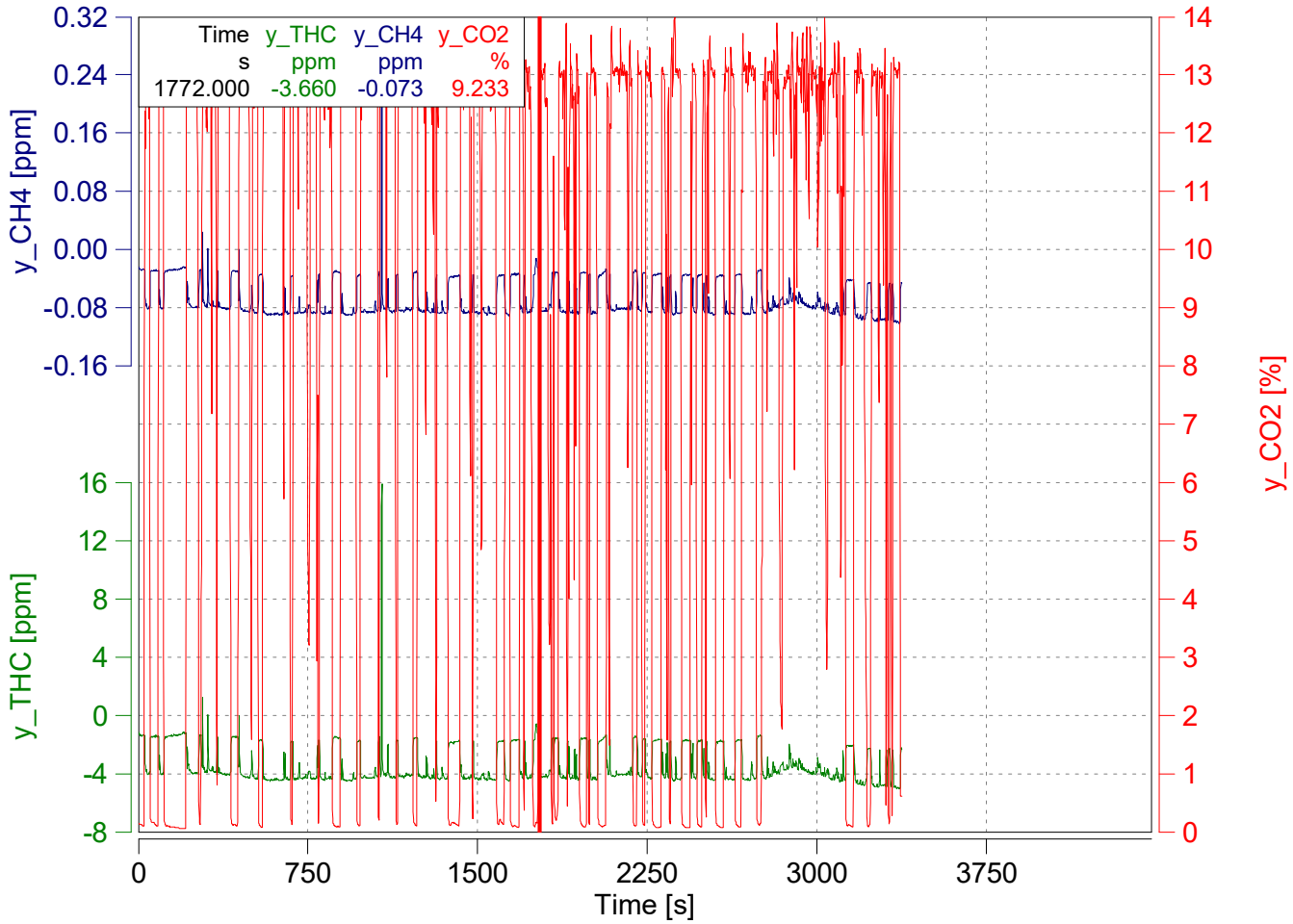


Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20



Absolute Time Shifts

y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

Apply Current Values

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

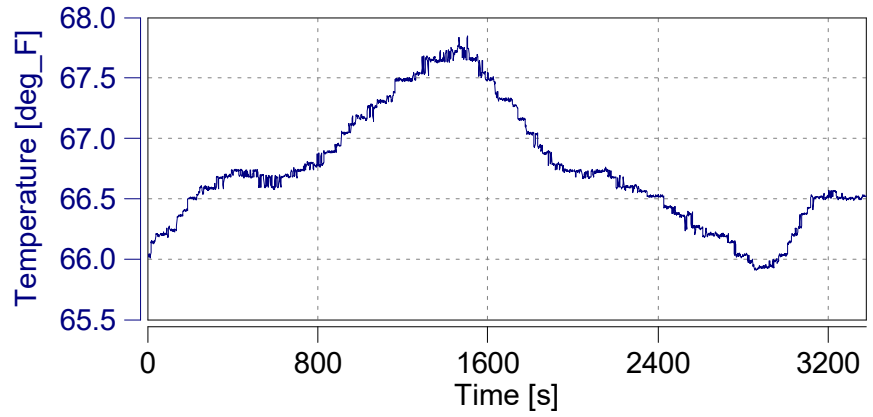
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

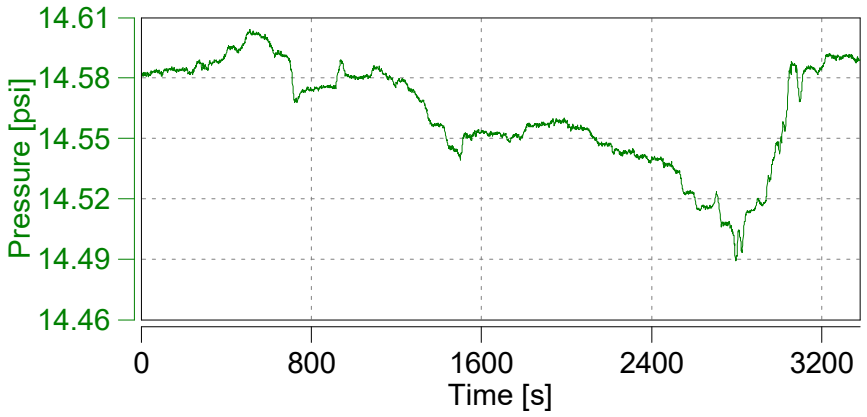
Case: C118-1270
Page: Ambient Conditions

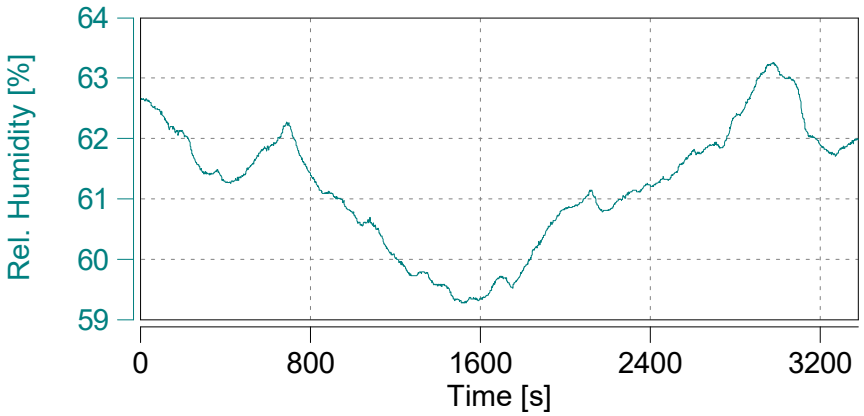
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

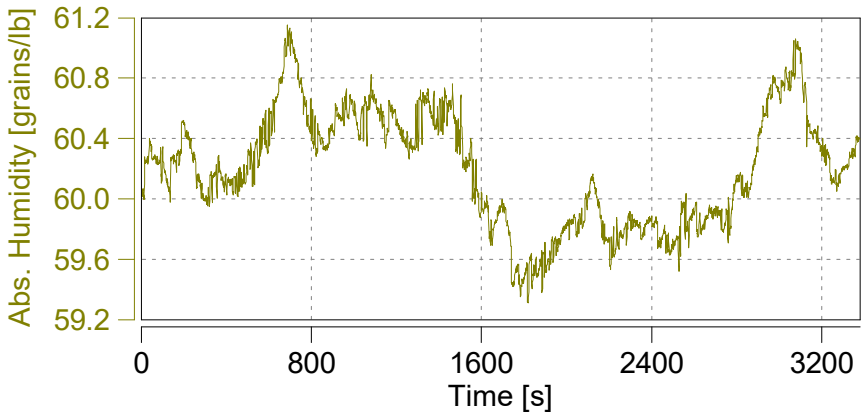
AVL

Concerto M.O.V.E, 20









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

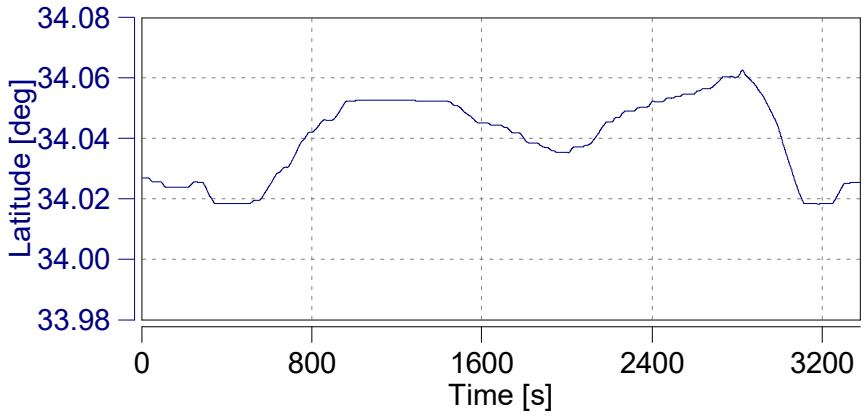
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

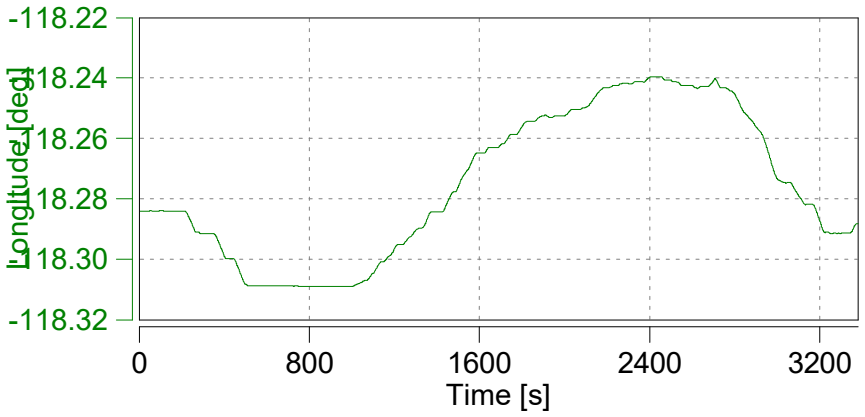
Case: C118-1270
Page: GPS

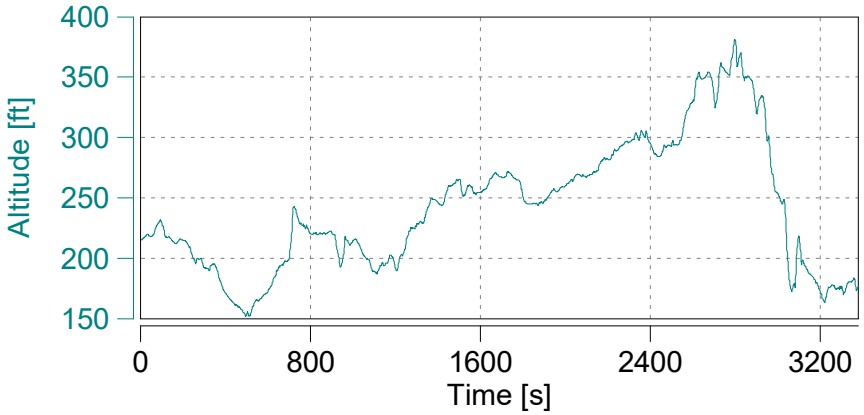
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

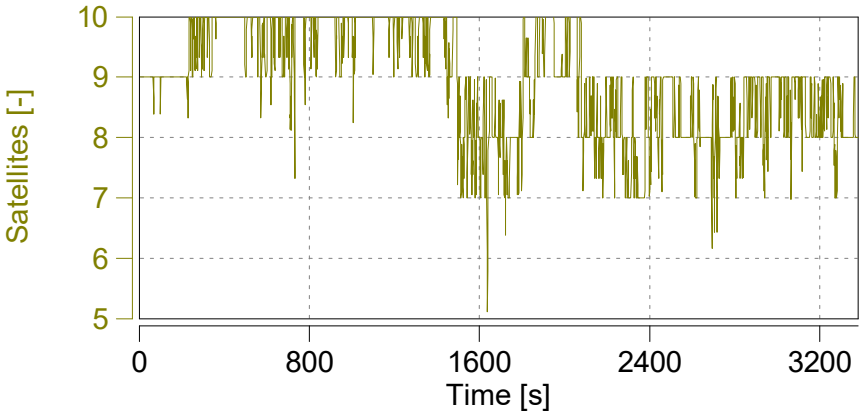
AVL

Concerto M.O.V.E, 20





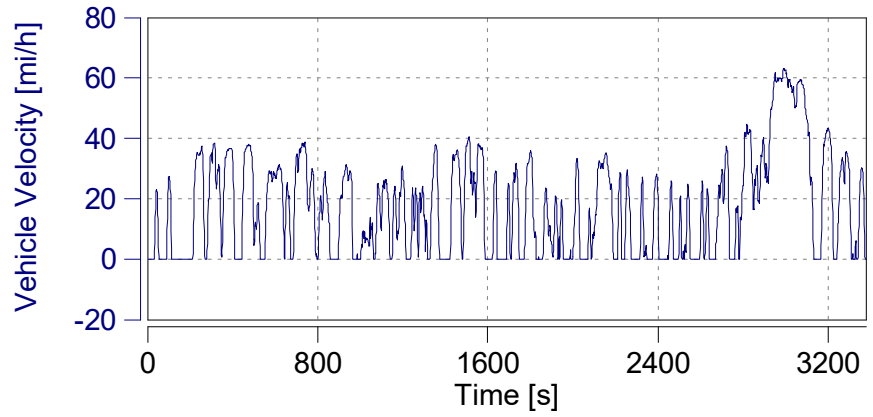


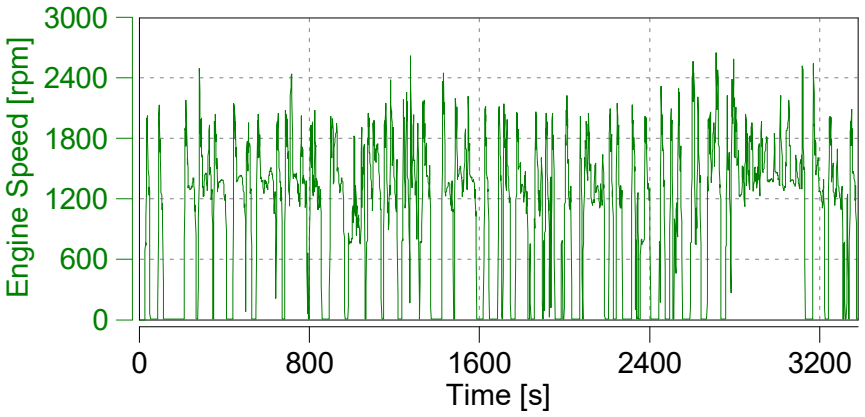


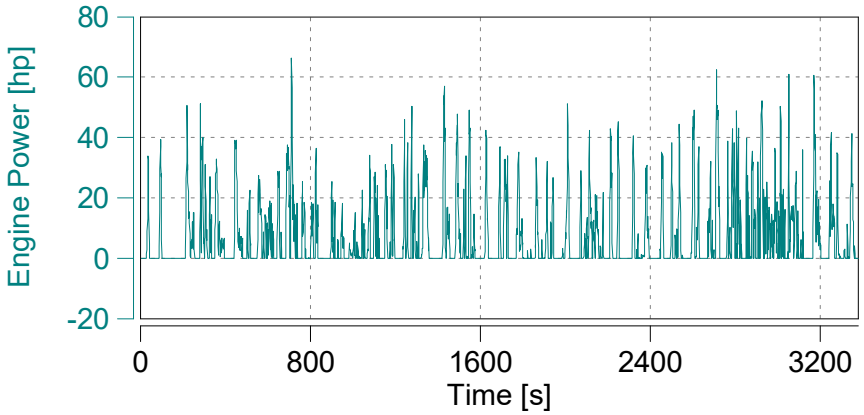
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

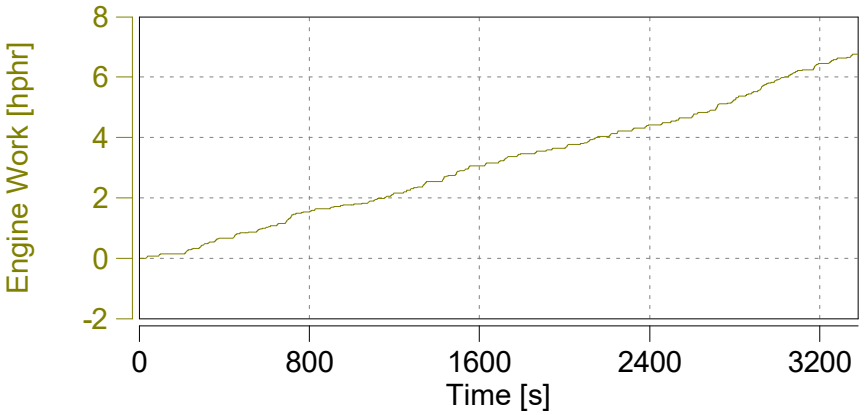
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0









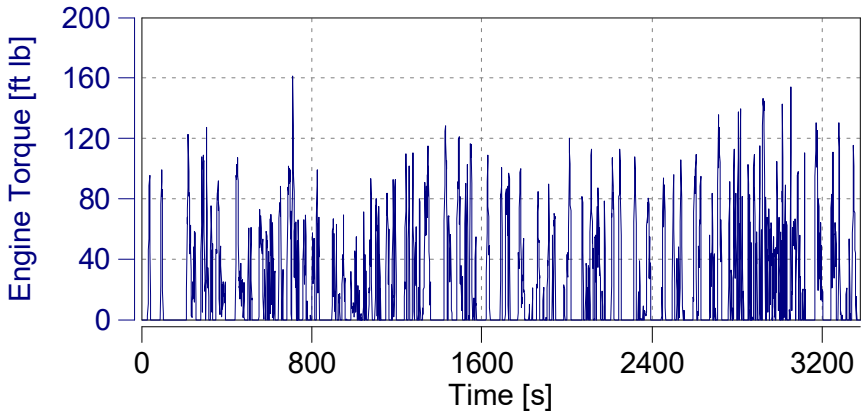
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

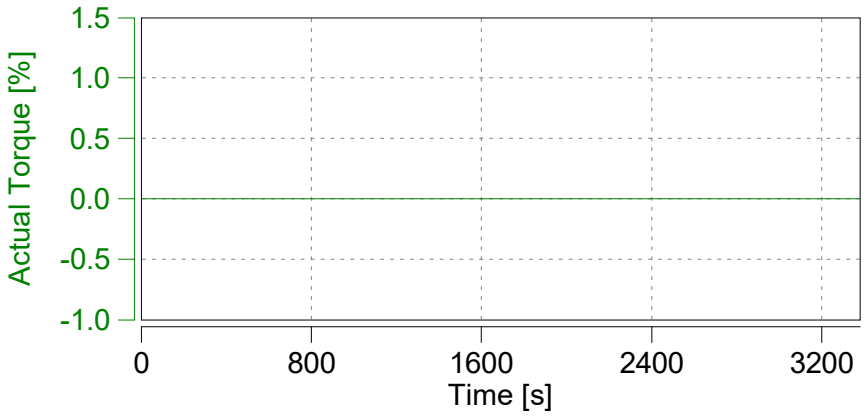
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

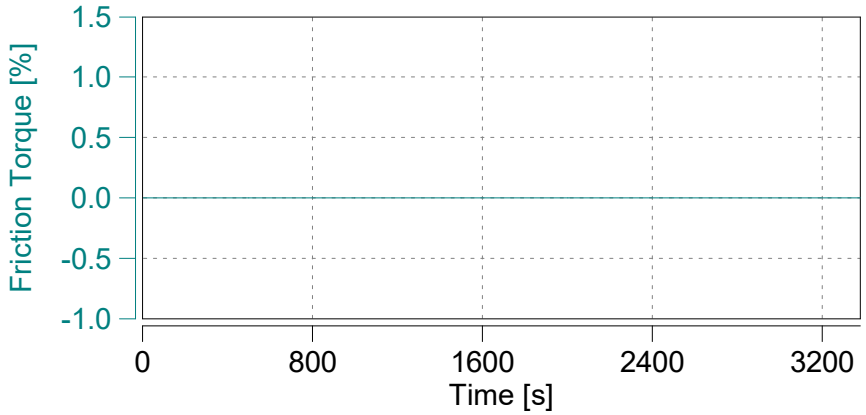
Case: C118-1270
Page: Engine (2)

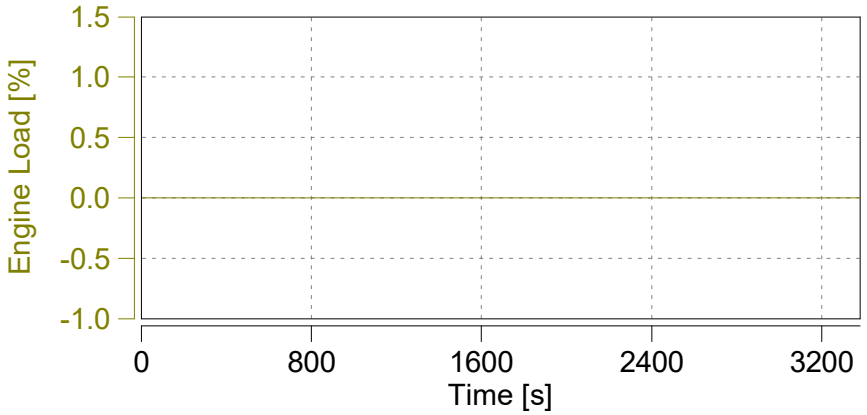
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

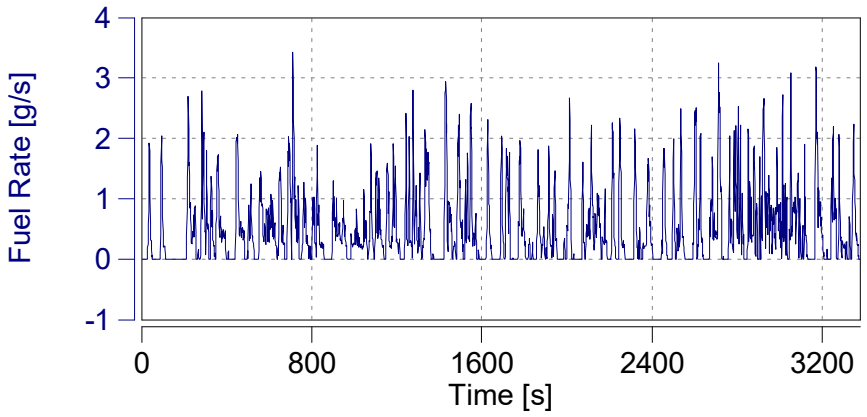
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

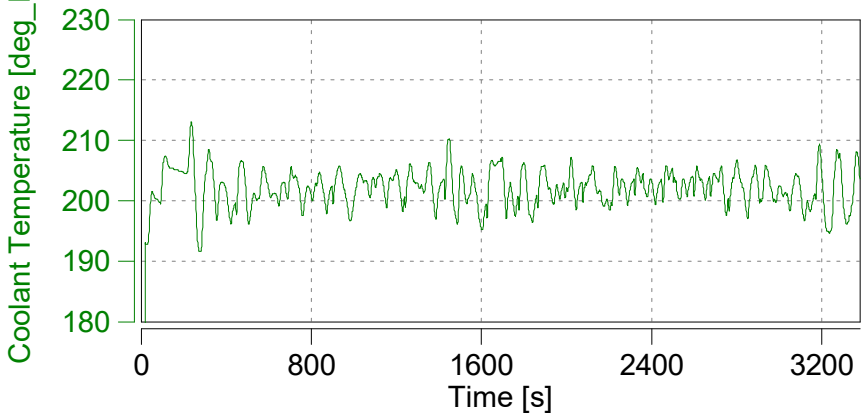
Case: C118-1270
Page: Engine (3)

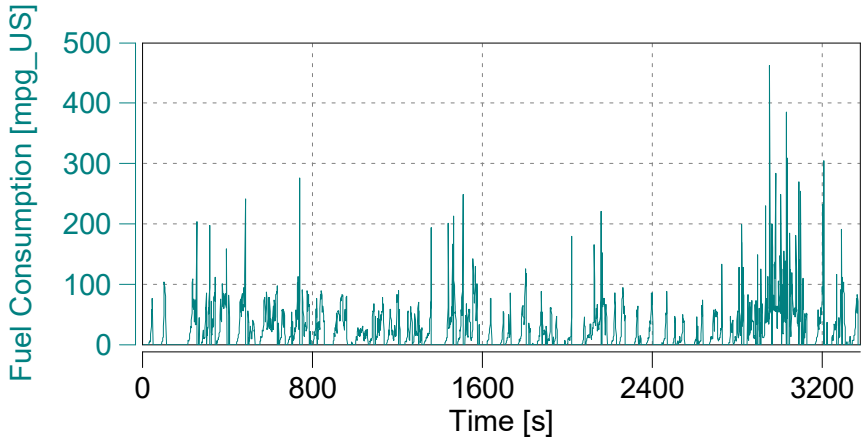
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

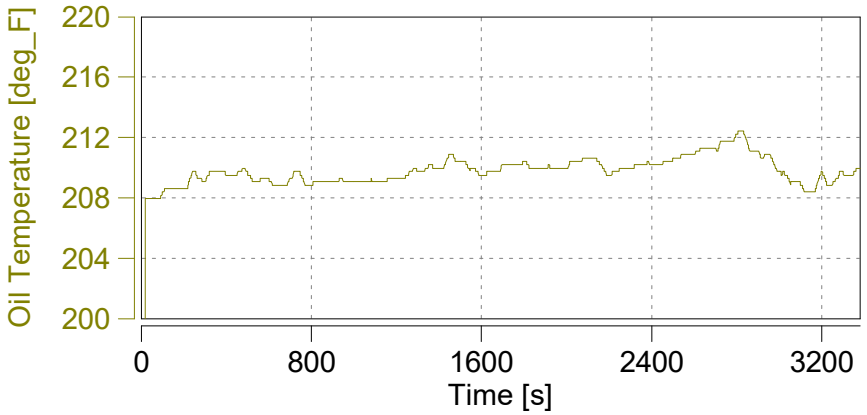
AVL

Concerto M.O.V.E, 20









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

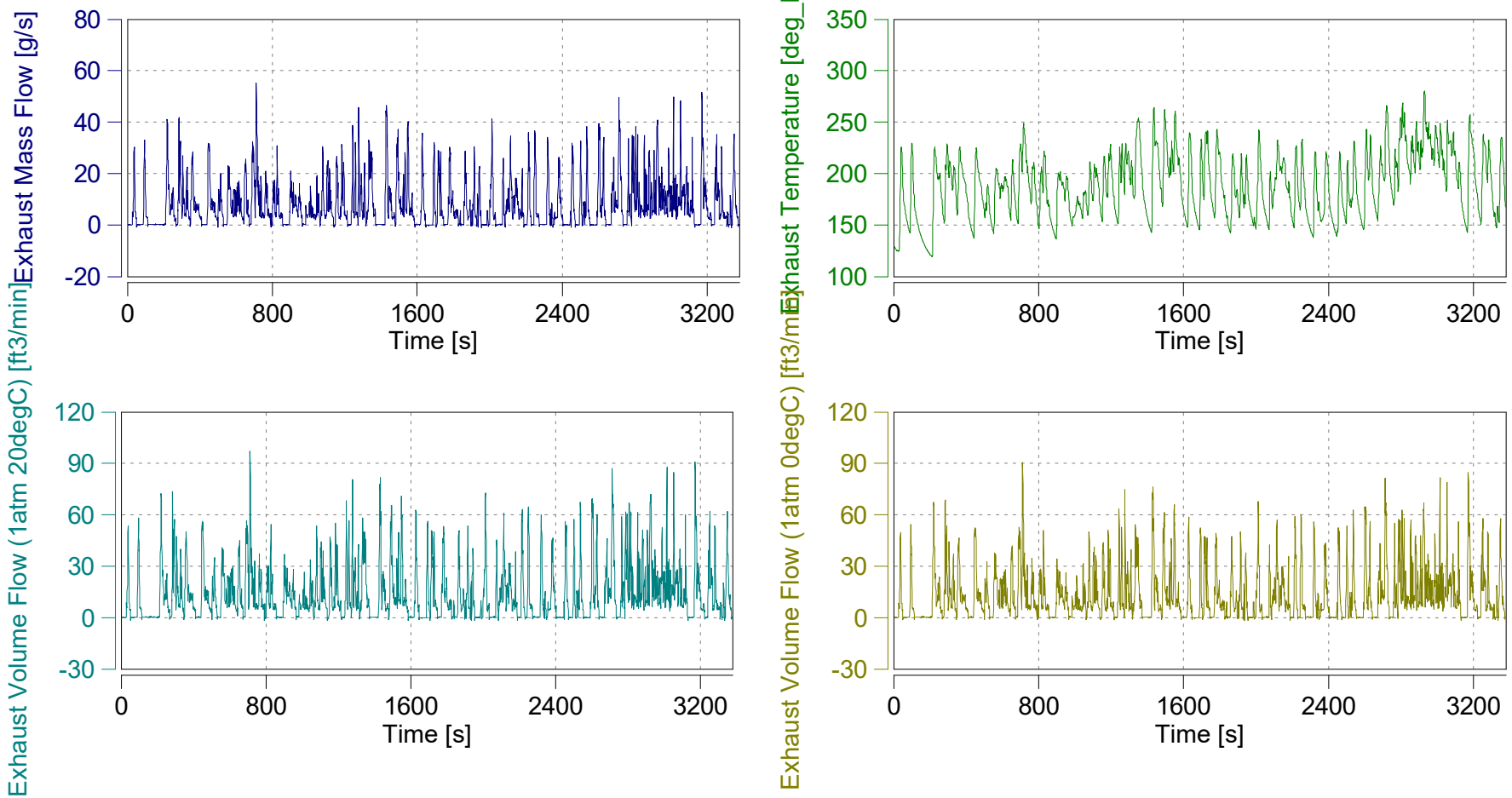
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Exhaust Flow (1)

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL

Concerto M.O.V.E, 20



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

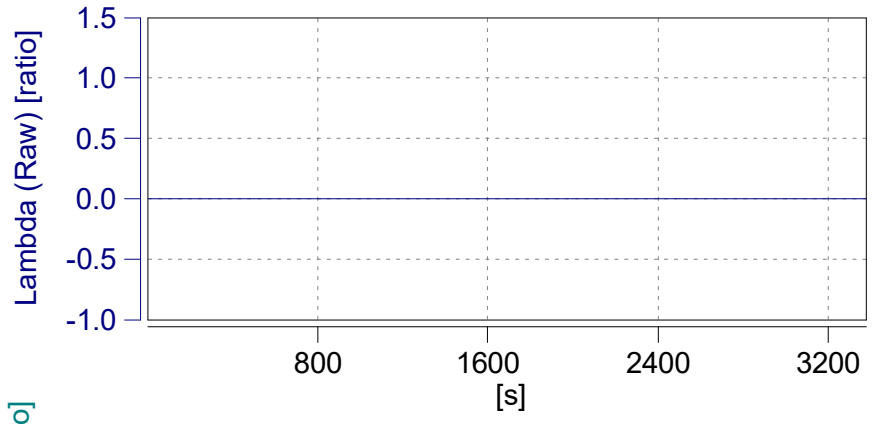
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

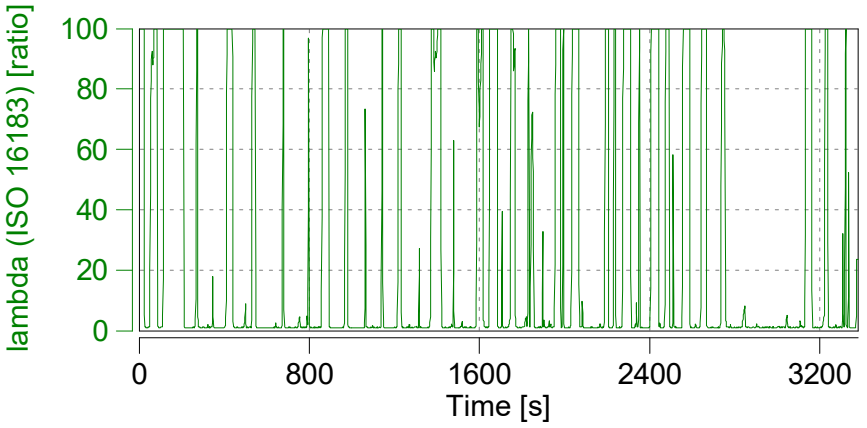
Case: C118-1270
Page: Exhaust Flow (2)

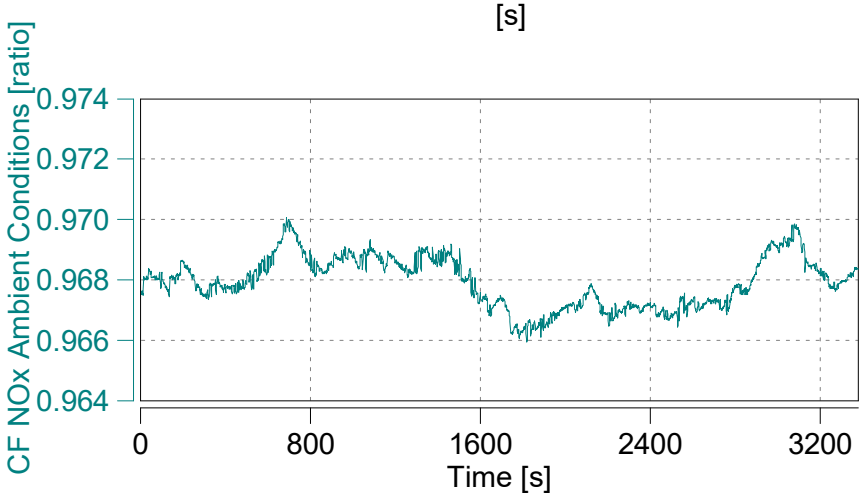
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

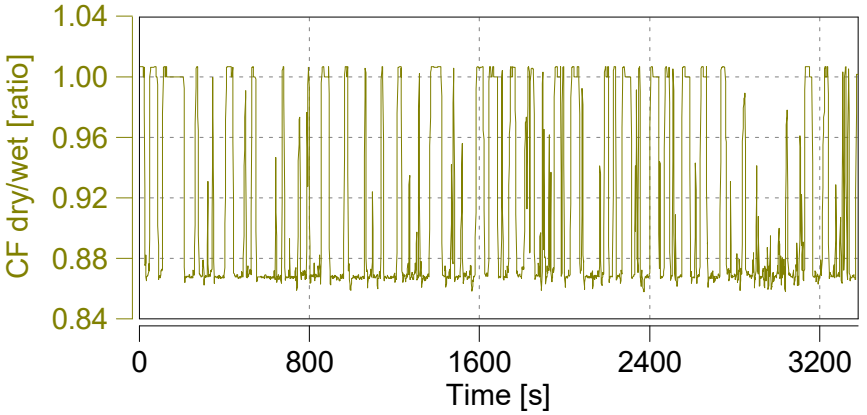
AVL

Concerto M.O.V.E, 20









Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

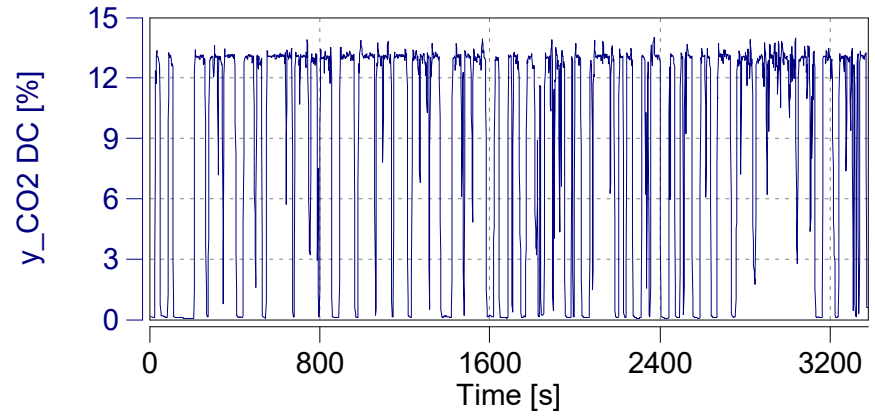
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

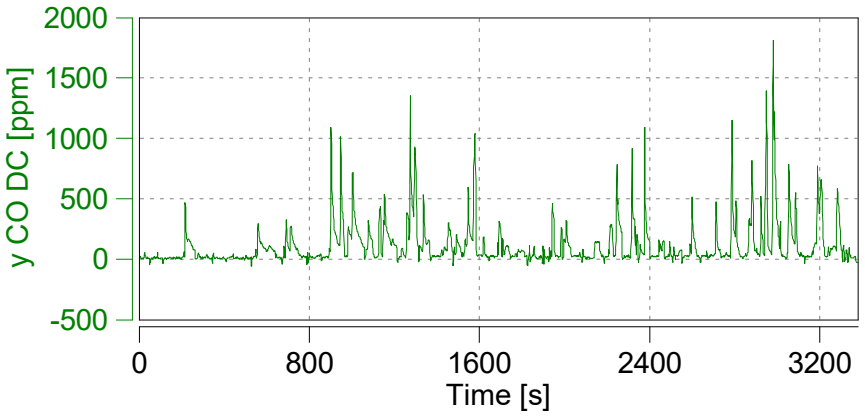
Case: C118-1270
Page: Corrected Emissions (1)

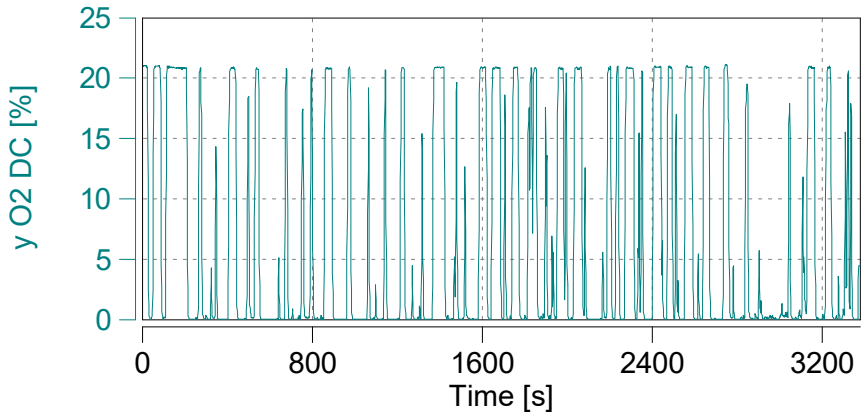
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

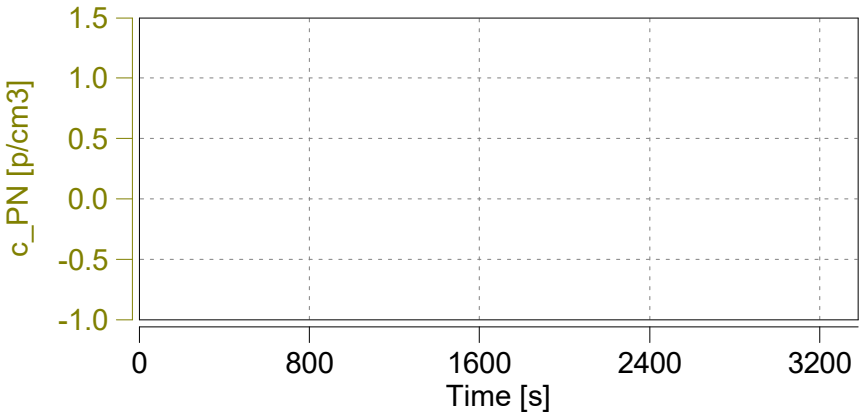
AVL

Concerto M.O.V.E, 20





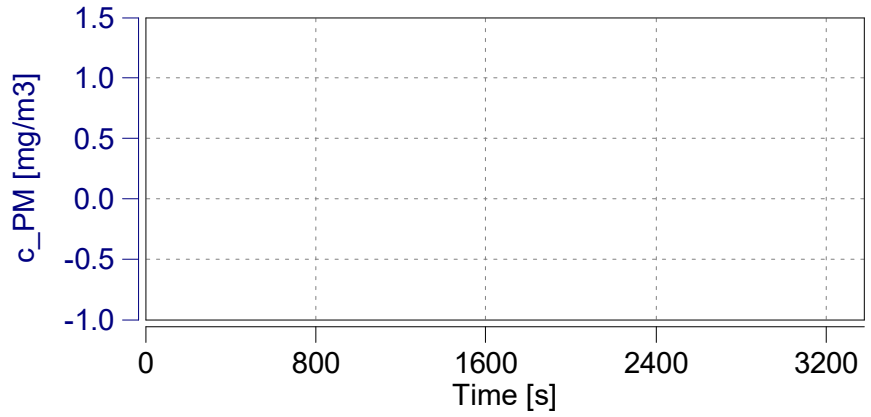


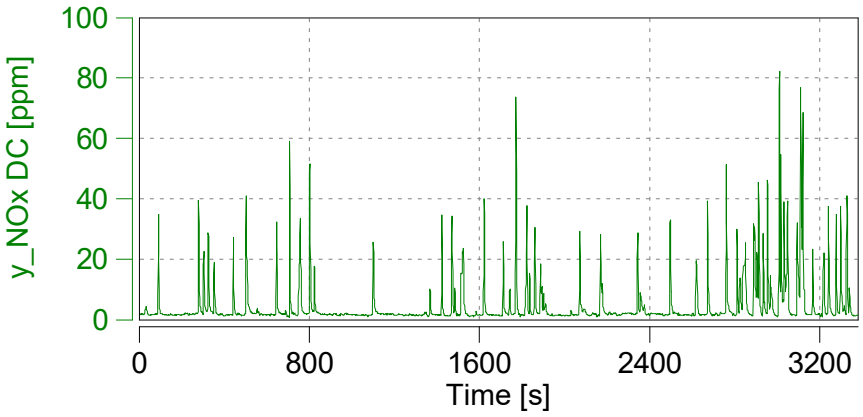


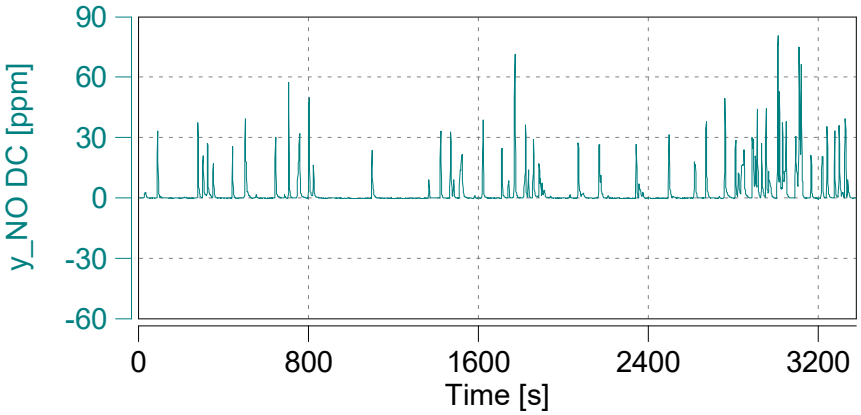
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

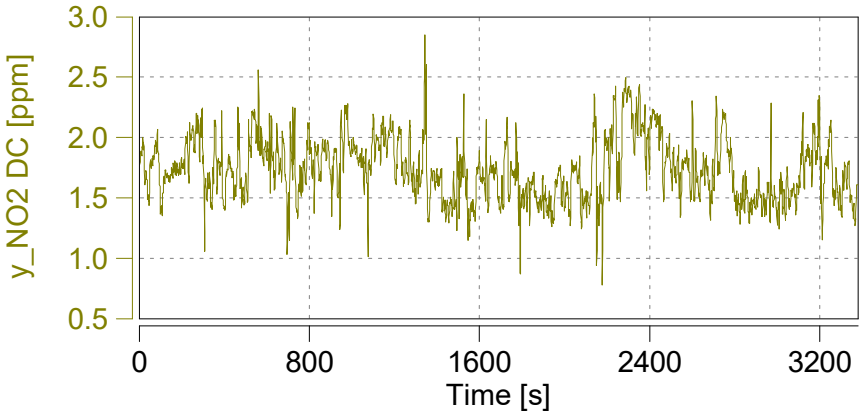
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0









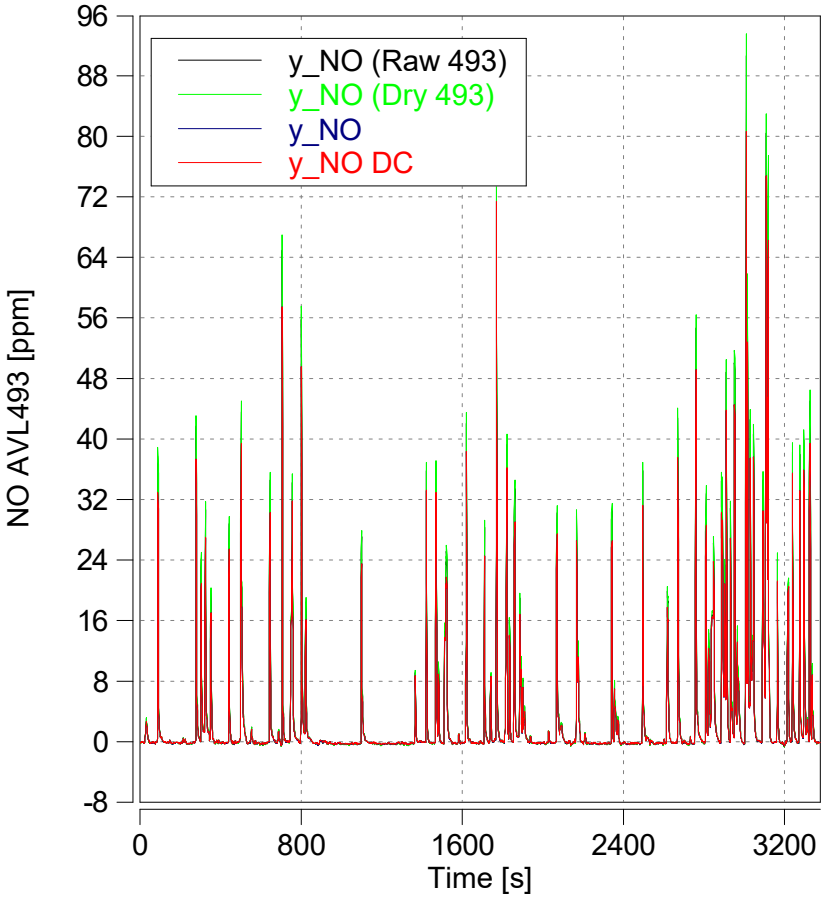
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

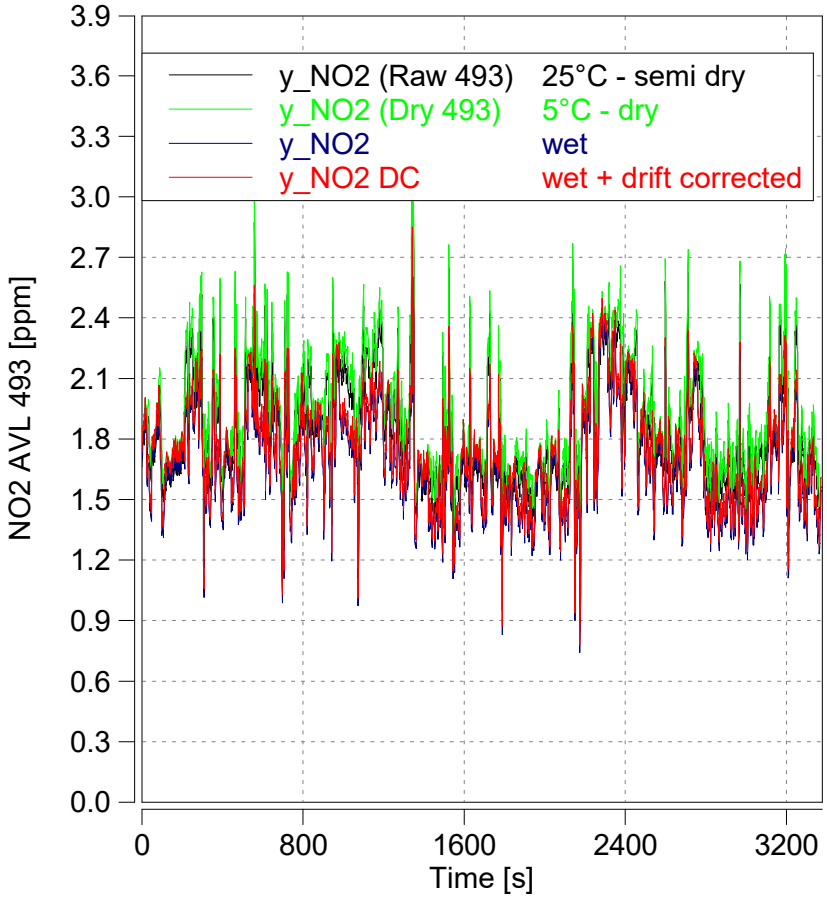
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: Corrected Emissions (3)

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20



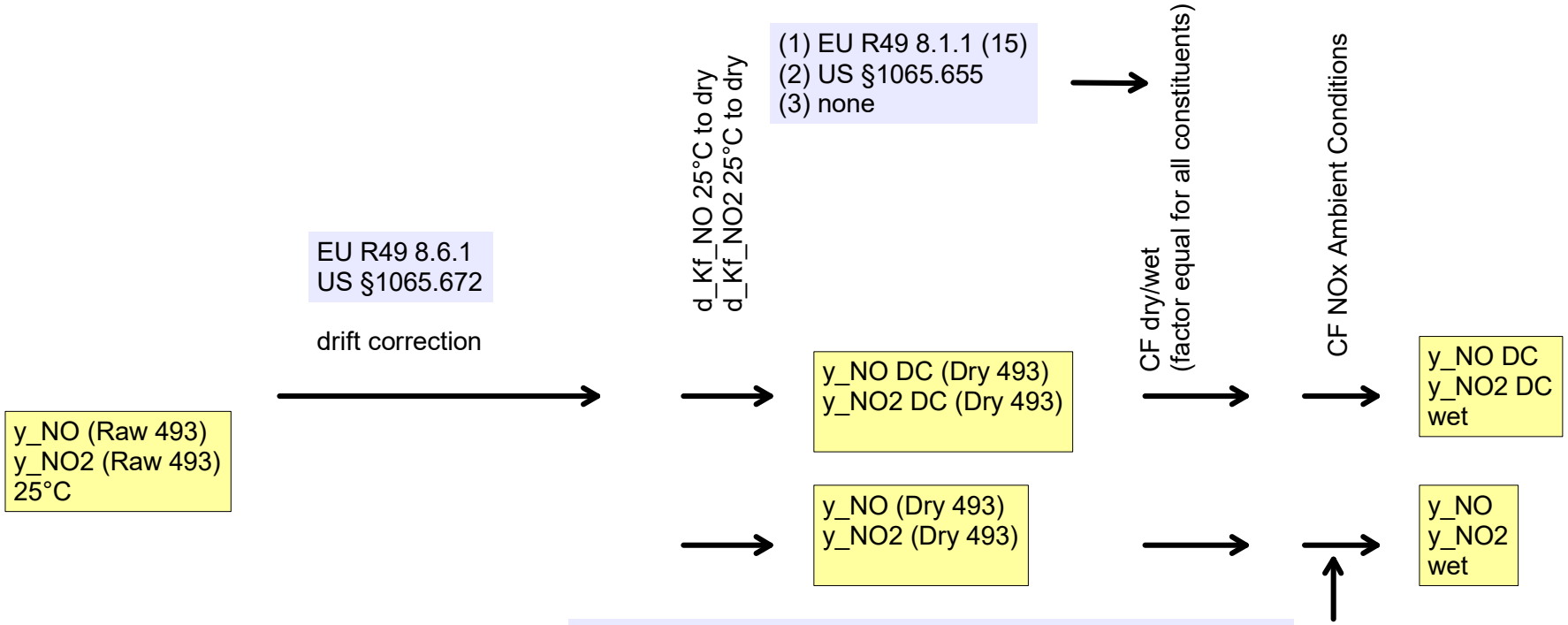


Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

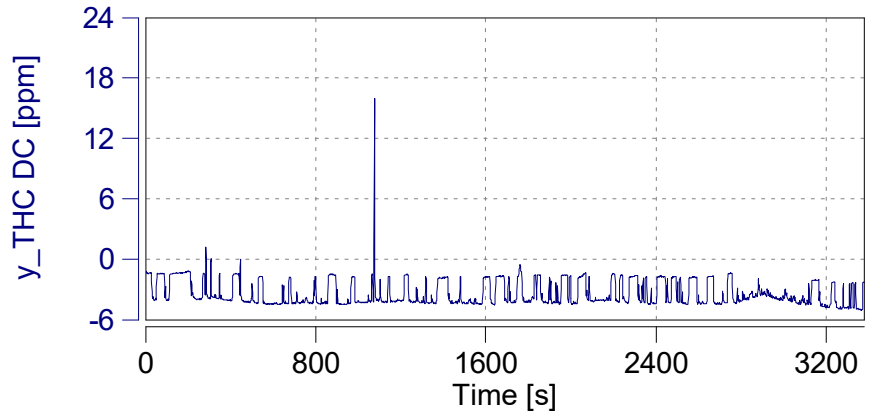
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

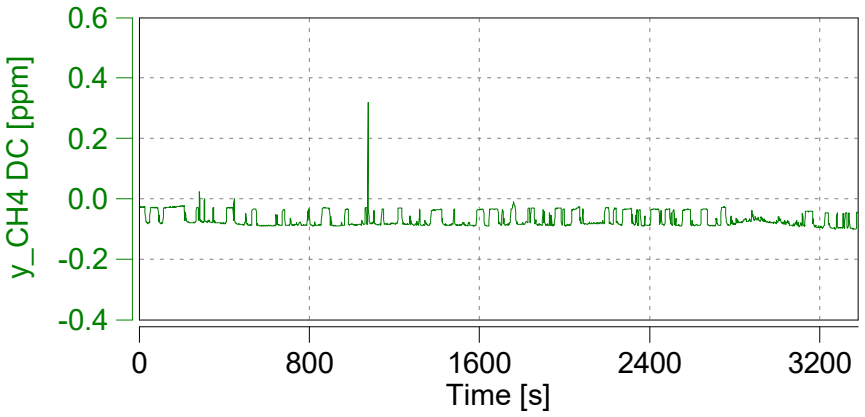
'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

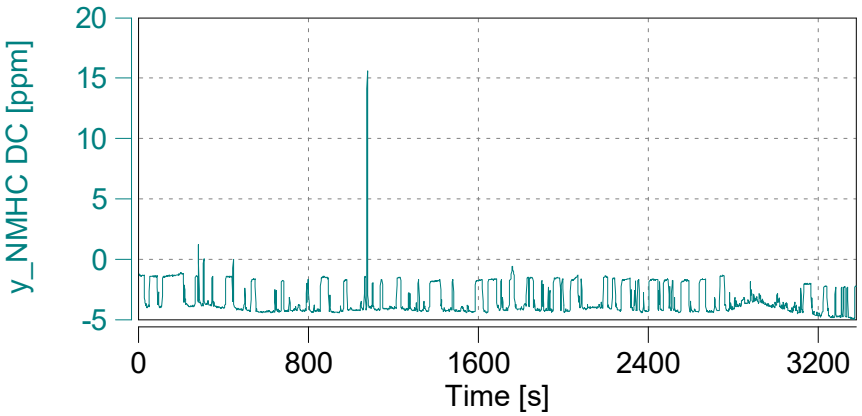
NOx - AVL 493



'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0







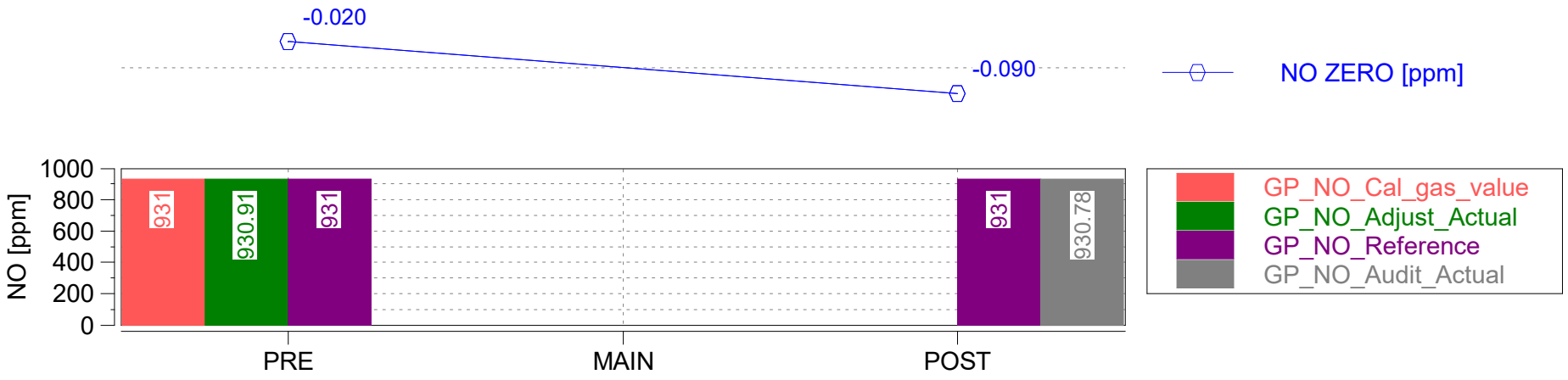
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

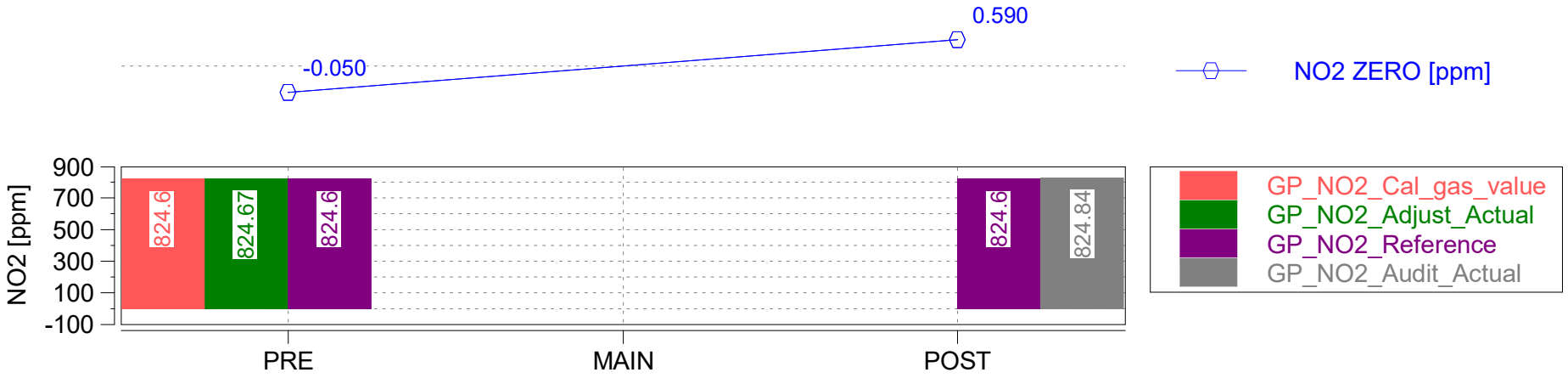
Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: NO/NO2/NOx Zero - Span

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20





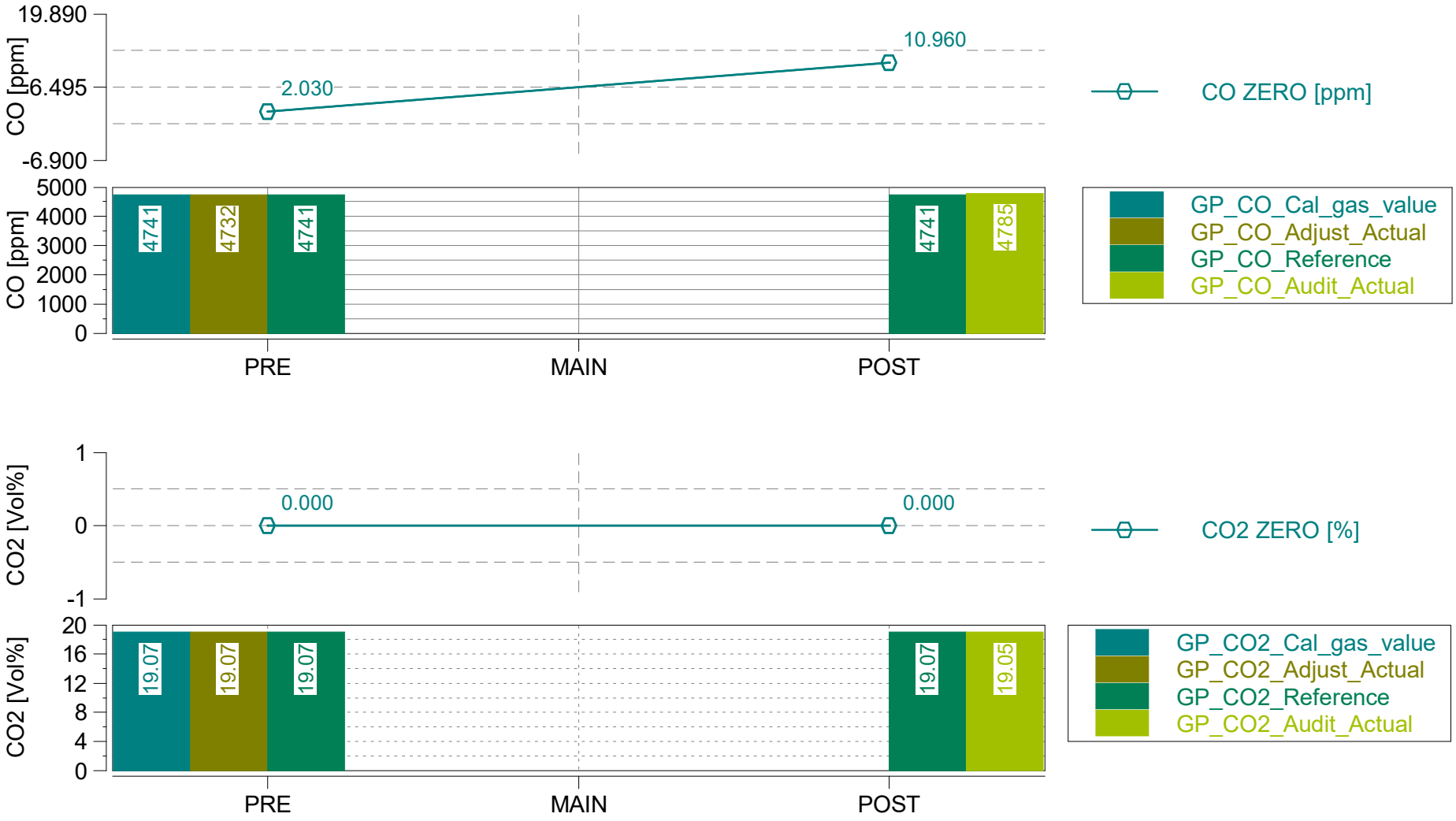
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: CO/CO2 Zero - Span

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20



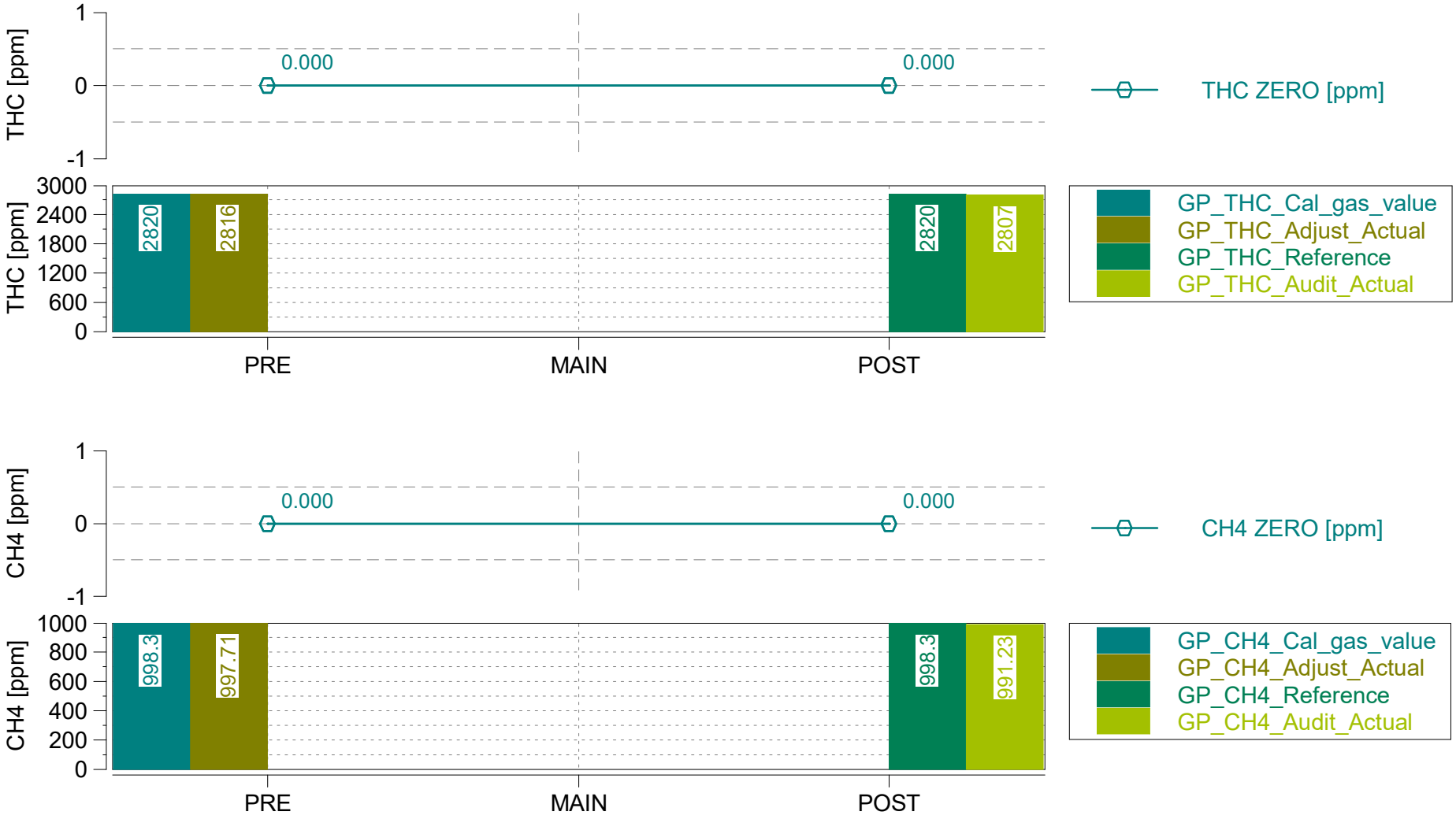
Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: C118-1270
Page: THC/CH4 Zero - Span

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20



Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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% (Date: 2023-06-01)	**0.13**	**%**	pass

GAS PEMS Devices

Device ID	AVL492
Serial Number	625
Firmware Version	V1.18
Main Test Date	2023-06-01
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	224
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	915
Serial Number Tube	01115
Firmware Version	V1.18

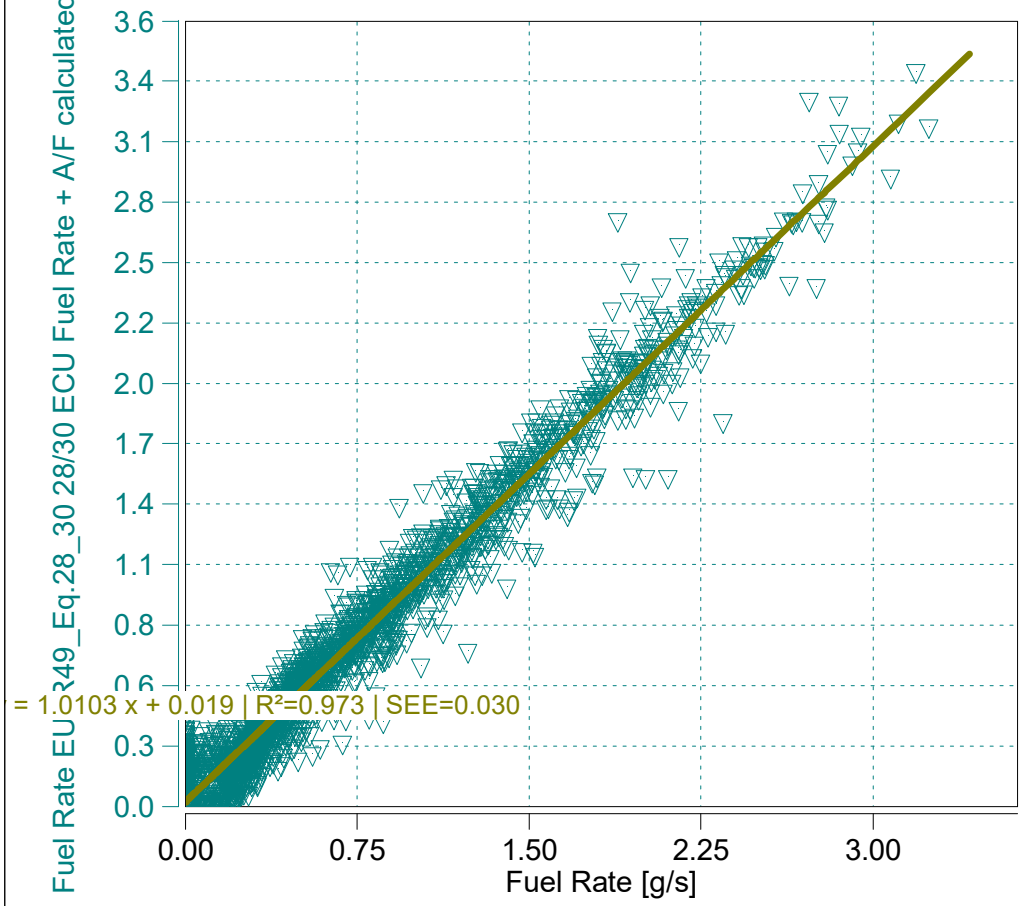
System Control

SC Version	R18.0.2_b242
SC Serial Number	1151

Case: C118-1270
Page: Fuel Rate ECU vs. Calculated

'C118-1270 (Comfort) - LA City (DT1)'
Start Date: 06/01/2023
Start Time: 10:10:30.0

AVL
Concerto M.O.V.E, 20



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

y = 1.0103 x + 0.019 | R²=0.973 | SEE=0.030
m = 1.01 (0.9 - 1.1 recommended)
R² = 0.97 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 505 Build 61, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R4.3_B360a
Legislation:

Vehicle: C118-1270 /
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NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90