



## Mercedes-Benz MY2024 GLE53 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 (AECs) 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 GLE53 4MATIC from Test Group RMBXT03.0HY1, which is the third highest volume Test Group applicable for MY2024 based on the projected 50 states’ sales volumes prepared for NMOG + NO<sub>x</sub> 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<sub>x</sub>), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), 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 December 2022. Tables 2 through 4 provide the vehicle test results of the combined route segments performed in the default transmission mode (Comfort Mode).

**Table 1: Vehicle Specification**

Model	Tier	Drive type	HP	Torque (ft.lb)	Transmission	Exh Treatment	Fuel	Start Mileage
GLE53 4M	SULEV 30	AWD	429	384	9 Automatic	TWC	Gasoline	212

**Table 2: Highway Results**

Model	A1 Highway East (g/mi)					B2 Highway West (g/mi)				
	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG
GLE53 4M	387.33	0.33160	0.00318	0.00471	0.00303	334.22	0.38622	0.00001	0.00624	0.00000

**Table 3: Mountain Results**

Model	A2 Mountain Uphill (g/mi)					B1 Mountain Downhill (g/mi)				
	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG
GLE53 4M	685.43	0.73500	0.00960	0.00758	0.00915	217.23	0.16910	0.00050	0.00743	0.00047

**Table 4: Cold Start and Urban Driving Result**

Model	A0 Long Beach → CARB (g/mi)					LA City (g/mi)				
	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG	CO <sub>2</sub>	CO	THC	NO <sub>x</sub>	NMOG
GLE53 4M	384.89	0.52391	0.01143	0.00749	0.01163	529.64	0.56227	0.00009	0.01374	0.00008

### 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 <sup>‡</sup>	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0:27:24	27.84	15.664	60.96	1.83	1.71	47.10	49.36	417.09	54.70

**Table 6: Highway West (B2)**

Trip Duration h.mm.ss	Distance (mi)	V*Apos <sup>‡</sup>	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0:42:36	28.50	15.233	40.15	6.20	0.86	48.33	44.60	207.36	62.37

**Table 7: Mountain Uphill (A2)**

Trip Duration h.mm.ss	Distance (mi)	V*Apos <sup>‡</sup>	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0:39:56	17.90	16.286	26.89	20.82	0.42	39.59	39.17	960.50	54.37

**Table 8: Mountain Downhill (B1)**

Trip Duration h.mm.ss	Distance (mi)	V*Apos <sup>‡</sup>	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0:27:00	17.98	18.720	39.96	10.12	0.81	47.73	41.34	91.80	54.56

**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)
0:35:54	24.20	14.535	40.45	6.57	0.56	49.14	43.73	264.22	56.48

**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)
0:51:45	16.03	16.644	18.64	28.94	0.29	37.40	33.37	240.95	63.74

‡V\*Apos results are the 95<sup>th</sup> percentile values displayed in m<sup>2</sup>/s<sup>3</sup>

## 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	36 min	120	40	60	40
A1	28	27 min	278	61	94	6
A2	18	40 min	893	27	4	96
B1	18	27 min	920	40	35	65
B2	29	43 min	288	40	55	45
LA City	16	52 min	74	19	15	85

### 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

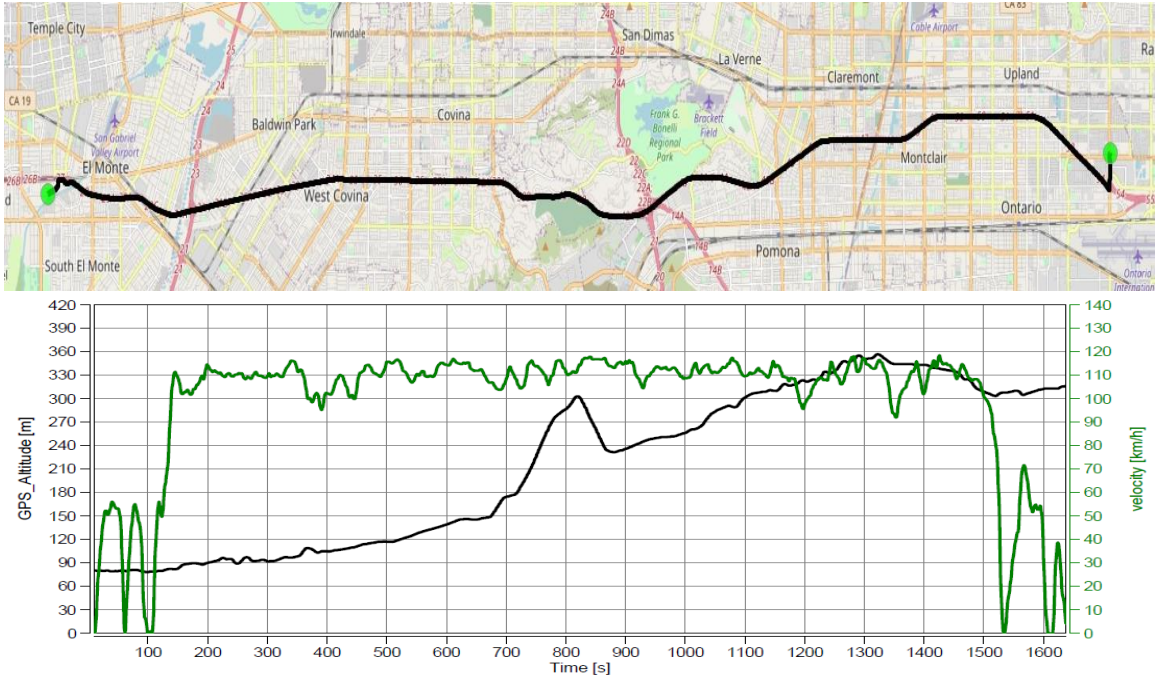


Figure 1. Map of Route A1 – Highway East. Including speed and elevation

### B2 – Highway West

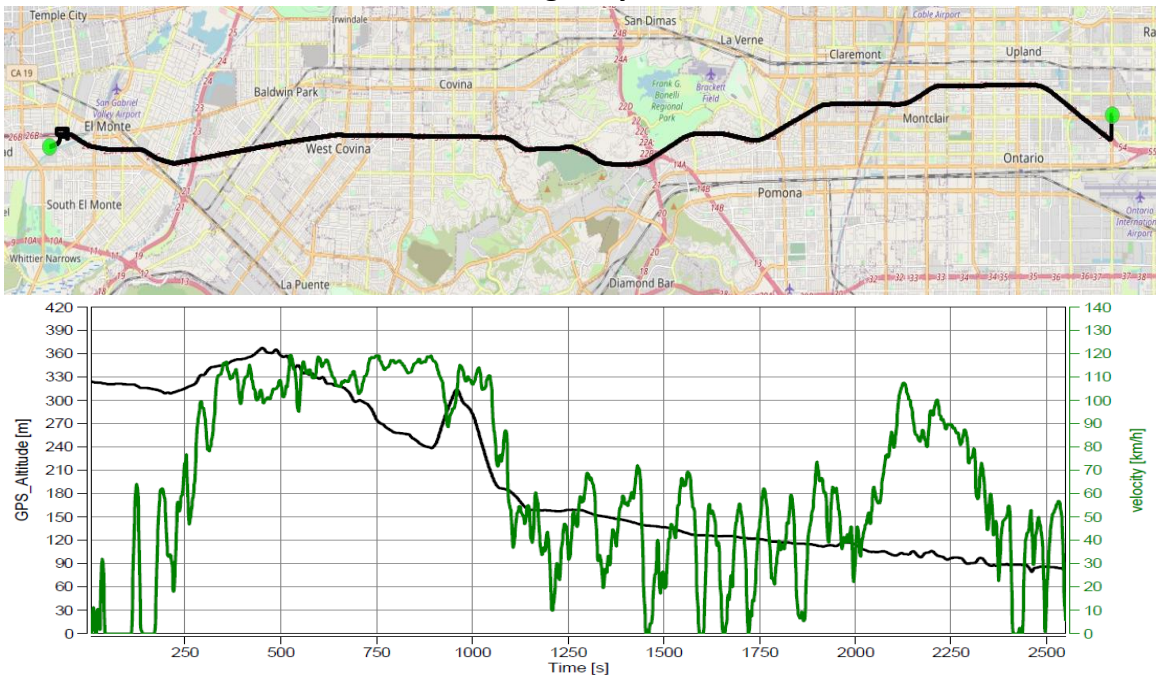


Figure 2. Map of Route B2 – Highway West. Including speed and elevation

### 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

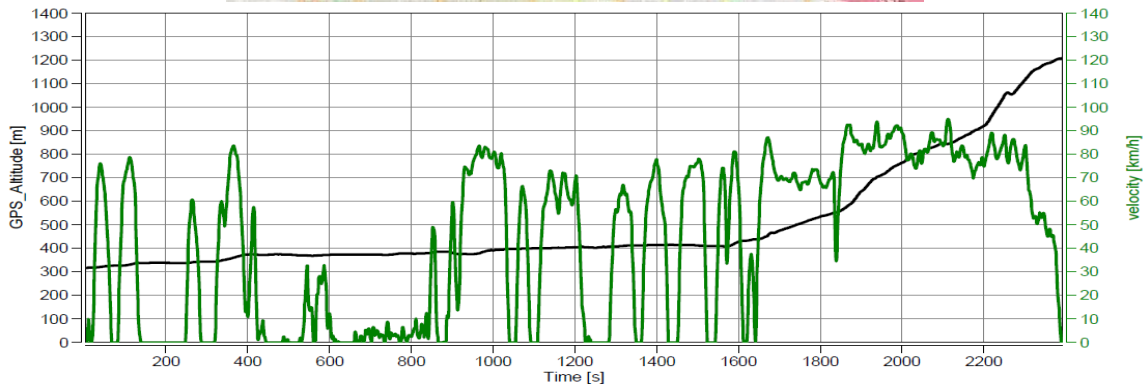
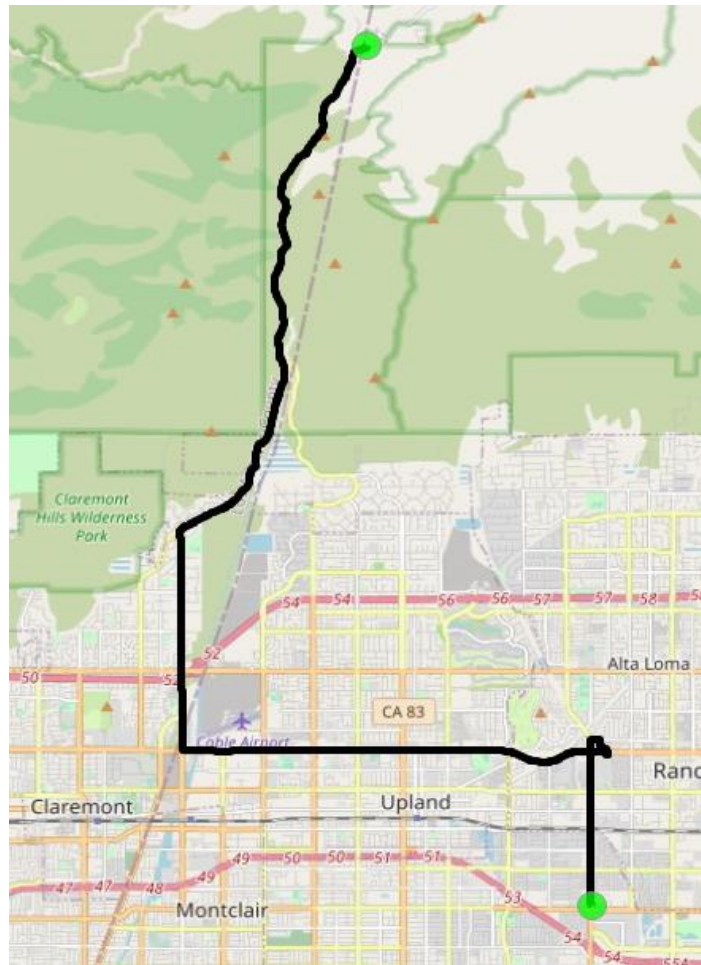


Figure 3. Map of Route A2 – Mountain Uphill. Including speed and elevation

B1 – Mountain Downhill.

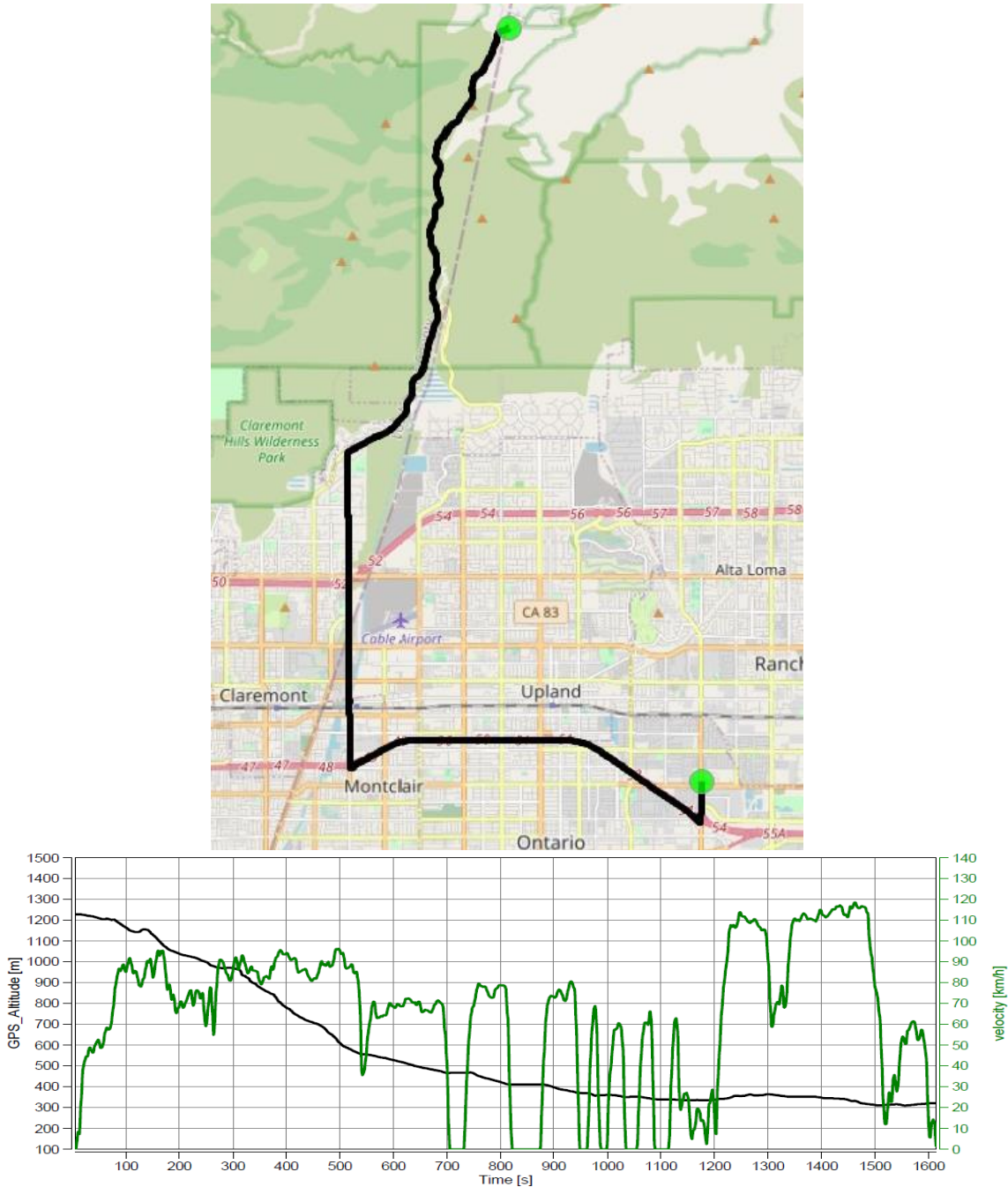


Figure 4. Map of Route B1 – Mountain Downhill. Including speed and elevation

### 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

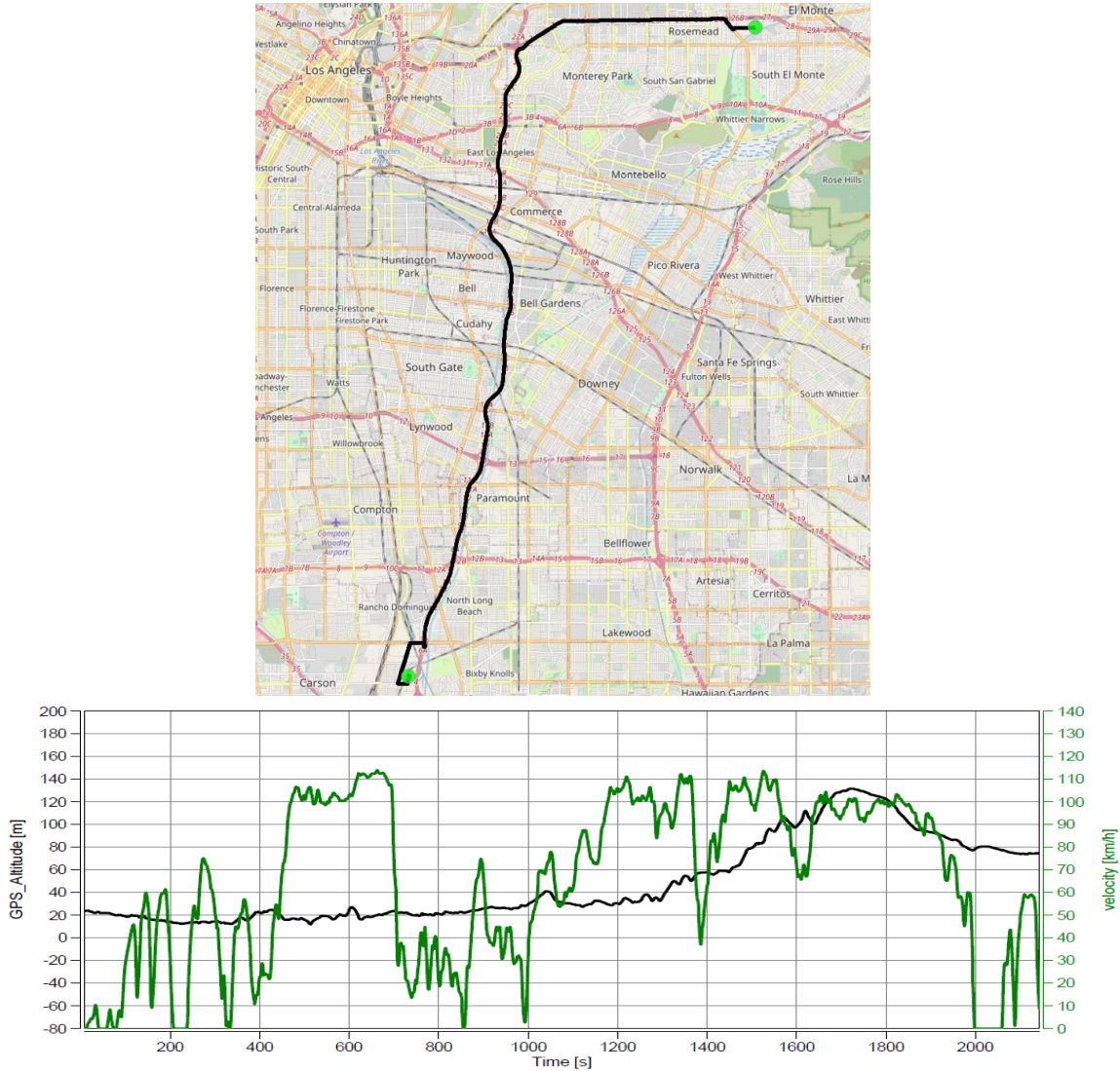


Figure 5. Map of Route A0 – Long Beach to CARB, El Monte. Including speed and elevation

### 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.

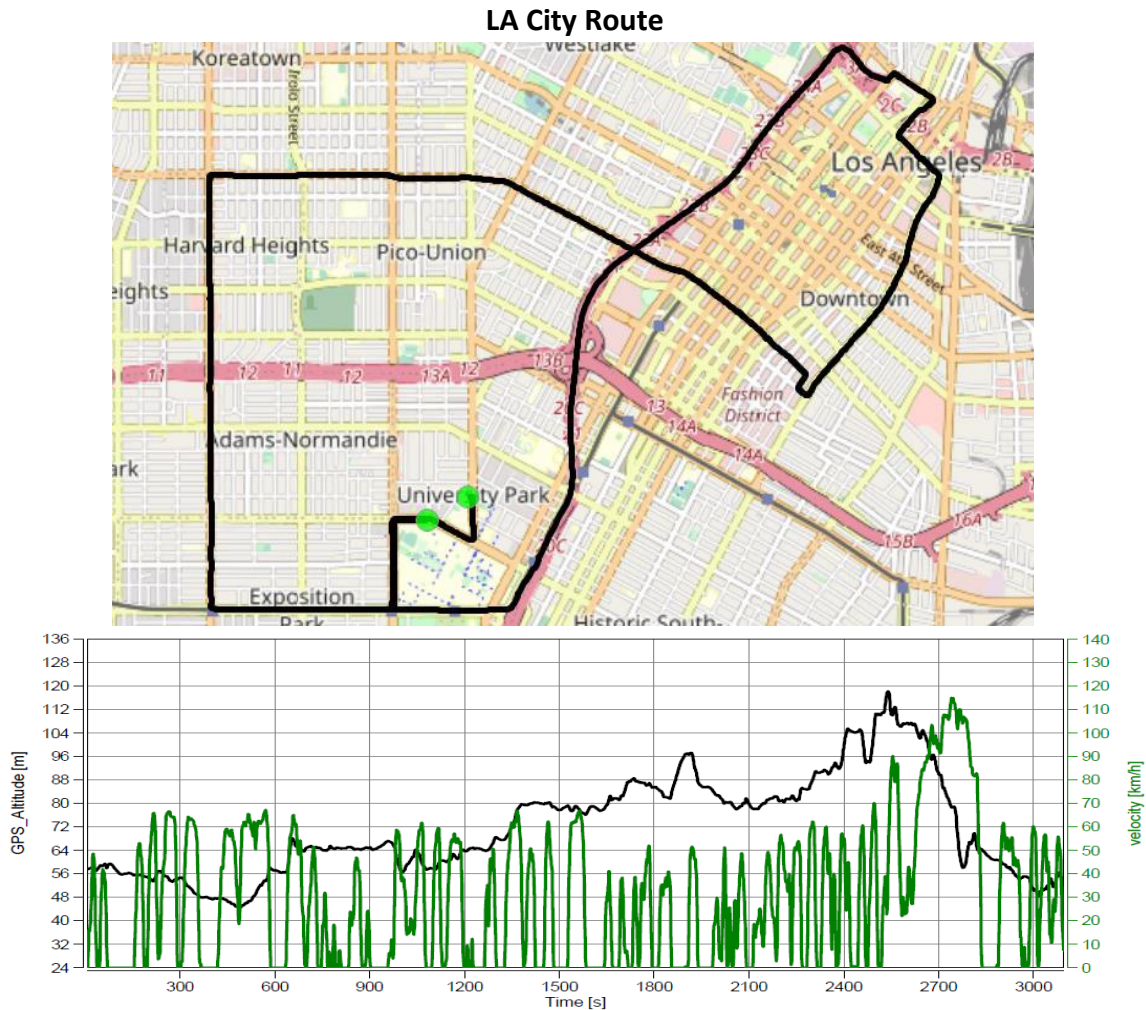


Figure 6. Map of LA City Route. Including speed and elevation



## **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 GLE53.pdf

The file contains log sheet information on PEMS testing conducted with the MY2024 Mercedes-Benz GLE53 4MATIC test vehicle V167-5409. The table also includes information and explanations on valid, aborted, and invalid tests.

## 7. PEMS Testing Route Deviations

For the MY2024 GLE53 testing on A2 – Mountain Uphill route, there was a deviation due to road closure. The replacement route was right turn off Vineyard Avenue onto Foothill Boulevard. Left turn towards San Bernardino Rd going around Orchard Plaza shopping center. Left turn off San Bernardino Rd to Vineyard Ave South and right turn onto Foothill Boulevard to continue with planned route. The deviation was approximately 0.7 miles. Details are provided in the map below.

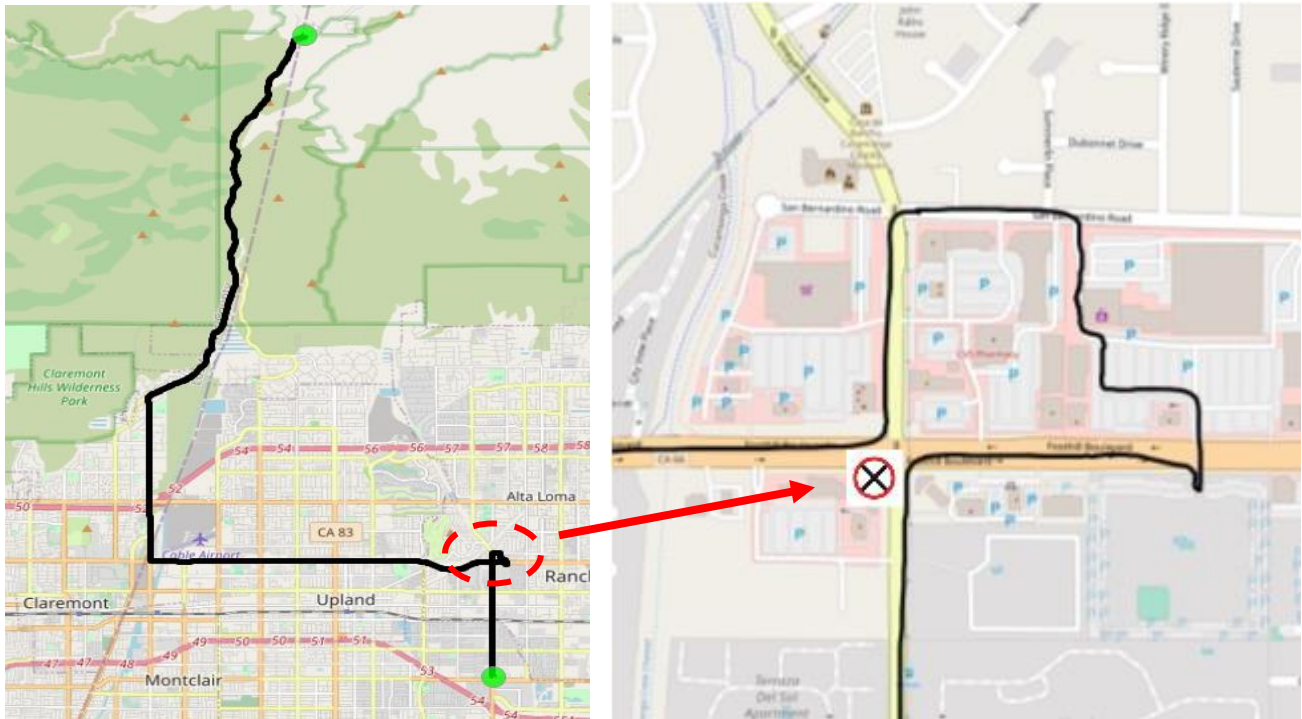


Figure 7. Deviation for MY2024 GLE53 on A2 – Mountain Uphill Route

## 8. Appendix

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



Trip Duration	1644.00	s
Trip Duration (a)	1644.00	s
Trip Distance	27.84	mi
Trip Distance (a)	27.84	mi
Trip Fuel Cons. (b)	3.38	kg
Trip Fuel Cons. (ab)	3.38	kg
Trip Fuel Cons. EU (ac)	3.55	kg
Trip Fuel Cons. US (ac)	3.55	kg
Trip Fuel Economy (b)	23.29	mpg_US
Trip Fuel Economy (ab)	23.29	mpg_US
Trip Fuel Economy EU (ac)	22.18	mpg_US
Trip Fuel Economy US (ac)	22.20	mpg_US
Trip Fuel Economy GGE (b)	23.29	mpg_US
Trip Fuel Economy GGE (ab)	23.29	mpg_US
Trip Fuel Economy EU GGE (ac)	22.18	mpg_US
Trip Fuel Economy US GGE (ac)	22.20	mpg_US
Trip Av. Eng. Speed	1544.15	rpm
Trip Av. Torque	139.01	lbft
Trip Av. Power	42.96	hp
Trip Work		
Trip Work (a)	19.62	hphr
Trip Exhaust Mass	54.65	kg
Trip Exhaust Mass EU (ac)	51.93	kg
Trip Exhaust Mass US (ac)	52.00	kg
Trip Av. Amb. Temperature	54.70	deg_F
Trip Av. Humidity	47.41	%
Trip Av. GPS Altitude	215.23	m
Fuel Type	Petrol (E10)	

ave THC	-0.03385	ppm
ave NMHC	-0.03317	ppm
ave CH4	-0.00068	ppm
ave CO	188.23751	ppm
ave CO2	12.46891	%
ave NOx	3.23879	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	0.08808	g
tot NMHC	0.08148	g
tot CH4	0.00195	g
tot CO	9.42551	g
tot CO2	10776.01438	g
tot NO (d)	0.04116	g
tot NO2	0.10270	g
tot NOx	0.13390	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	60.95580	mi/hr
Trip Distance Share Urban	4.25383	% distanc
Trip Distance Share Rural	1.55035	% distanc
Trip Distance Share Motorway	94.19582	% distanc

BS CO2	549.31218	g/hphr
BS CO	0.48047	g/hphr
BS THC	0.00449	g/hphr
BS NMHC	0.00415	g/hphr
BS CH4	0.00010	g/hphr
BS NO (d)	0.00210	g/hphr
BS NO2	0.00524	g/hphr
BS NOx	0.00683	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	387.11838	g/mi
DS CO	0.33860	g/mi
DS THC	0.00316	g/mi
DS NMHC	0.00293	g/mi
DS CH4	0.00007	g/mi
DS NO (d)	0.00148	g/mi
DS NO2	0.00369	g/mi
DS NOx	0.00481	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	3186.46617	g/kg
FS CO	2.78712	g/kg
FS THC	0.02605	g/kg
FS NMHC	0.02409	g/kg
FS CH4	0.00058	g/kg
FS NO (d)	0.01217	g/kg
FS NO2	0.03037	g/kg
FS NOx	0.03959	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

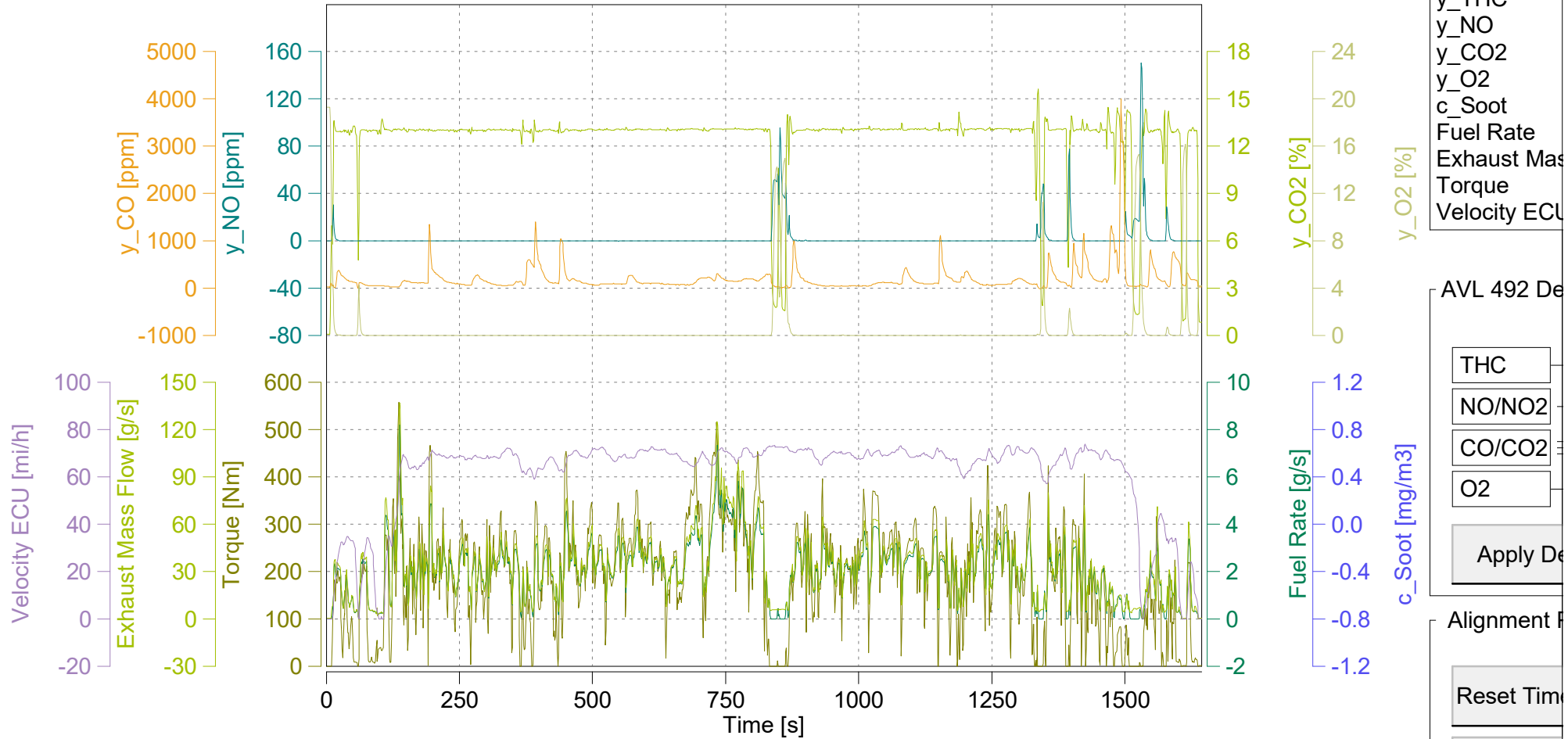


Trip Duration	1644.00	s
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Trip Fuel Economy (b)	23.29	mpg_US
Trip Fuel Economy (ab)	23.29	mpg_US
Trip Fuel Economy EU (ac)	22.18	mpg_US
Trip Fuel Economy US (ac)	22.20	mpg_US
Trip Fuel Economy GGE (b)	23.29	mpg_US
Trip Fuel Economy GGE (ab)	23.29	mpg_US
Trip Fuel Economy EU GGE (ac)	22.18	mpg_US
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Trip Av. Eng. Speed	1544.15	rpm
Trip Av. Torque	139.01	lbft
Trip Av. Power	42.96	hp
Trip Work		
Trip Work (a)	19.62	hphr
Trip Exhaust Mass	54.65	kg
Trip Exhaust Mass EU (ac)	51.93	kg
Trip Exhaust Mass US (ac)	52.00	kg
Trip Av. Amb. Temperature	54.70	deg_F
Trip Av. Humidity	47.41	%
Trip Av. GPS Altitude	215.23	m
Fuel Type	Petrol (E10)	

ave THC DC	-0.03400	ppm
ave NMHC DC	-0.03332	ppm
ave CH4 DC	-0.00068	ppm
ave CO DC	184.54357	ppm
ave CO2 DC	12.47558	%
ave NOx DC	3.20772	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	0.08848	g
tot NMHC DC	0.08184	g
tot CH4 DC	0.00196	g
tot CO DC	9.23054	g
tot CO2 DC	10781.78004	g
tot NO DC (d)	0.04082	g
tot NO2 DC	0.10342	g
tot NOx DC	0.13120	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	60.95580	mi/hr
Trip Distance Share Urban	4.25383	% distanc
Trip Distance Share Rural	1.55035	% distanc
Trip Distance Share Motorway	94.19582	% distanc

BS CO2 DC	549.60609	g/hphr
BS CO DC	0.47053	g/hphr
BS THC DC	0.00451	g/hphr
BS NMHC DC	0.00417	g/hphr
BS CH4 DC	0.00010	g/hphr
BS NO DC (d)	0.00208	g/hphr
BS NO2 DC	0.00527	g/hphr
BS NOx DC	0.00669	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	387.32550	g/mi
DS CO DC	0.33160	g/mi
DS THC DC	0.00318	g/mi
DS NMHC DC	0.00294	g/mi
DS CH4 DC	0.00007	g/mi
DS NO DC (d)	0.00147	g/mi
DS NO2 DC	0.00372	g/mi
DS NOx DC	0.00471	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	3188.17107	g/kg
FS CO DC	2.72947	g/kg
FS THC DC	0.02616	g/kg
FS NMHC DC	0.02420	g/kg
FS CH4 DC	0.00058	g/kg
FS NO DC (d)	0.01207	g/kg
FS NO2 DC	0.03058	g/kg
FS NOx DC	0.03879	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



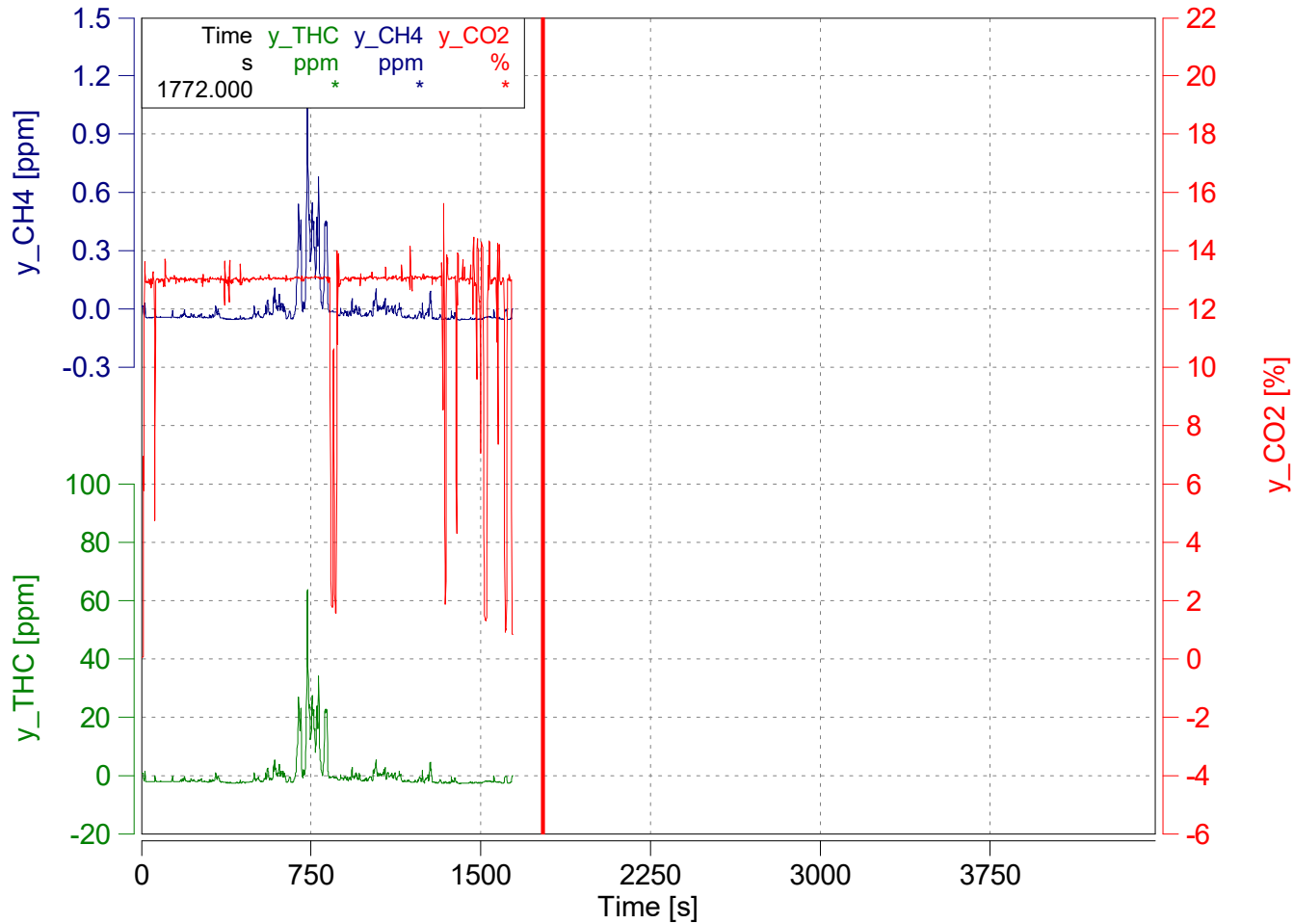
AVL 492 De

- y\_THC
- y\_NO
- y\_CO2
- y\_O2
- c\_Soot
- Fuel Rate
- Exhaust Mas
- Torque
- Velocity ECU

Apply De

Alignment F

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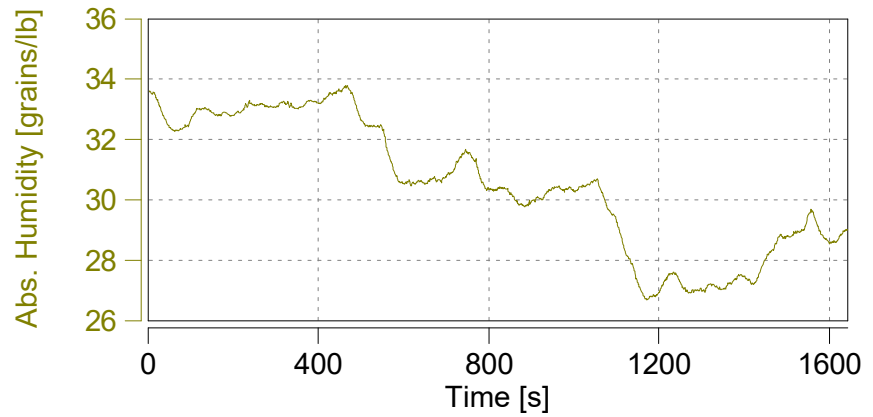
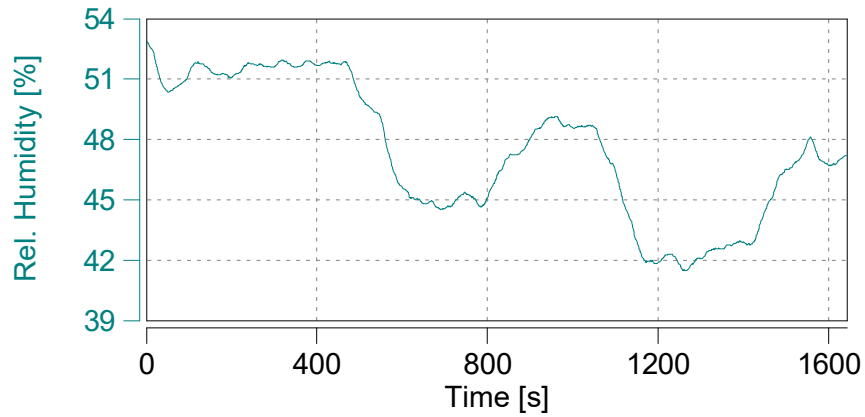
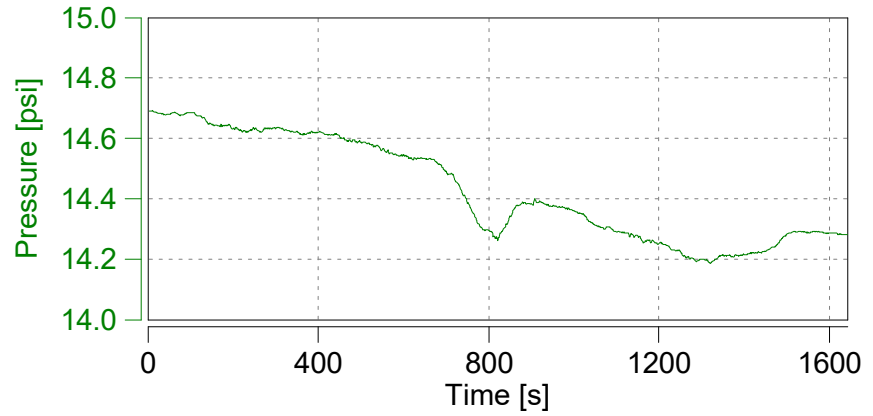
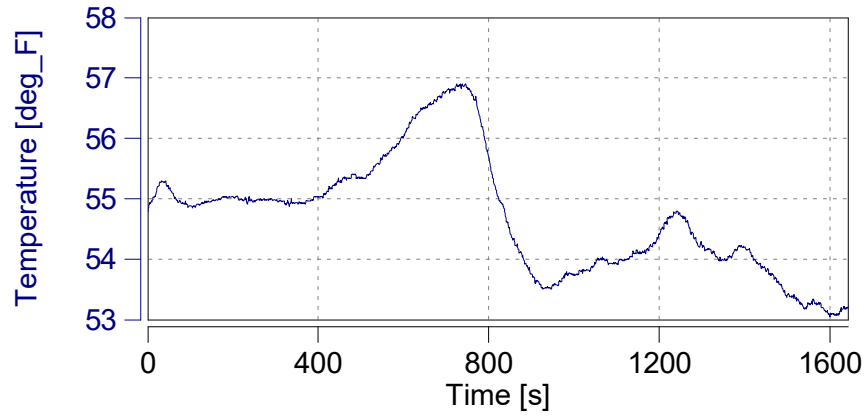


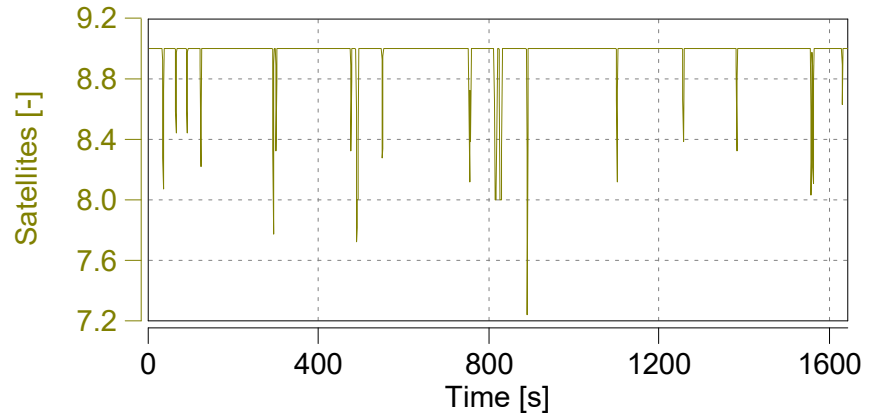
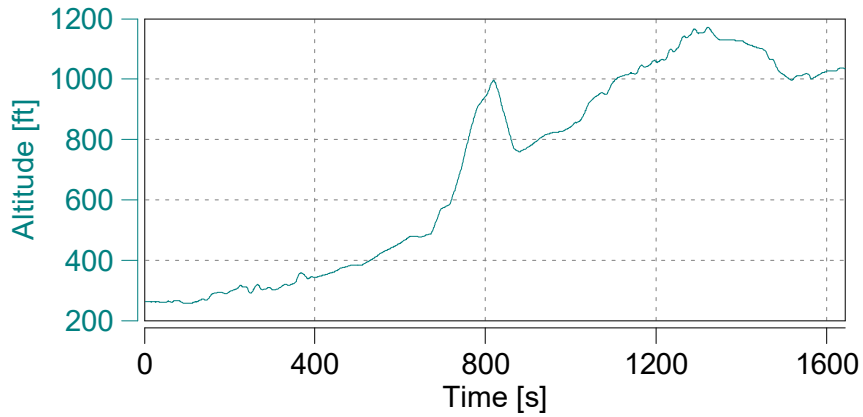
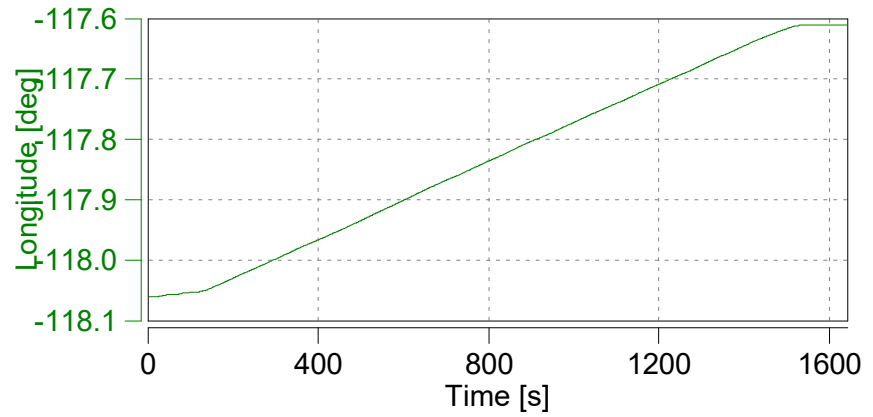
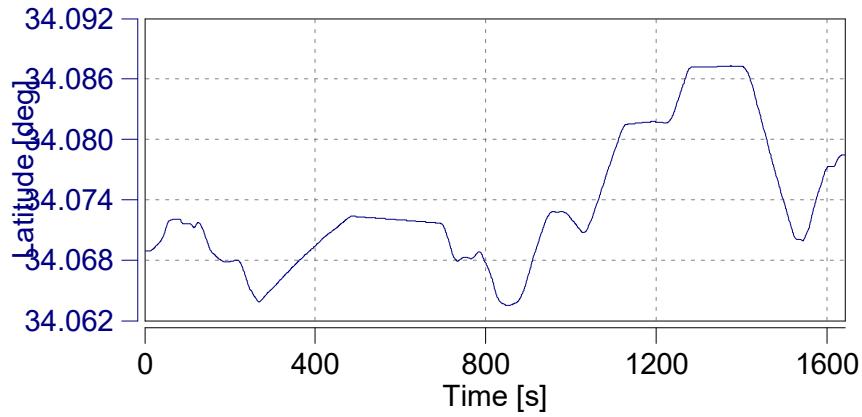
Absolute Time Shifts

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y_CH4	s	0.0

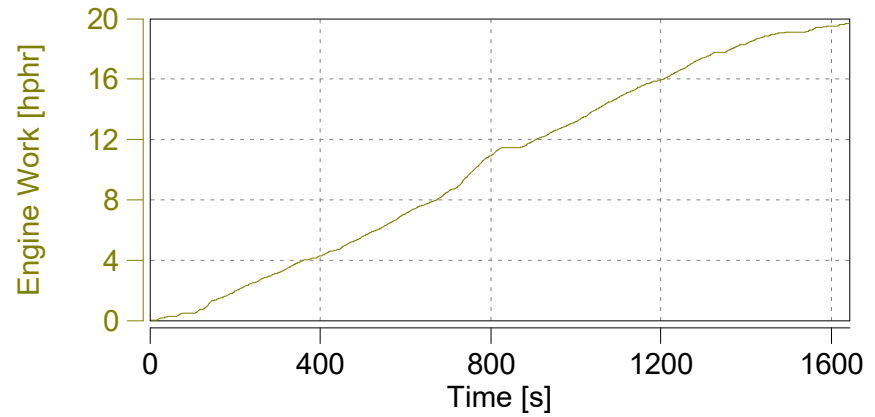
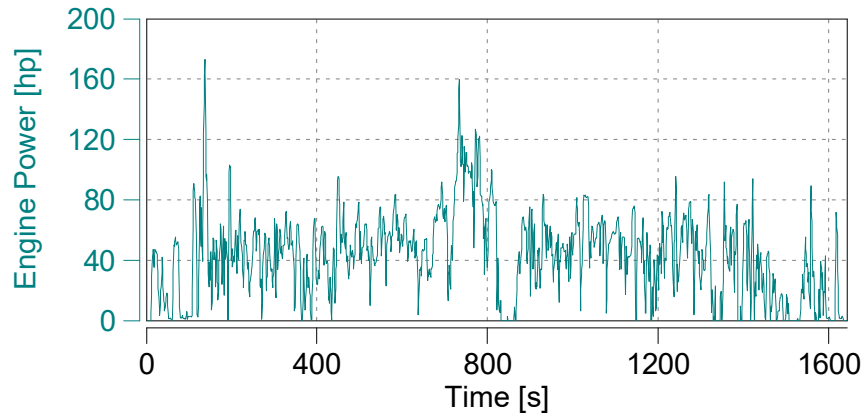
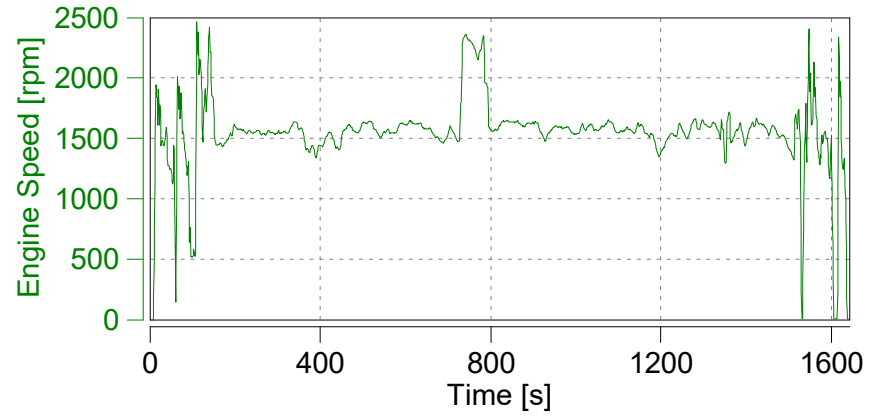
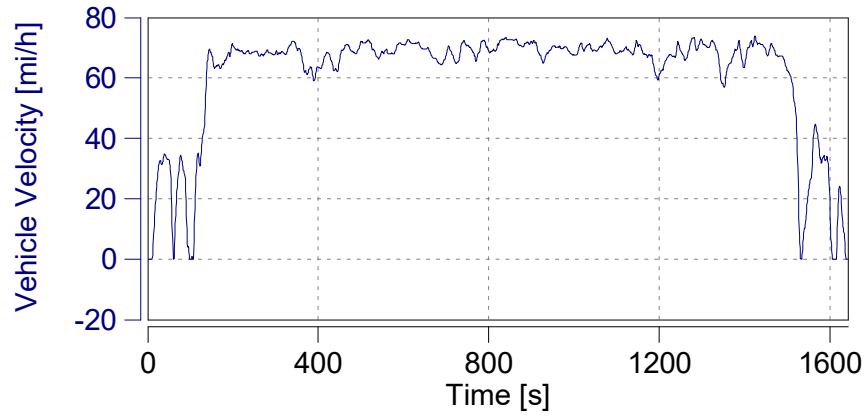
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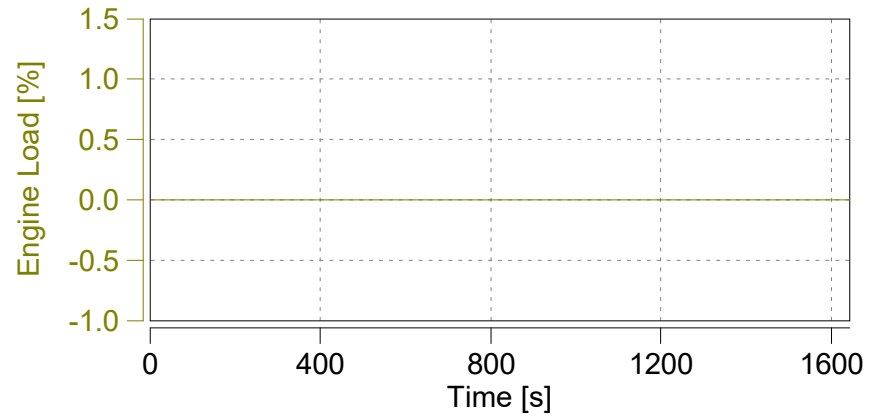
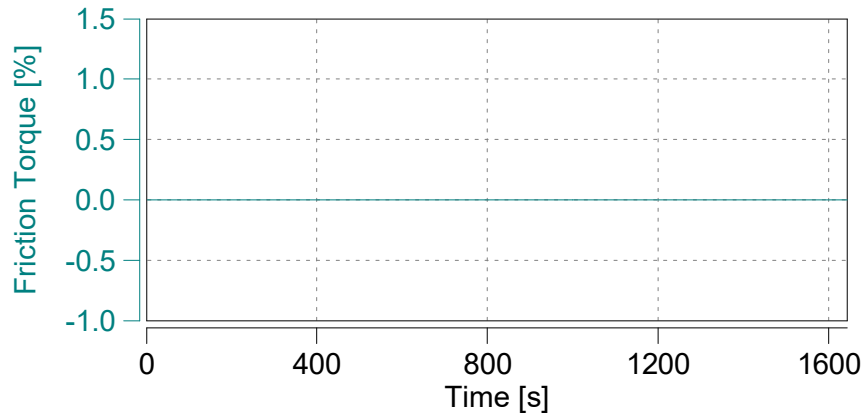
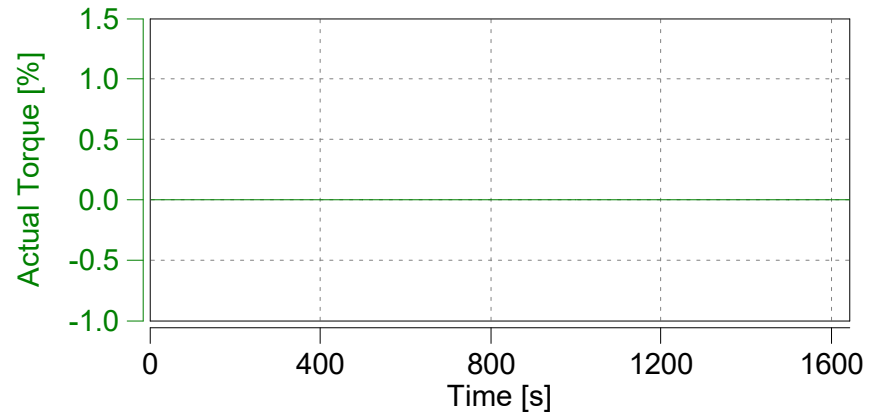
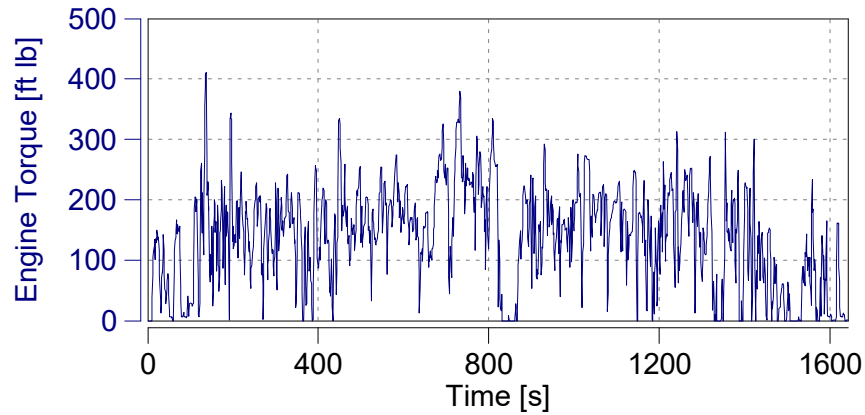
Apply Current Values

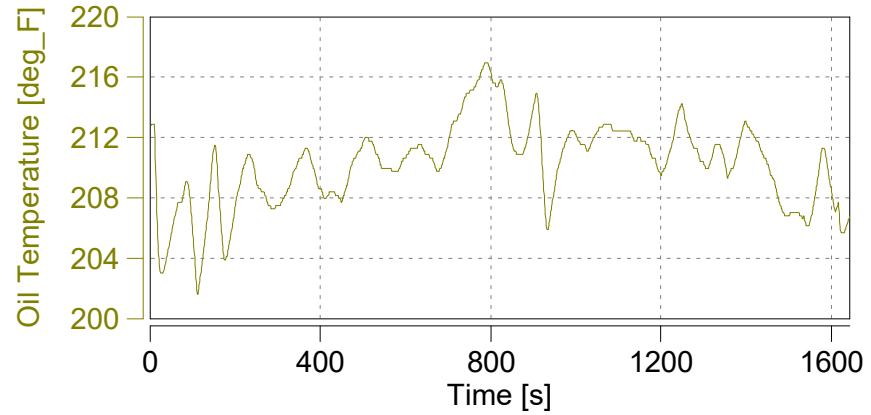
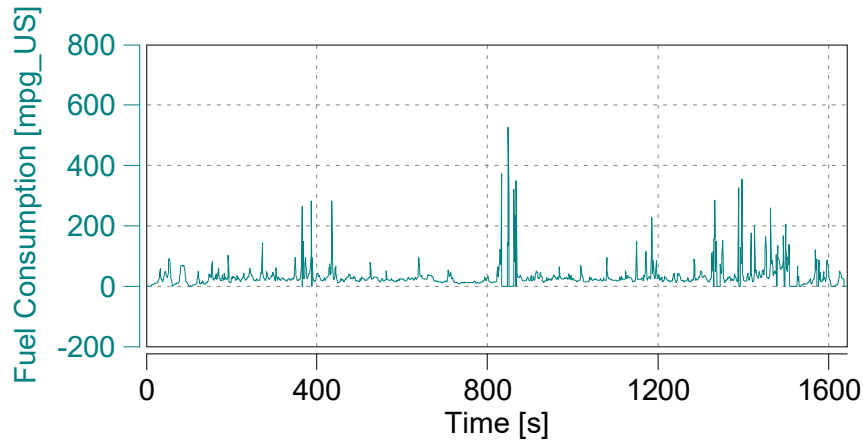
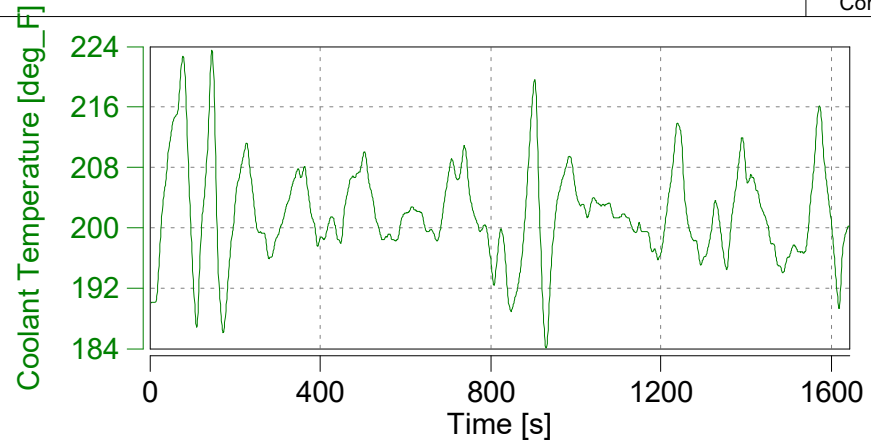
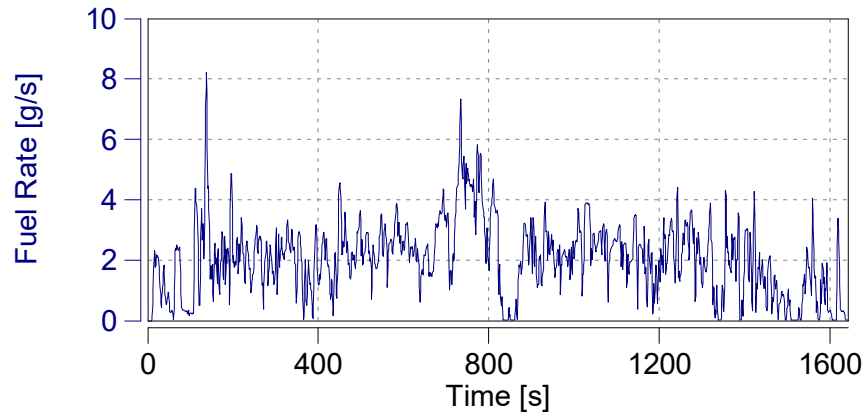


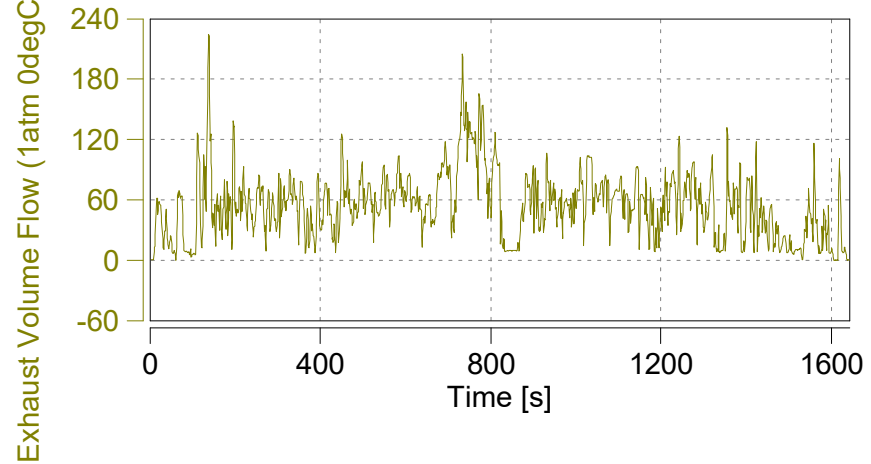
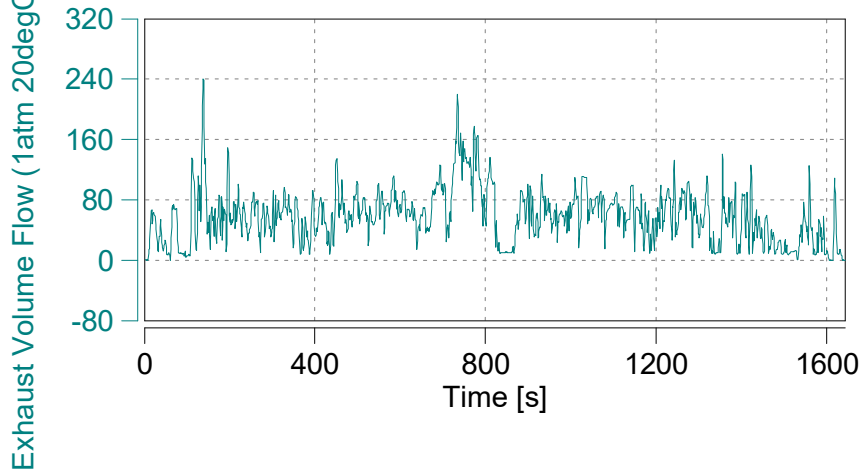
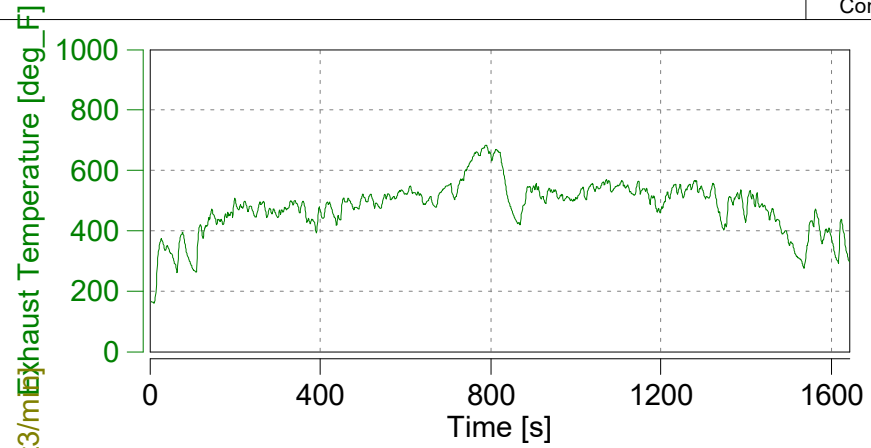
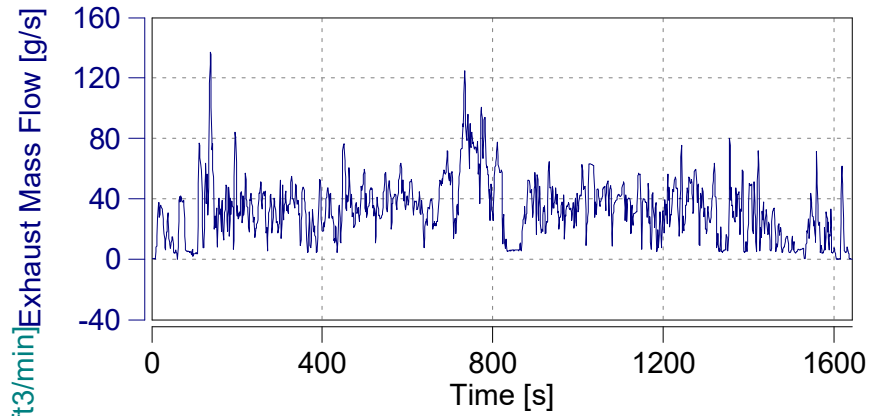


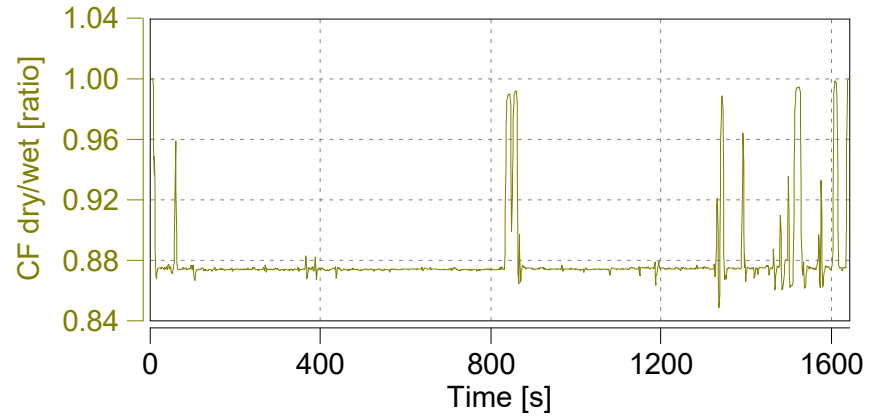
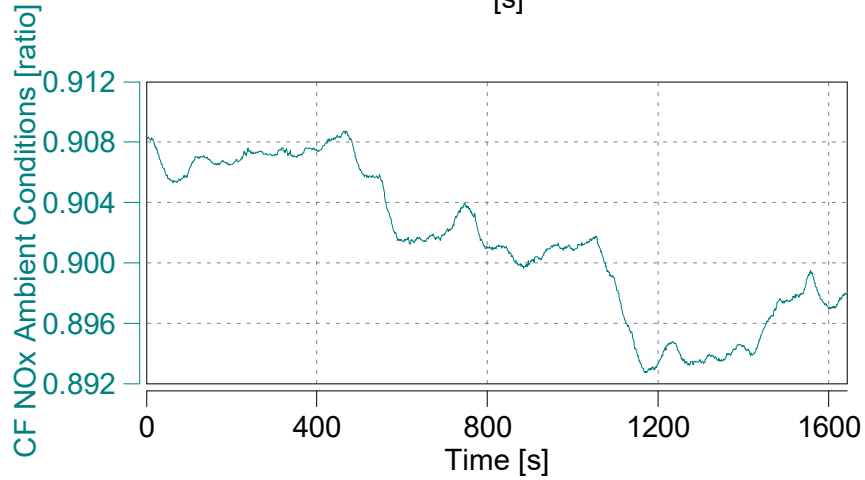
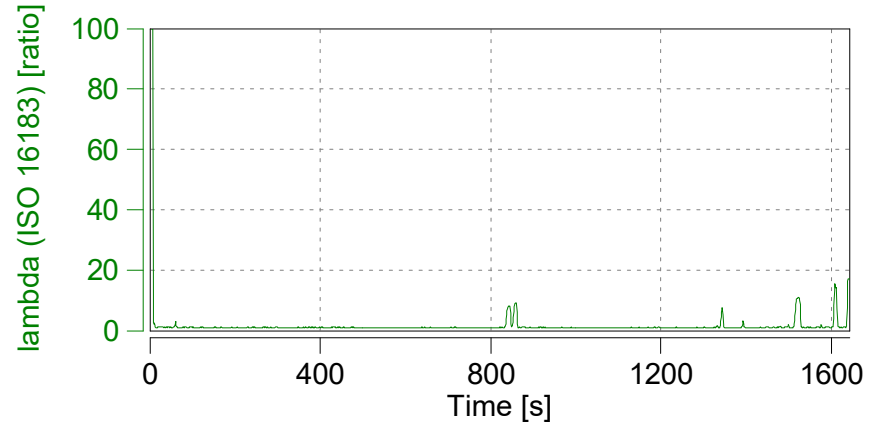
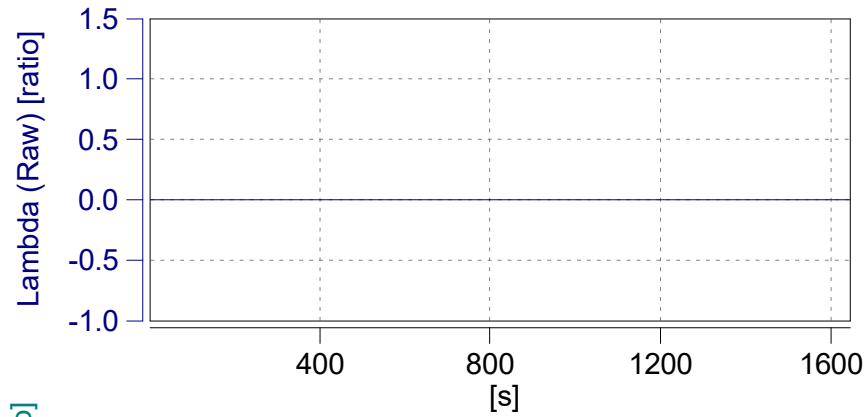


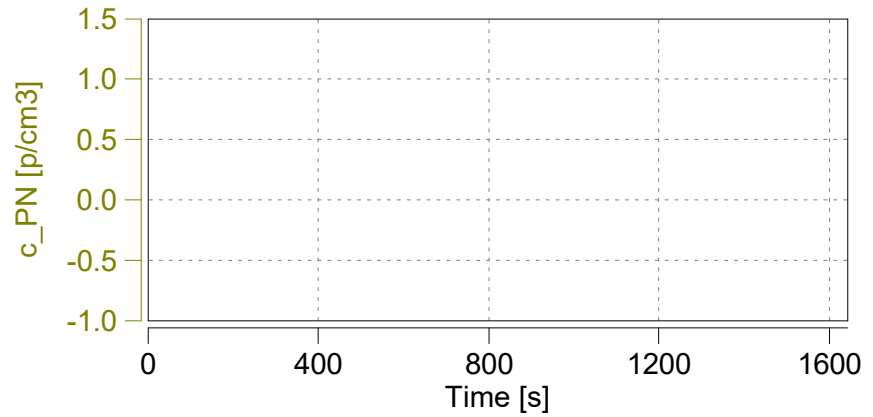
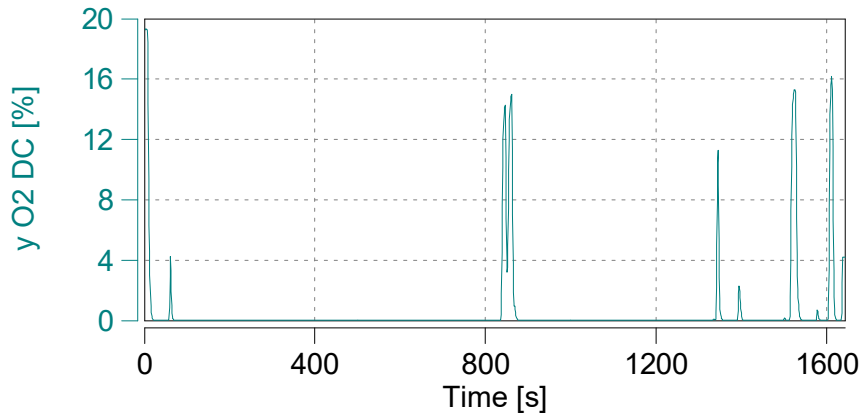
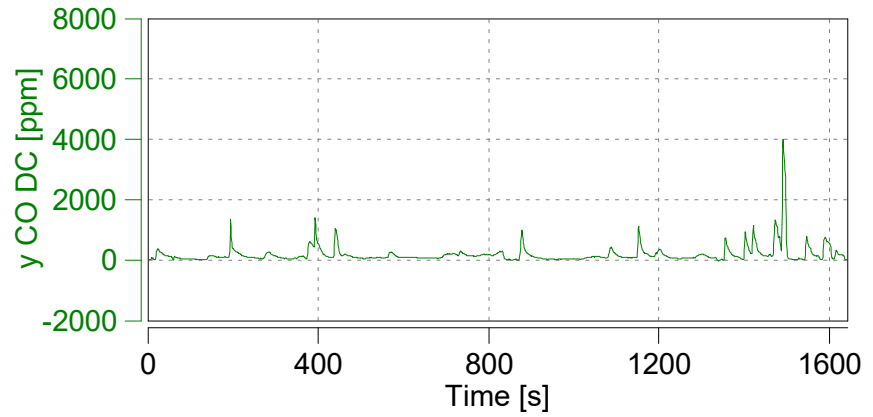
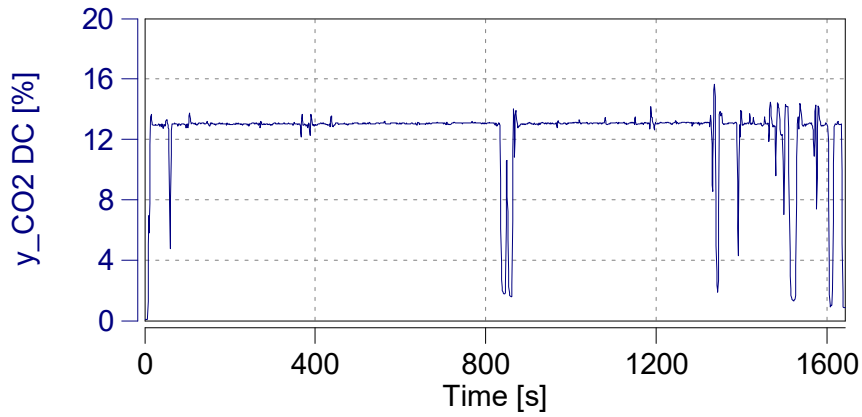


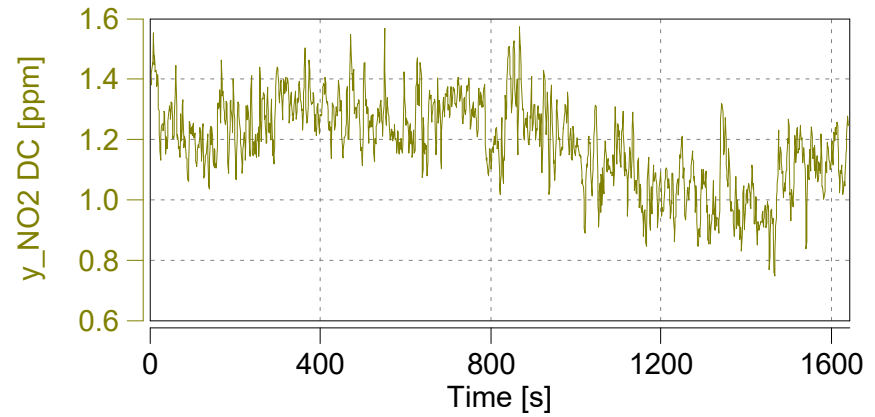
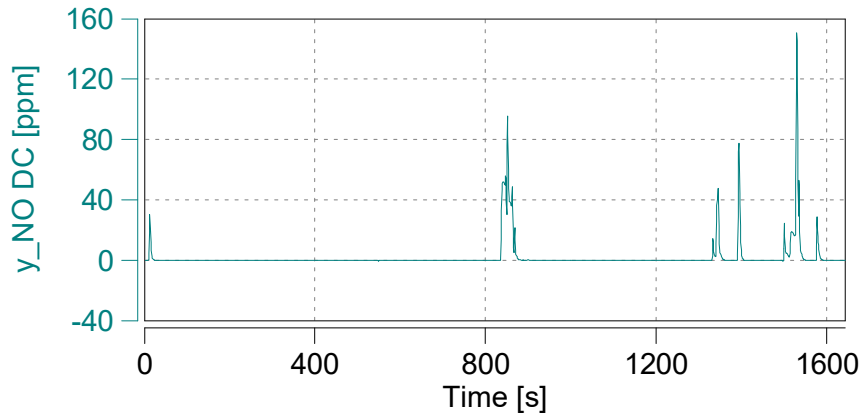
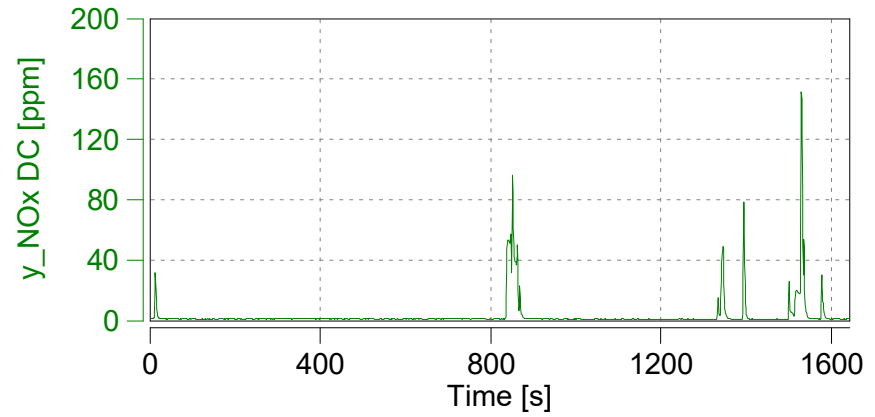
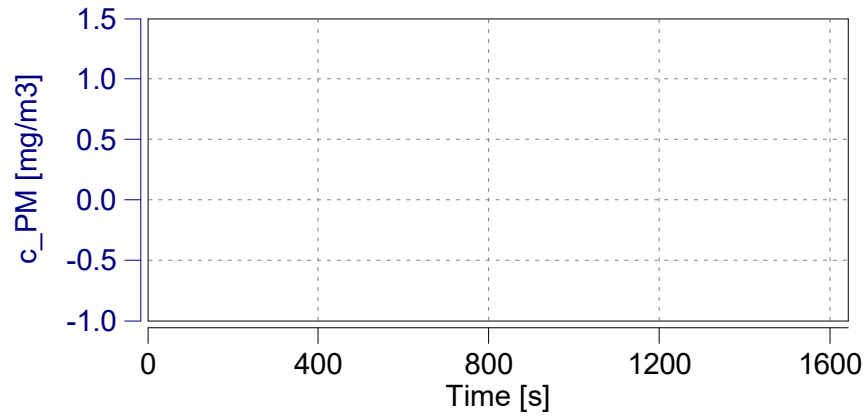


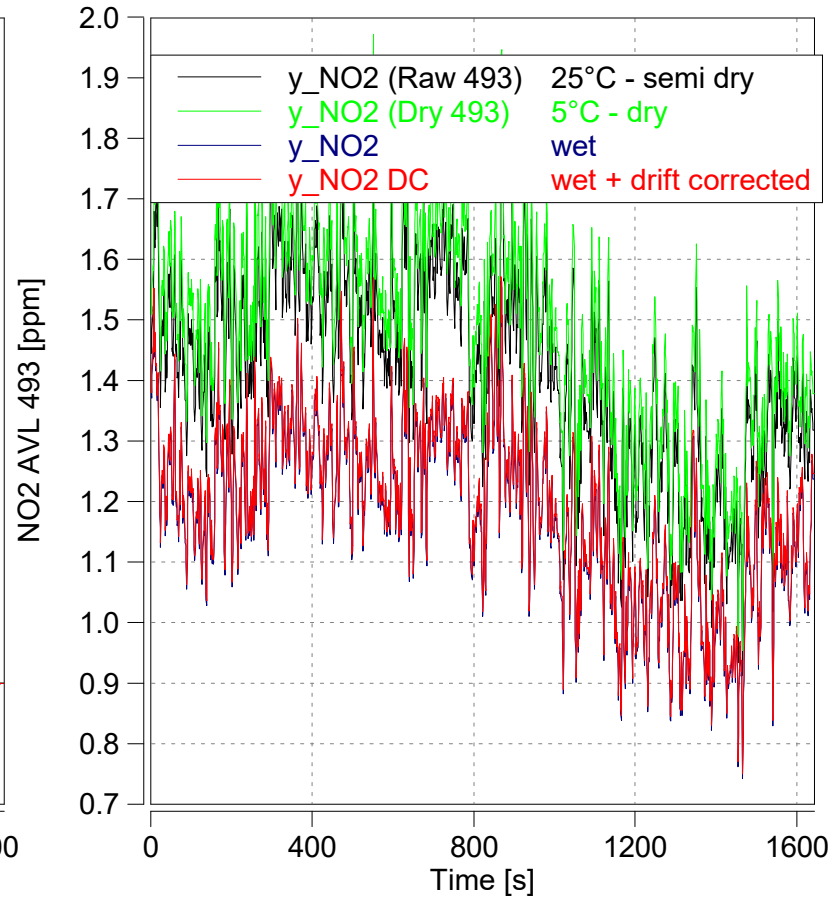
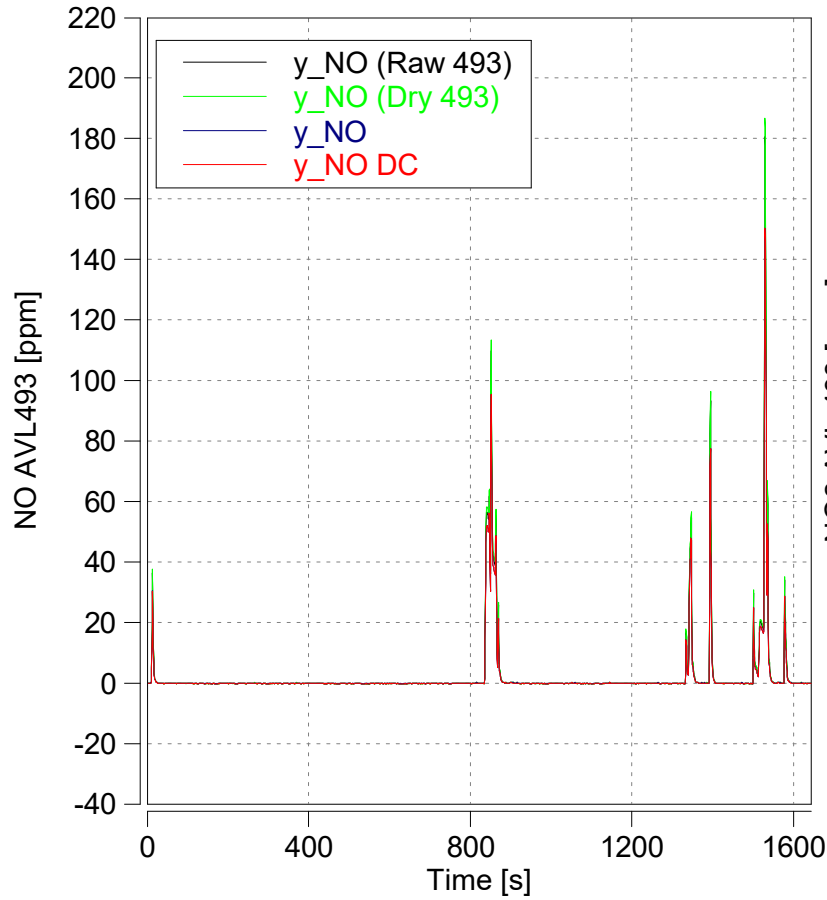






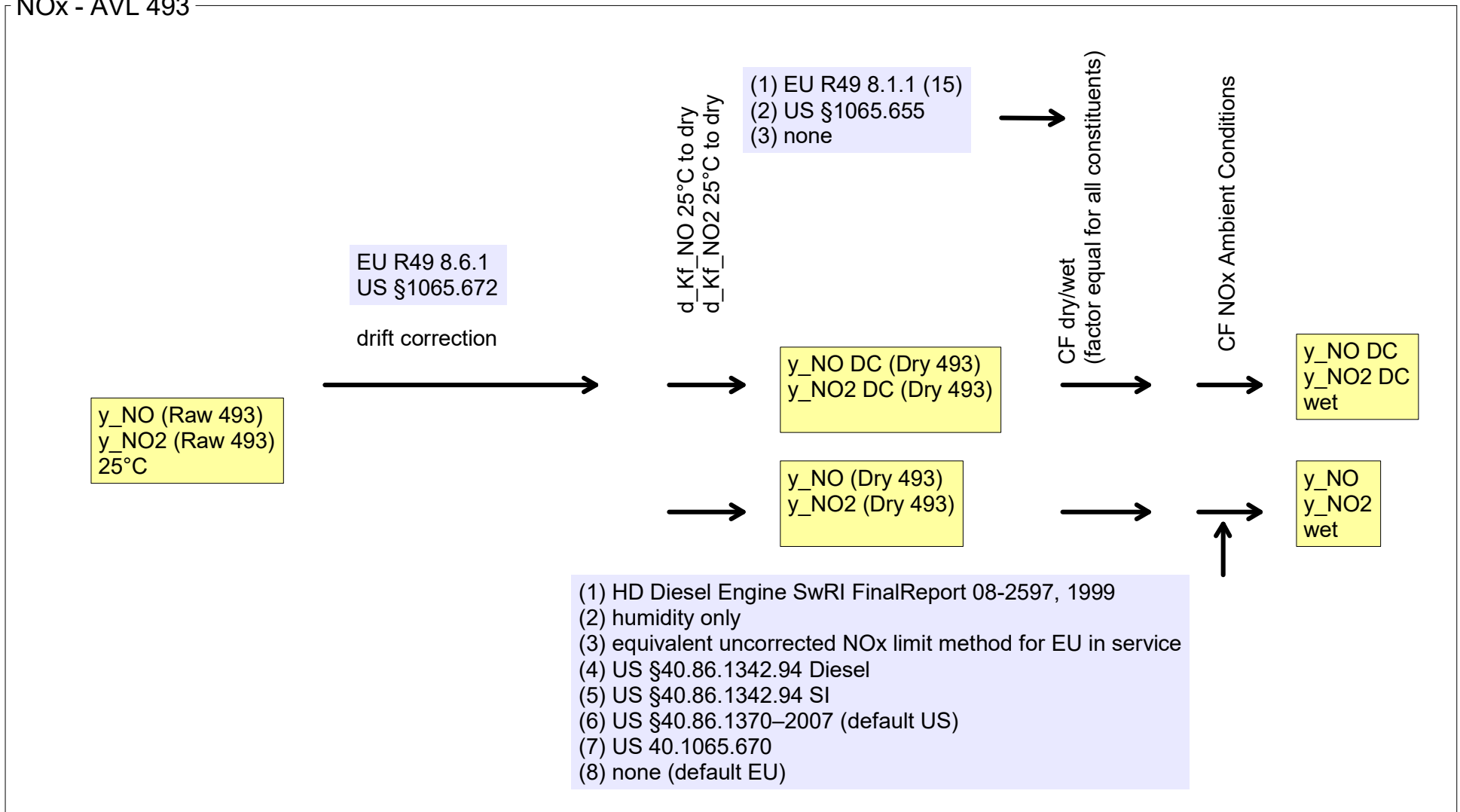


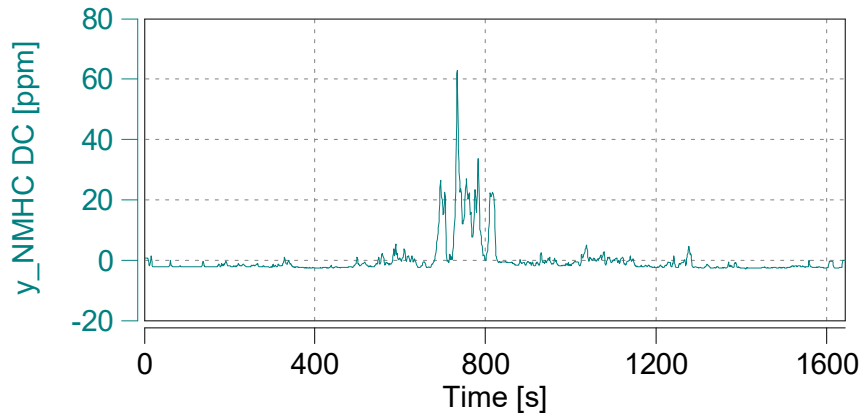
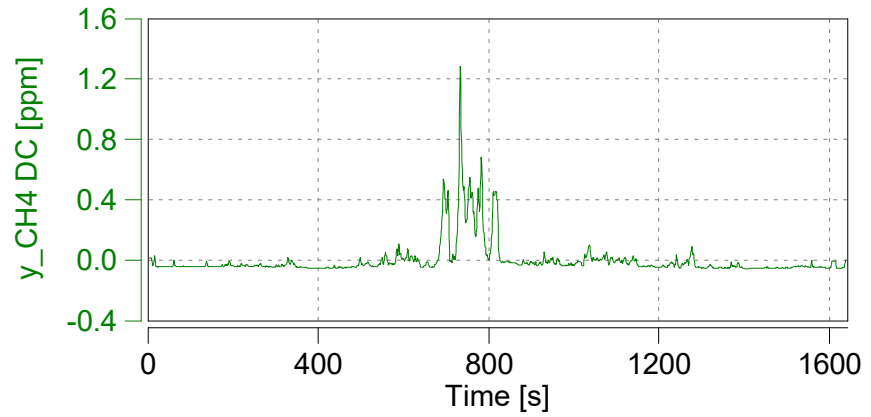
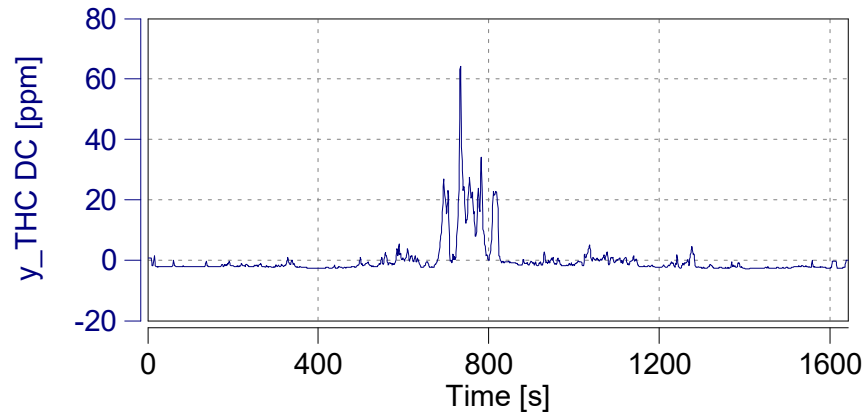


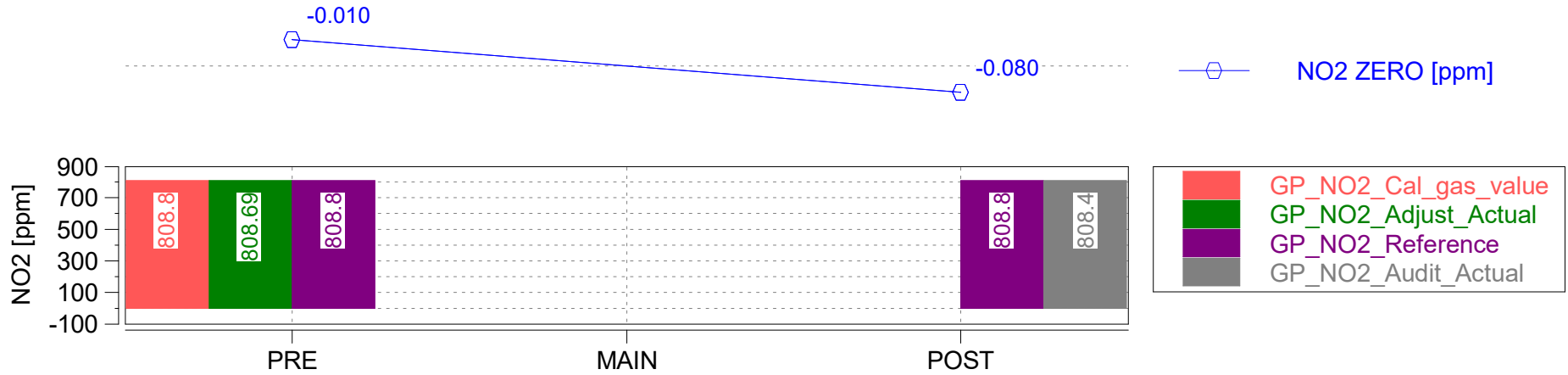
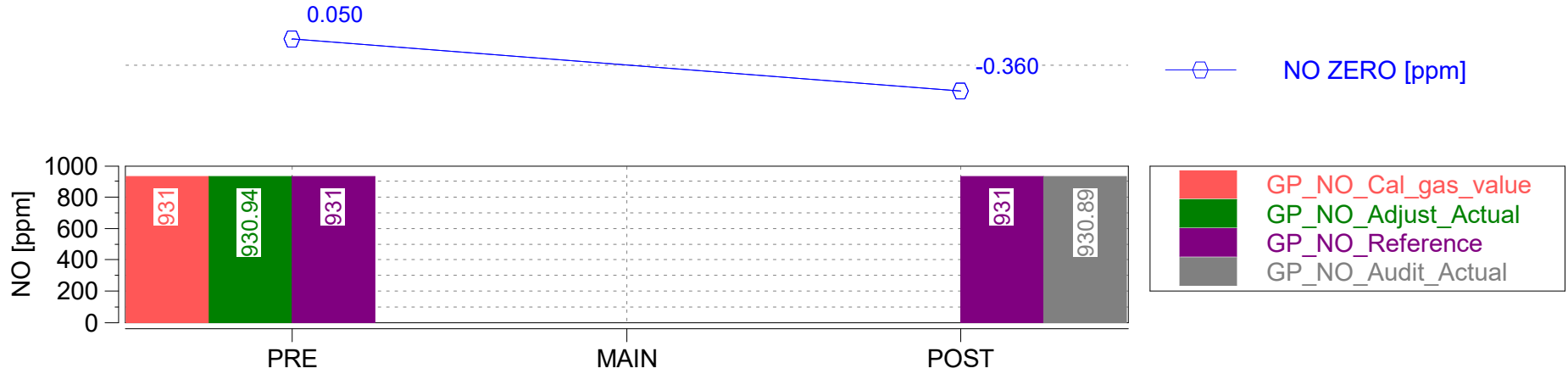


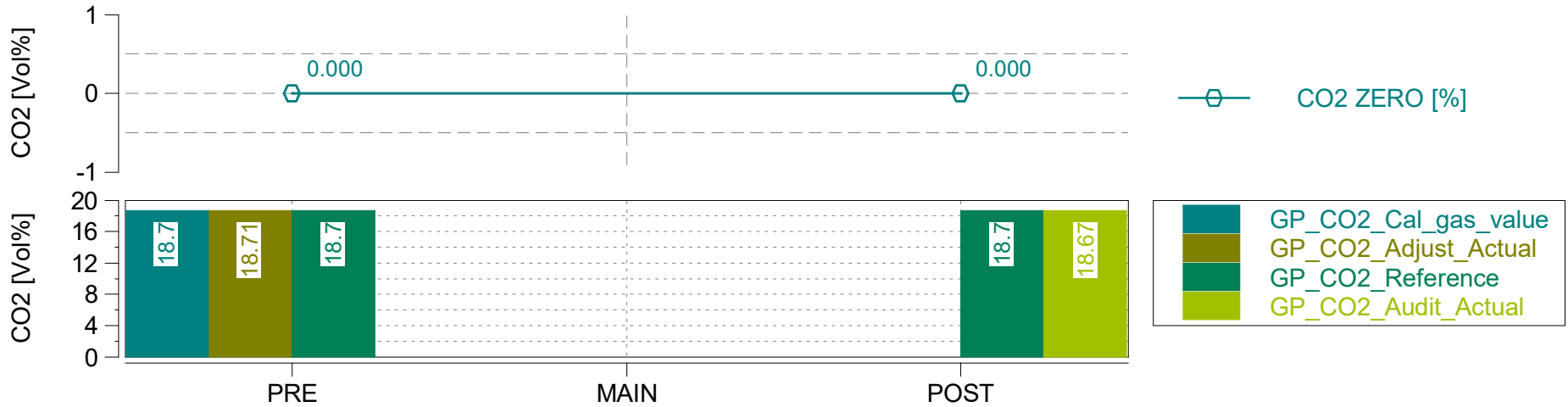
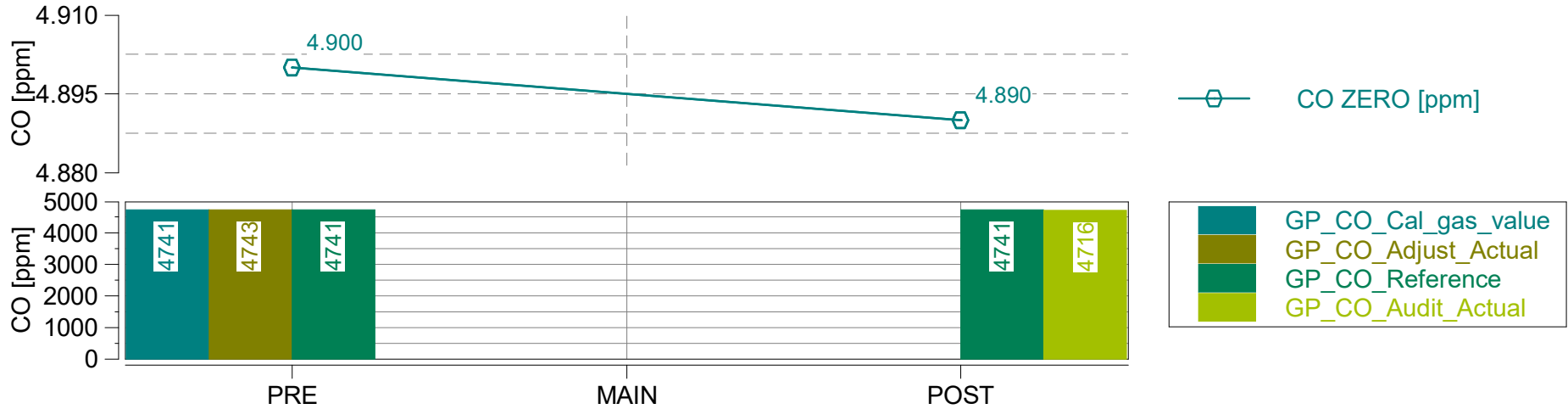


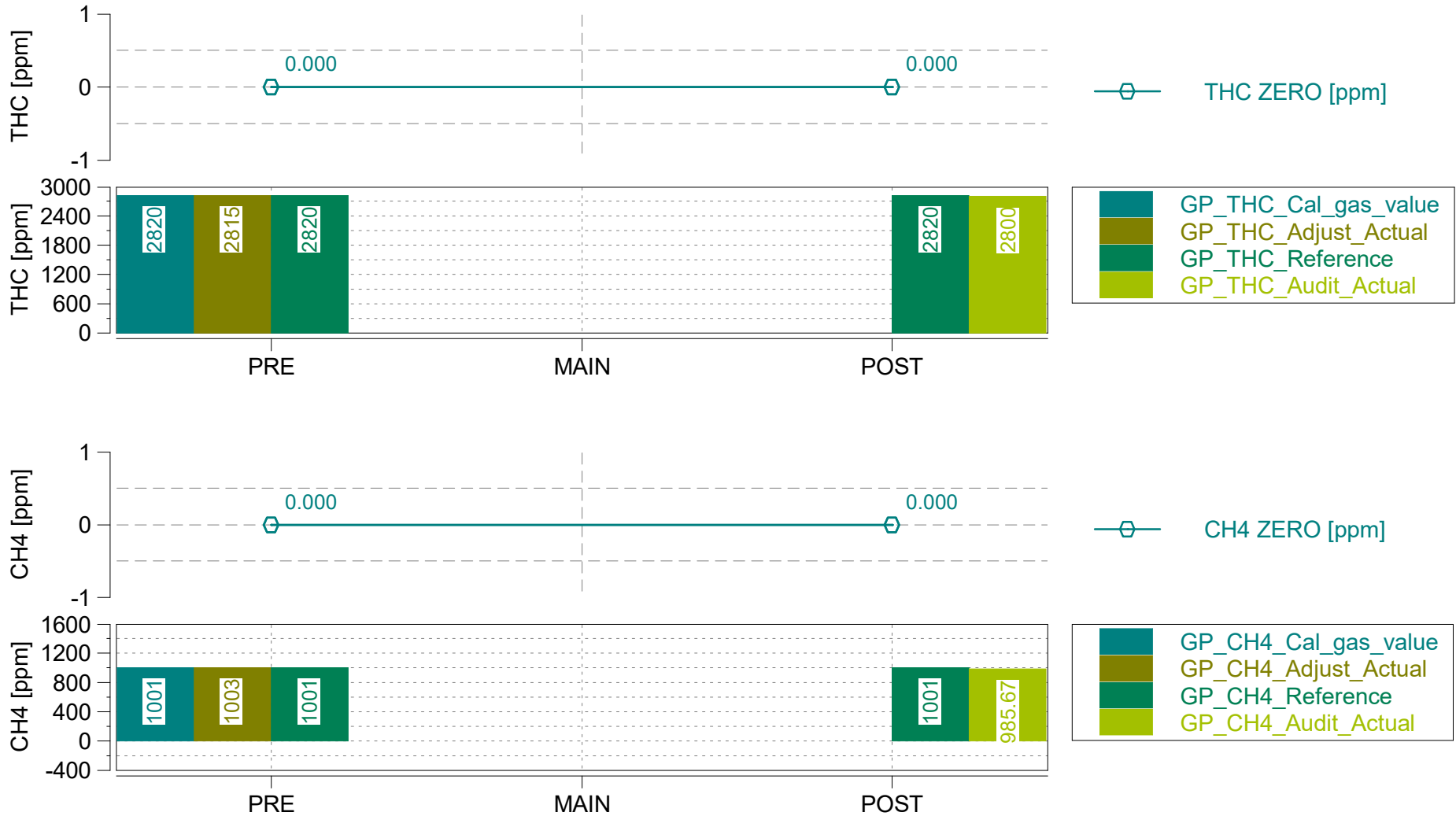
NOx - AVL 493













§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	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%	<b>0.22</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-14
Leak Check Age [days]	0

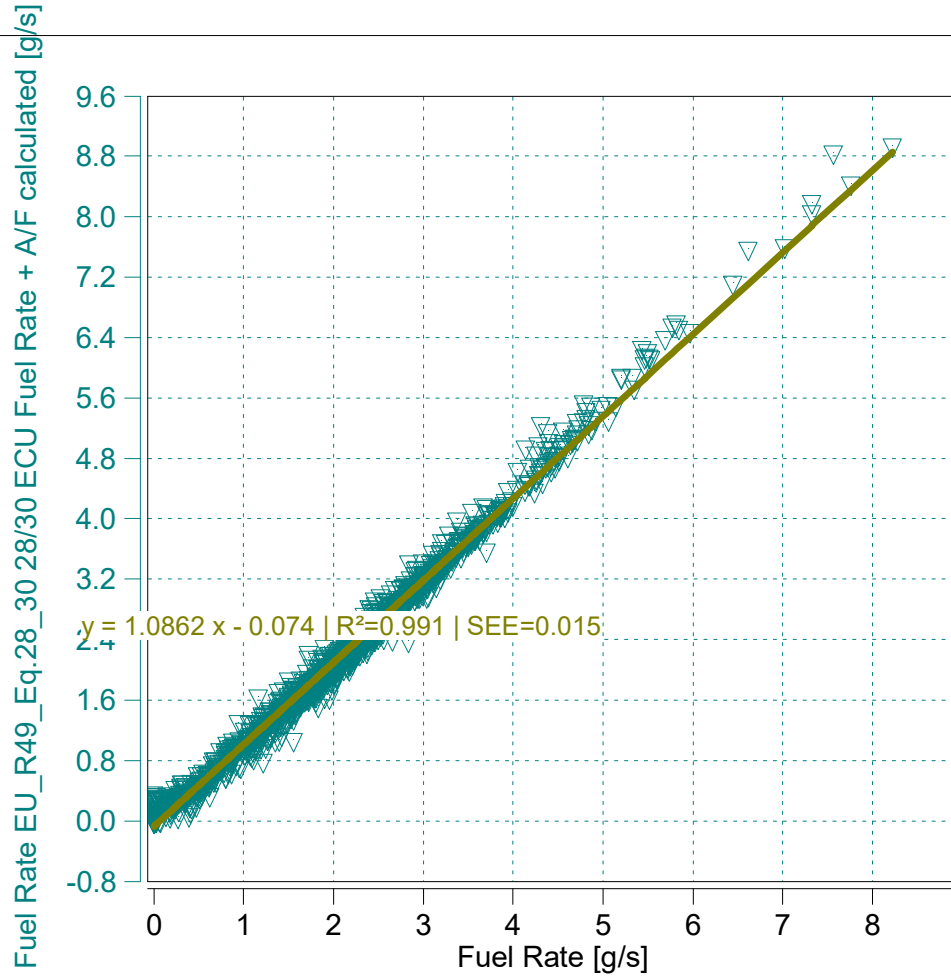
Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151



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

$y = 1.0862 x - 0.074 \mid R^2=0.991 \mid SEE=0.015$

$m = 1.09$  (0.9 - 1.1 recommended)

$R^2 = 0.99$  (min 0.9 mandatory)

Data from - to [% of Maximum]

0

100



Trip Duration	2556.00	s
Trip Duration (a)	2556.00	s
Trip Distance	28.50	mi
Trip Distance (a)	28.50	mi
Trip Fuel Cons. (b)	2.97	kg
Trip Fuel Cons. (ab)	2.97	kg
Trip Fuel Cons. EU (ac)	3.14	kg
Trip Fuel Cons. US (ac)	3.14	kg
Trip Fuel Economy (b)	27.18	mpg_US
Trip Fuel Economy (ab)	27.18	mpg_US
Trip Fuel Economy EU (ac)	25.70	mpg_US
Trip Fuel Economy US (ac)	25.72	mpg_US
Trip Fuel Economy GGE (b)	27.18	mpg_US
Trip Fuel Economy GGE (ab)	27.18	mpg_US
Trip Fuel Economy EU GGE (ac)	25.70	mpg_US
Trip Fuel Economy US GGE (ac)	25.72	mpg_US
Trip Av. Eng. Speed	1407.99	rpm
Trip Av. Torque	73.84	lbft
Trip Av. Power	22.13	hp
Trip Work		
Trip Work (a)	15.71	hphr
Trip Exhaust Mass	48.53	kg
Trip Exhaust Mass EU (ac)	45.73	kg
Trip Exhaust Mass US (ac)	45.79	kg
Trip Av. Amb. Temperature	62.37	deg_F
Trip Av. Humidity	34.24	%
Trip Av. GPS Altitude	199.74	m
Fuel Type	Petrol (E10)	

ave THC	-3.11384	ppm
ave NMHC	-3.05156	ppm
ave CH4	-0.06228	ppm
ave CO	199.26622	ppm
ave CO2	11.97513	%
ave NOx	3.90446	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	0.00014	g
tot NMHC	0.00013	g
tot CH4	0.00000	g
tot CO	11.17166	g
tot CO2	9521.24476	g
tot NO (d)	0.10421	g
tot NO2	0.08695	g
tot NOx	0.18036	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	40.14590	mi/hr
Trip Distance Share Urban	26.42928	% distance
Trip Distance Share Rural	18.82009	% distance
Trip Distance Share Motorway	54.75063	% distance

BS CO2	606.08767	g/hphr
BS CO	0.71115	g/hphr
BS THC	0.00001	g/hphr
BS NMHC	0.00001	g/hphr
BS CH4	0.00000	g/hphr
BS NO (d)	0.00663	g/hphr
BS NO2	0.00554	g/hphr
BS NOx	0.01148	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	334.03673	g/mi
DS CO	0.39194	g/mi
DS THC	0.00000	g/mi
DS NMHC	0.00000	g/mi
DS CH4	0.00000	g/mi
DS NO (d)	0.00366	g/mi
DS NO2	0.00305	g/mi
DS NOx	0.00633	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	3208.81720	g/kg
FS CO	3.76503	g/kg
FS THC	0.00005	g/kg
FS NMHC	0.00004	g/kg
FS CH4	0.00000	g/kg
FS NO (d)	0.03512	g/kg
FS NO2	0.02930	g/kg
FS NOx	0.06078	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



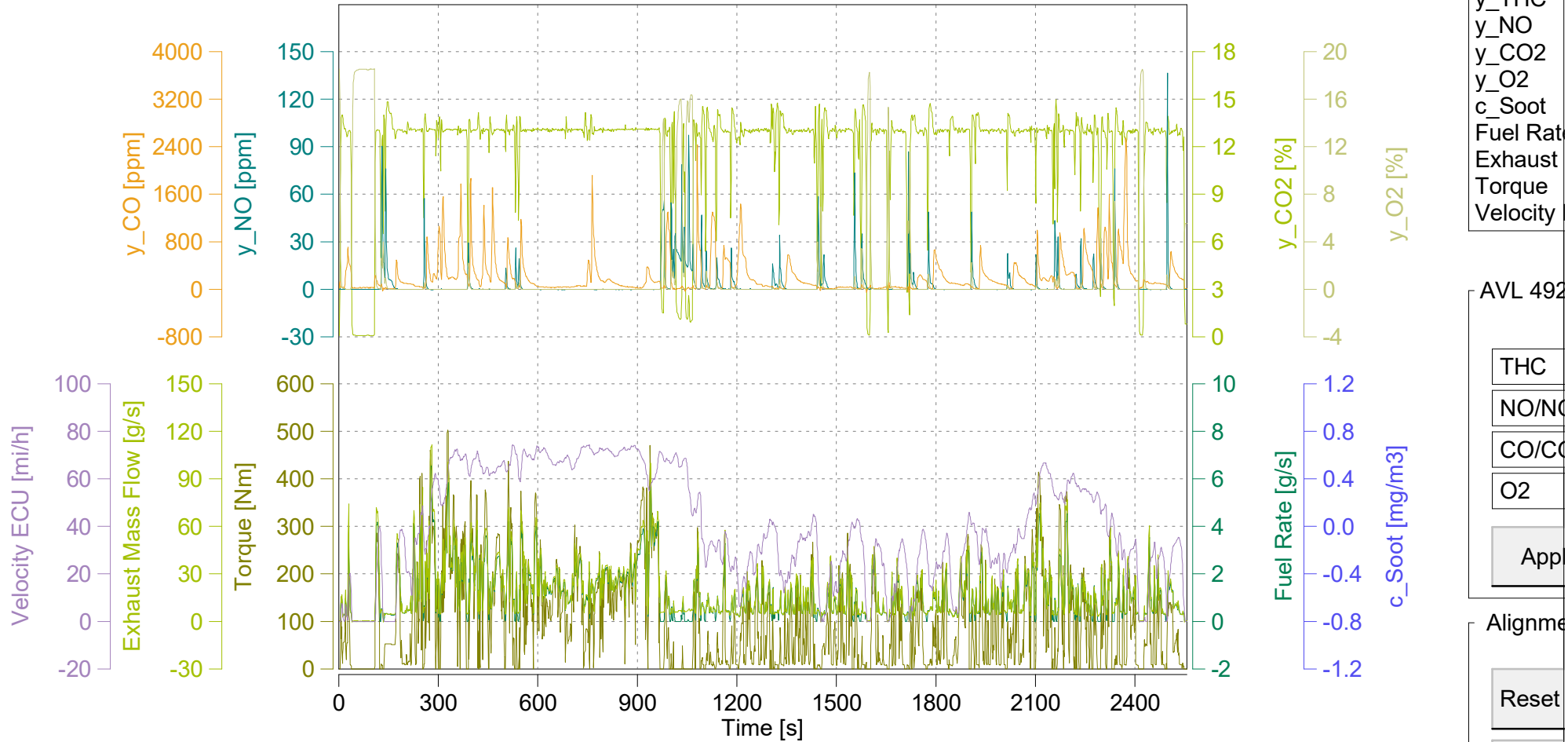


Trip Duration	2556.00	s
Trip Duration (a)	2556.00	s
Trip Distance	28.50	mi
Trip Distance (a)	28.50	mi
Trip Fuel Cons. (b)	2.97	kg
Trip Fuel Cons. (ab)	2.97	kg
Trip Fuel Cons. EU (ac)	3.14	kg
Trip Fuel Cons. US (ac)	3.14	kg
Trip Fuel Economy (b)	27.18	mpg_US
Trip Fuel Economy (ab)	27.18	mpg_US
Trip Fuel Economy EU (ac)	25.70	mpg_US
Trip Fuel Economy US (ac)	25.72	mpg_US
Trip Fuel Economy GGE (b)	27.18	mpg_US
Trip Fuel Economy GGE (ab)	27.18	mpg_US
Trip Fuel Economy EU GGE (ac)	25.70	mpg_US
Trip Fuel Economy US GGE (ac)	25.72	mpg_US
Trip Av. Eng. Speed	1407.99	rpm
Trip Av. Torque	73.84	lbft
Trip Av. Power	22.13	hp
Trip Work		
Trip Work (a)	15.71	hphr
Trip Exhaust Mass	48.53	kg
Trip Exhaust Mass EU (ac)	45.73	kg
Trip Exhaust Mass US (ac)	45.79	kg
Trip Av. Amb. Temperature	62.37	deg_F
Trip Av. Humidity	34.24	%
Trip Av. GPS Altitude	199.74	m
Fuel Type	Petrol (E10)	

ave THC DC	-3.12781	ppm
ave NMHC DC	-3.06526	ppm
ave CH4 DC	-0.06256	ppm
ave CO DC	195.58359	ppm
ave CO2 DC	11.98153	%
ave NOx DC	3.87343	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	0.00014	g
tot NMHC DC	0.00013	g
tot CH4 DC	0.00000	g
tot CO DC	11.00867	g
tot CO2 DC	9526.33906	g
tot NO DC (d)	0.10355	g
tot NO2 DC	0.08759	g
tot NOx DC	0.17797	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	40.14590	mi/hr
Trip Distance Share Urban	26.42928	% distance
Trip Distance Share Rural	18.82009	% distance
Trip Distance Share Motorway	54.75063	% distance

BS CO2 DC	606.41195	g/hphr
BS CO DC	0.70077	g/hphr
BS THC DC	0.00001	g/hphr
BS NMHC DC	0.00001	g/hphr
BS CH4 DC	0.00000	g/hphr
BS NO DC (d)	0.00659	g/hphr
BS NO2 DC	0.00558	g/hphr
BS NOx DC	0.01133	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	334.21545	g/mi
DS CO DC	0.38622	g/mi
DS THC DC	0.00001	g/mi
DS NMHC DC	0.00000	g/mi
DS CH4 DC	0.00000	g/mi
DS NO DC (d)	0.00363	g/mi
DS NO2 DC	0.00307	g/mi
DS NOx DC	0.00624	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	3210.53407	g/kg
FS CO DC	3.71011	g/kg
FS THC DC	0.00005	g/kg
FS NMHC DC	0.00004	g/kg
FS CH4 DC	0.00000	g/kg
FS NO DC (d)	0.03490	g/kg
FS NO2 DC	0.02952	g/kg
FS NOx DC	0.05998	g/kg
FS Soot	n/a	g/kg
FS Soot meas	n/a	g/kg
FS PM	n/a	g/kg
FS PN DC		

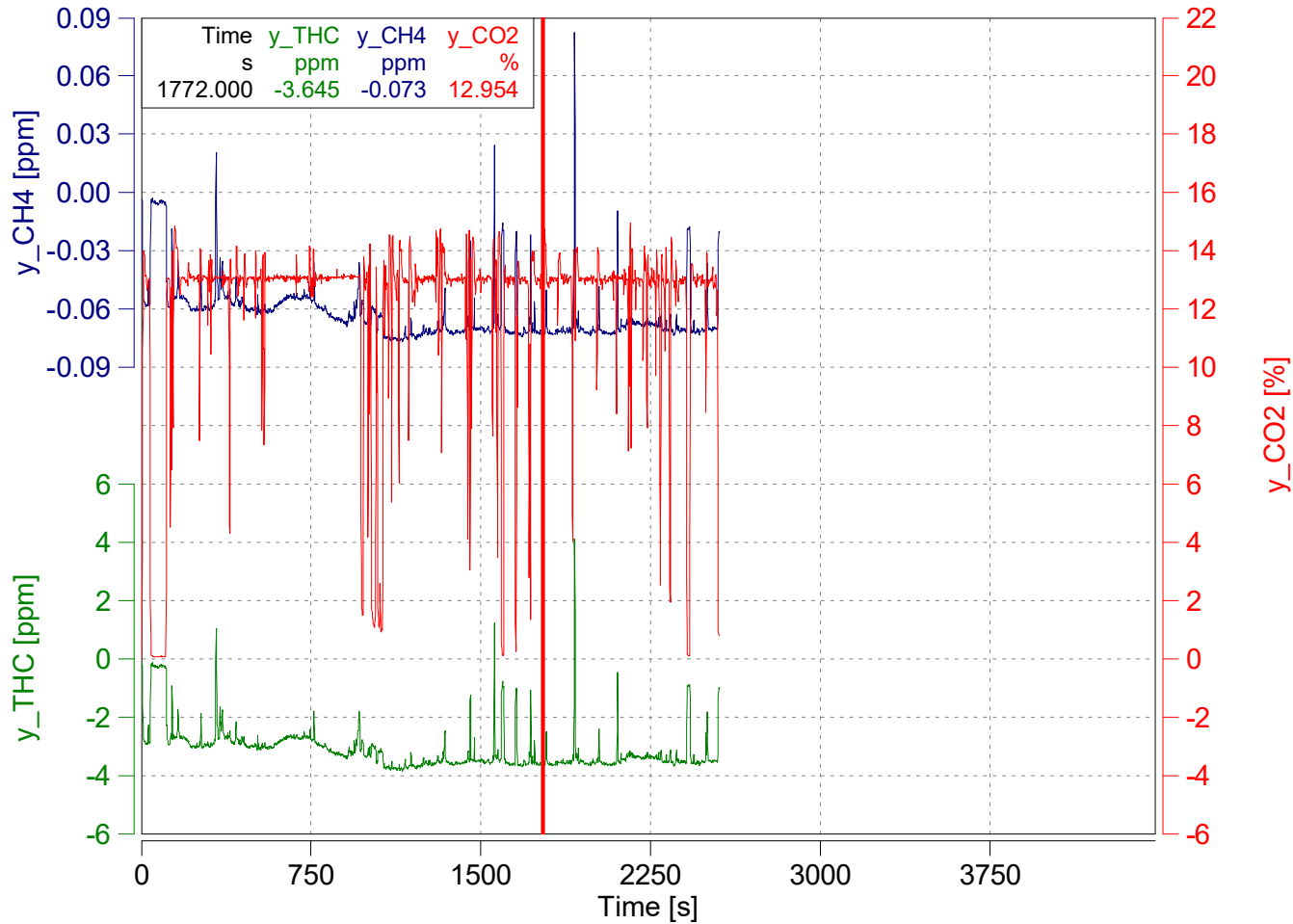
(a) GAS PEMS measurement state only, (b) based on fuel rate input (ECU, Fuel Meter), (c) Based on A/F ratio (eq 28-32 - R49)  
 (d) NO calculated using molecular weight of NO2, GGE=Gasoline Gallon Equivalents



- y\_THC
- y\_NO
- y\_CO2
- y\_O2
- c\_Soot
- Fuel Rate
- Exhaust
- Torque
- Velocity

- AVL 492
- THC
  - NO/NO2
  - CO/CO2
  - O2
  - App

- Alignme
- Reset
  - Re
  - Appl

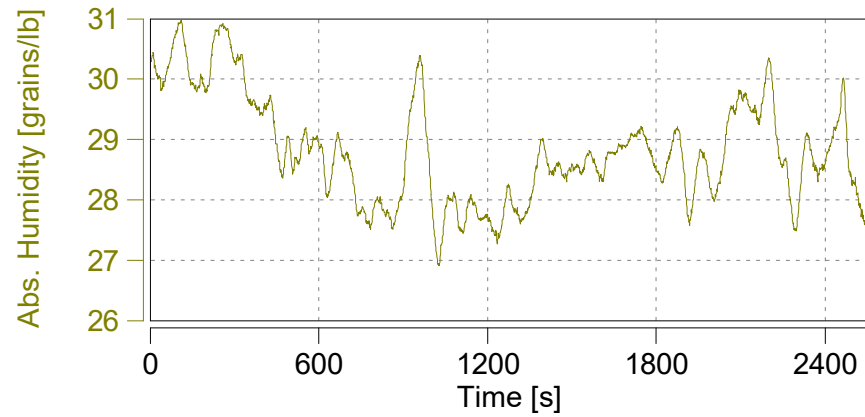
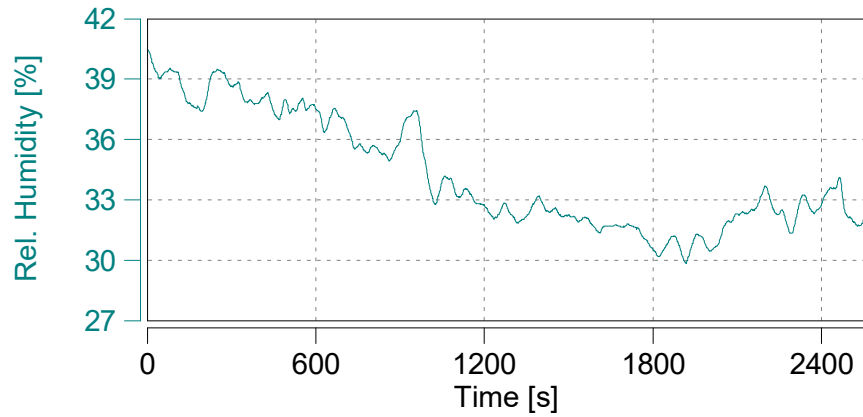
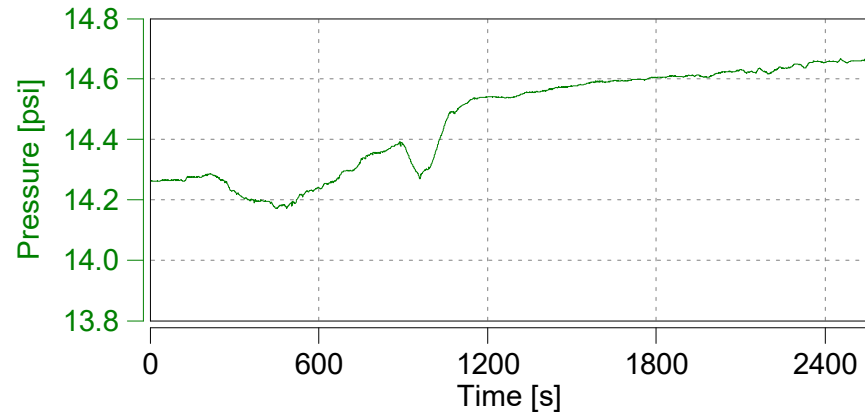
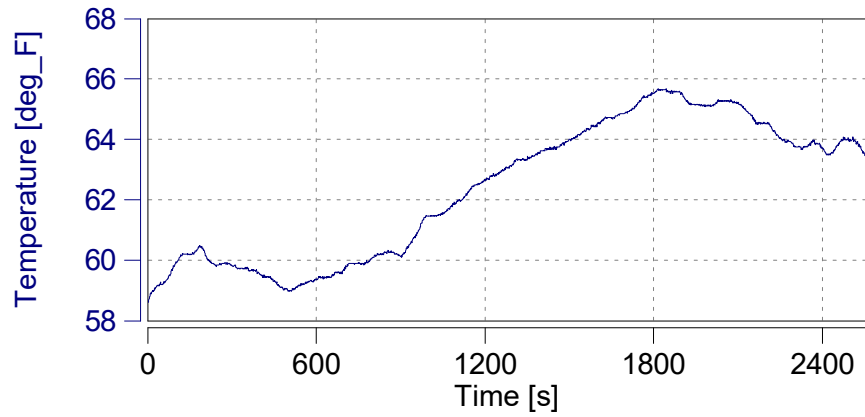


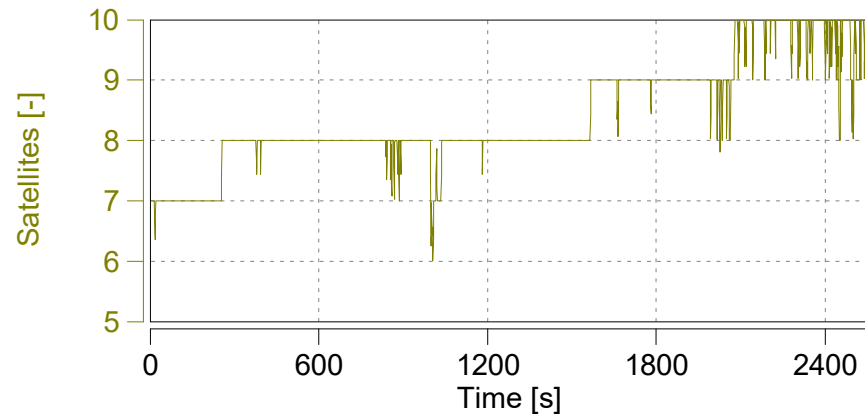
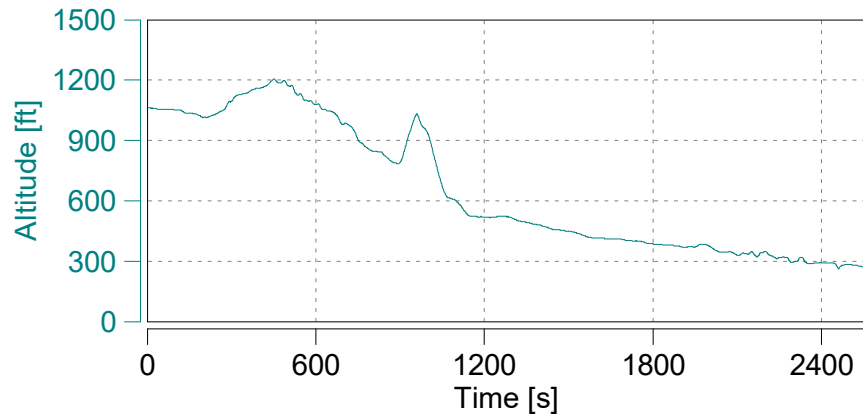
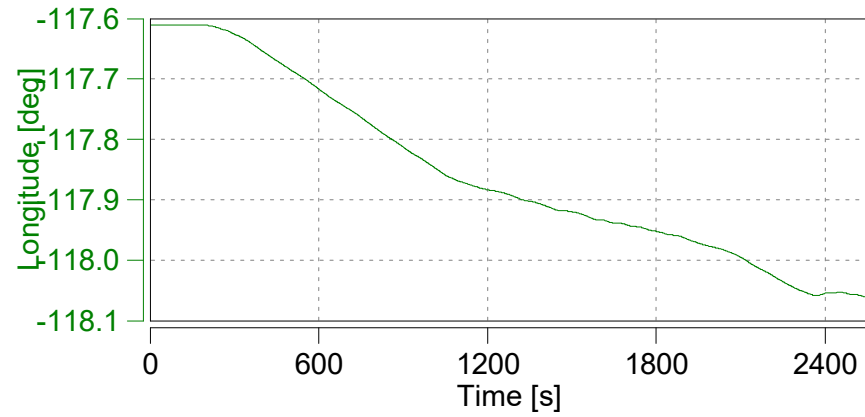
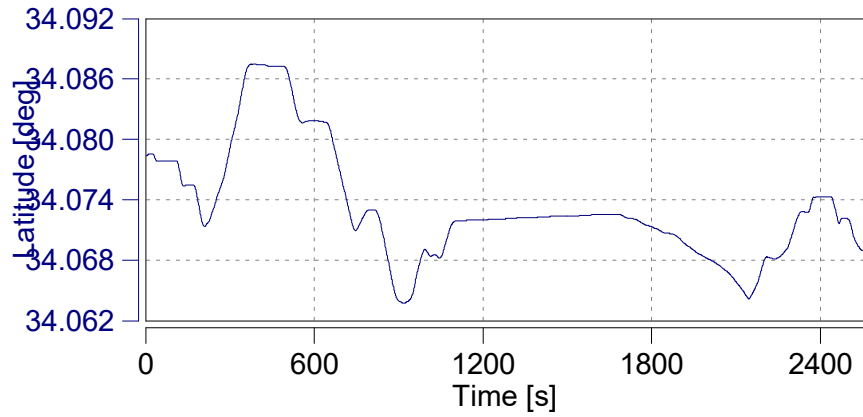
Absolute Time Shifts

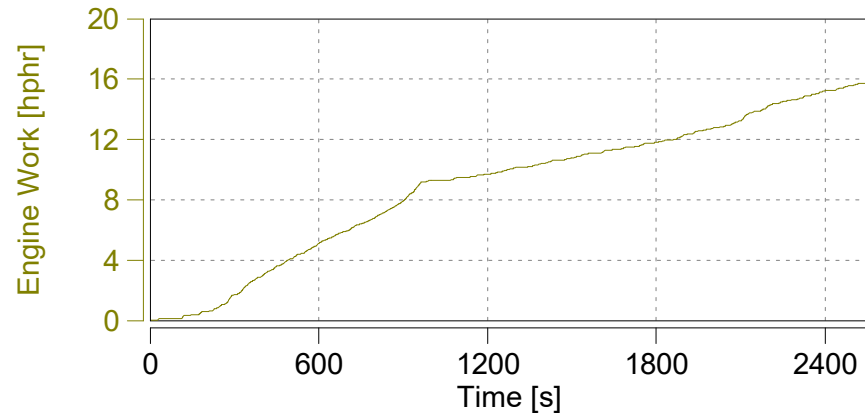
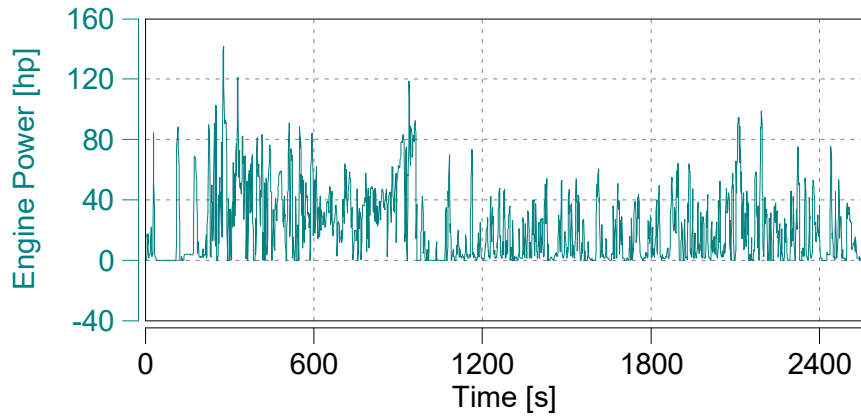
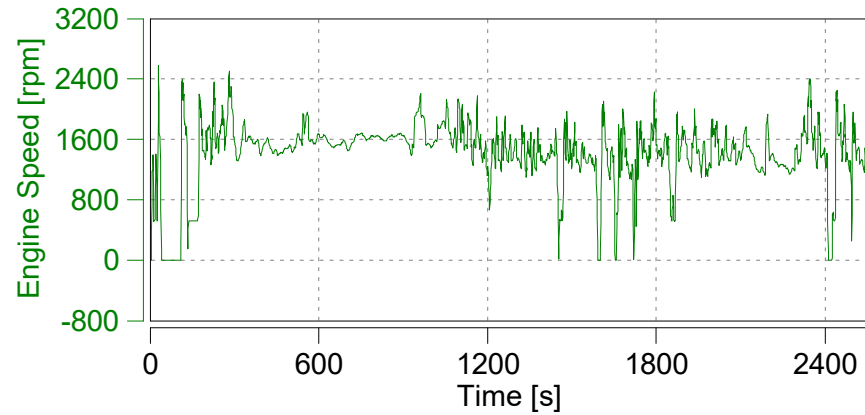
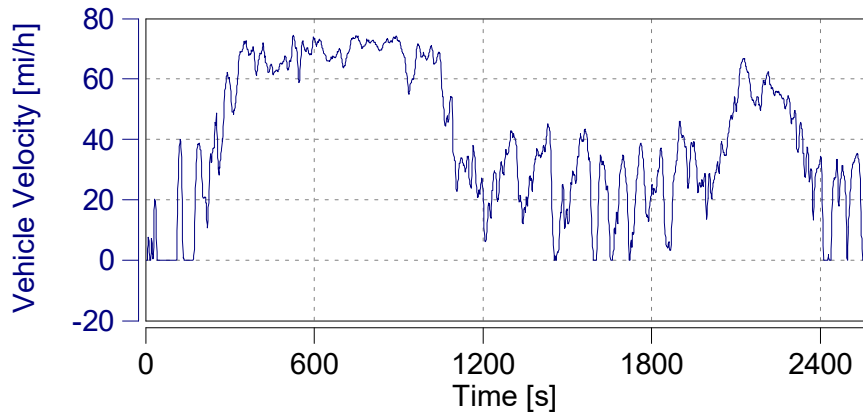
y_THC	s	0.0
y_CH4	s	0.0

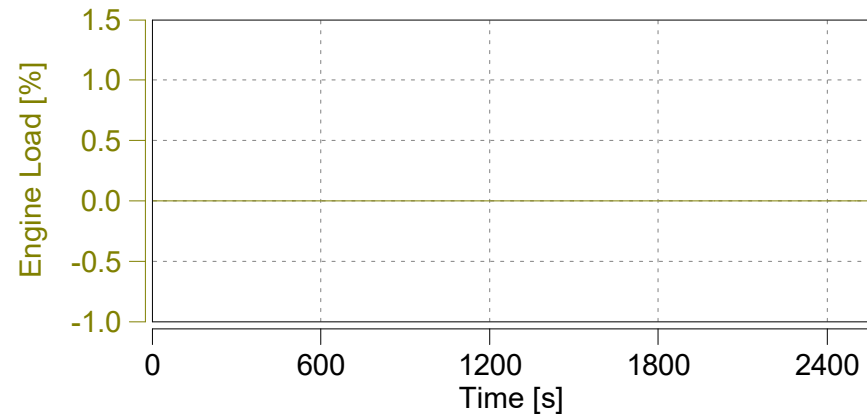
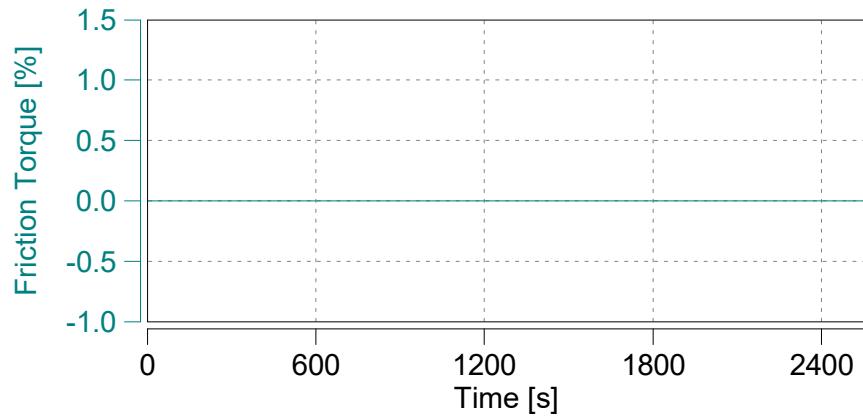
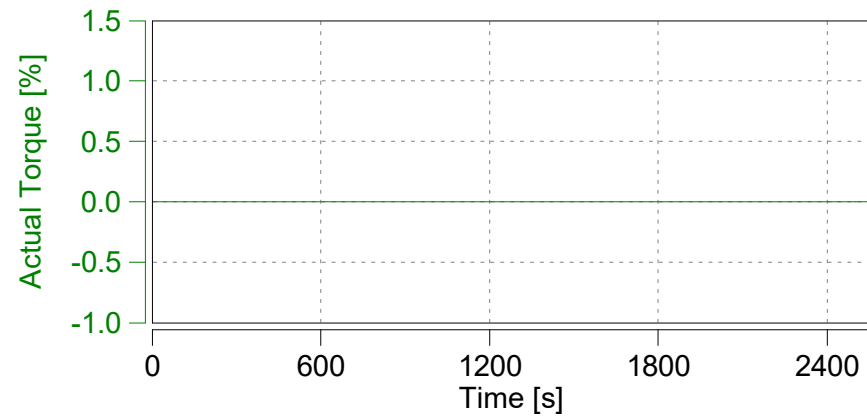
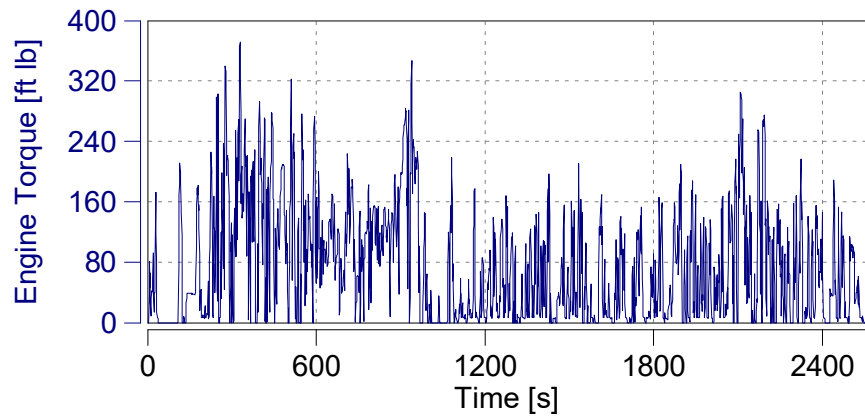
Reset Time Shifts in Plot

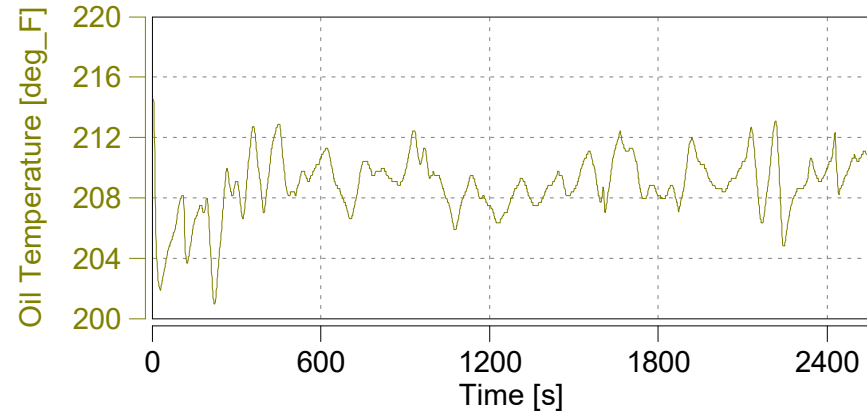
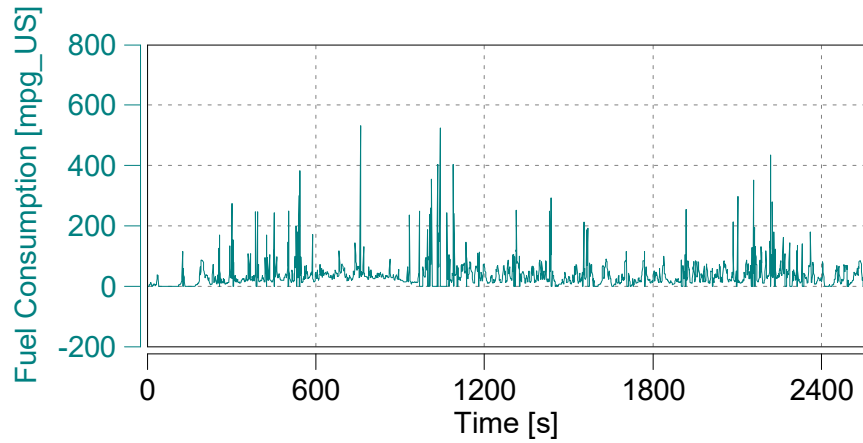
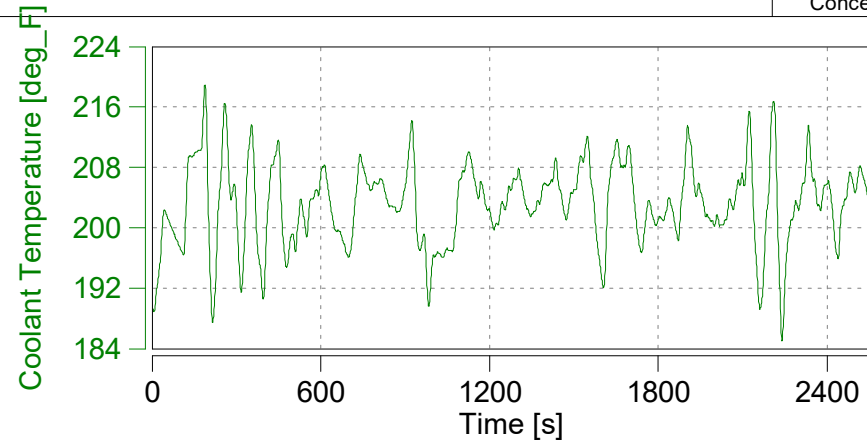
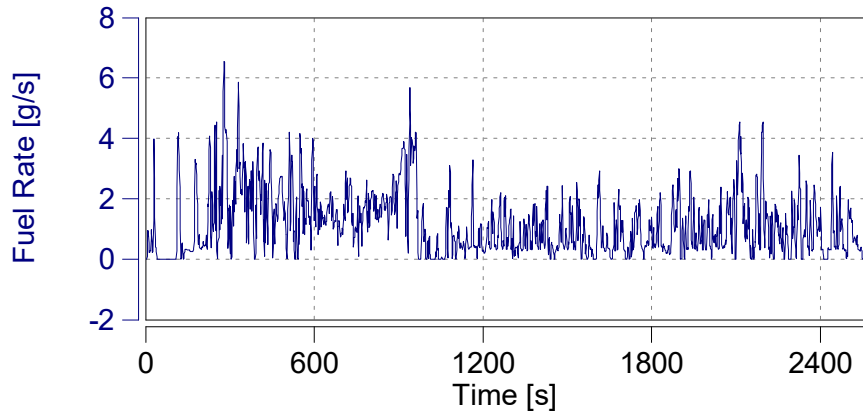
Apply Current Values



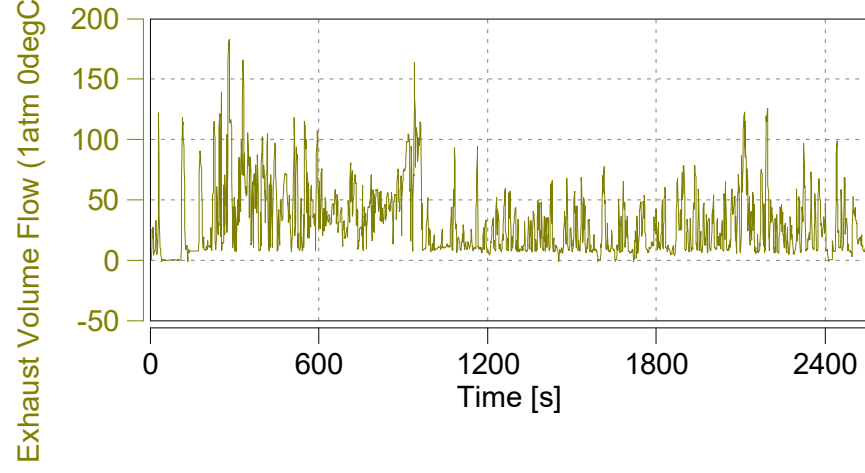
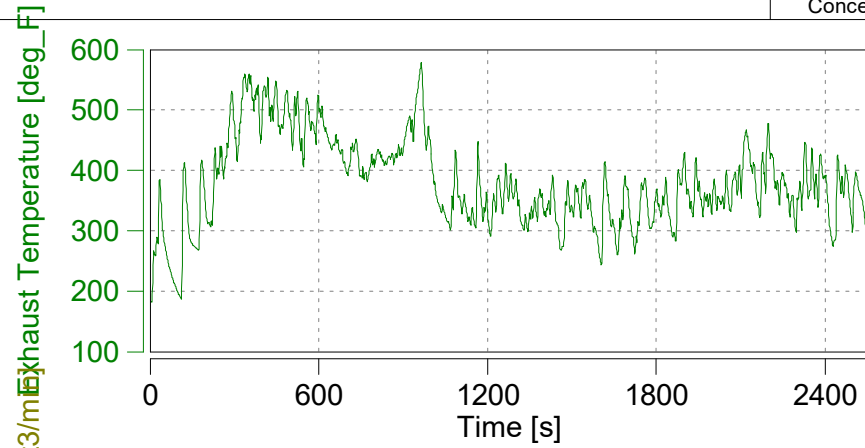
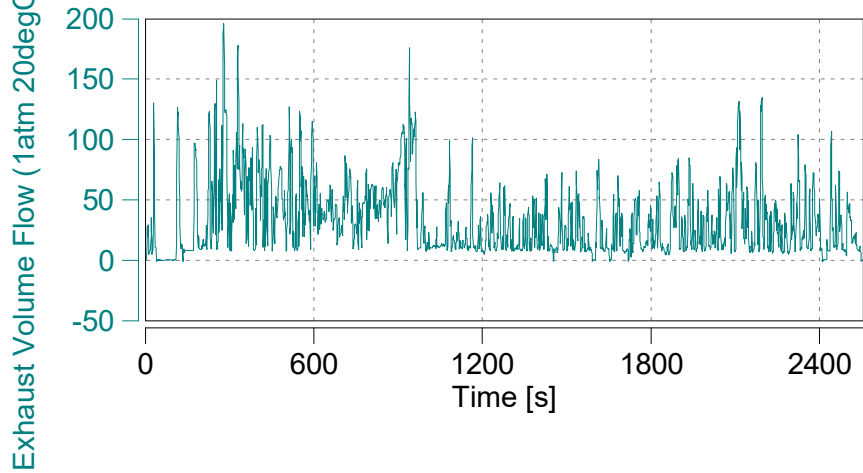
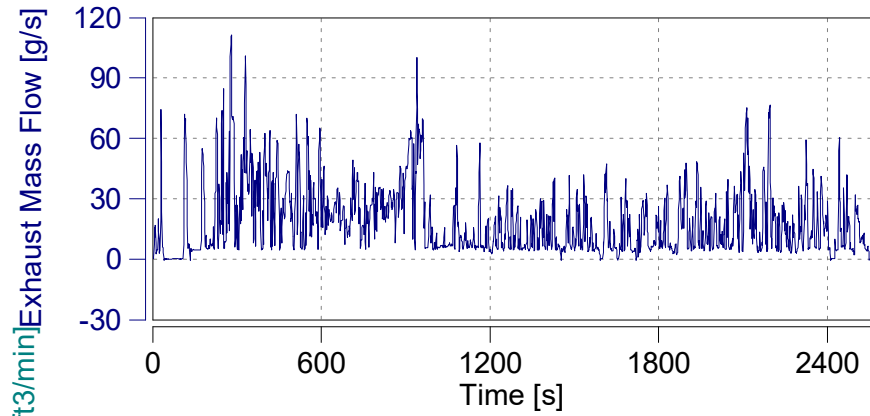


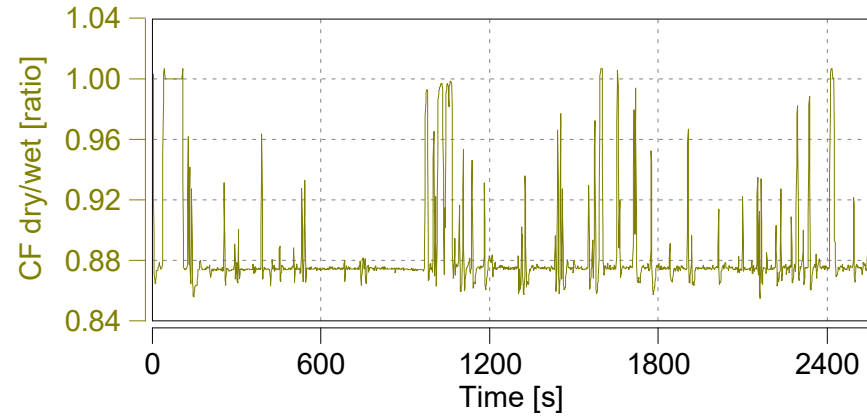
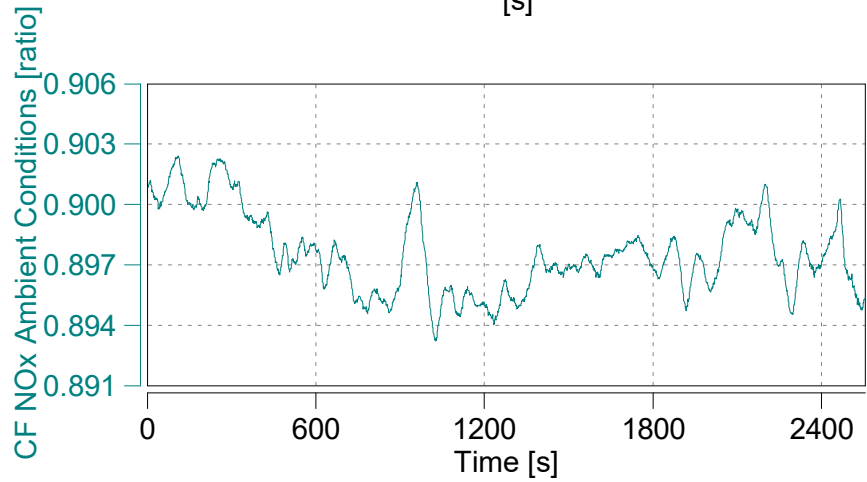
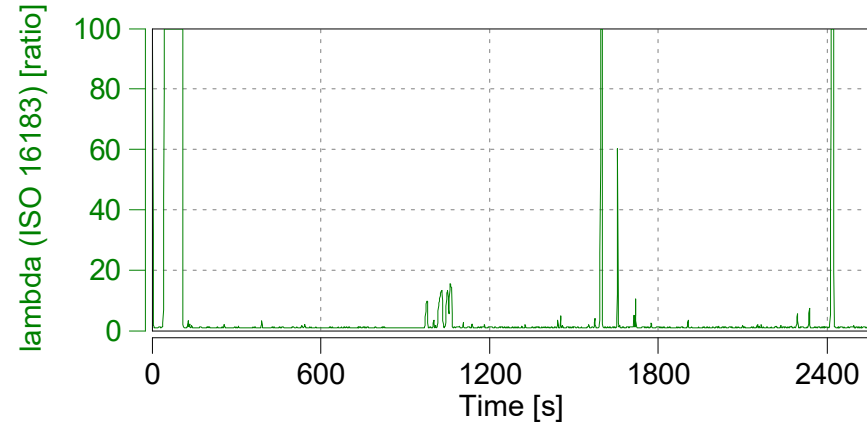
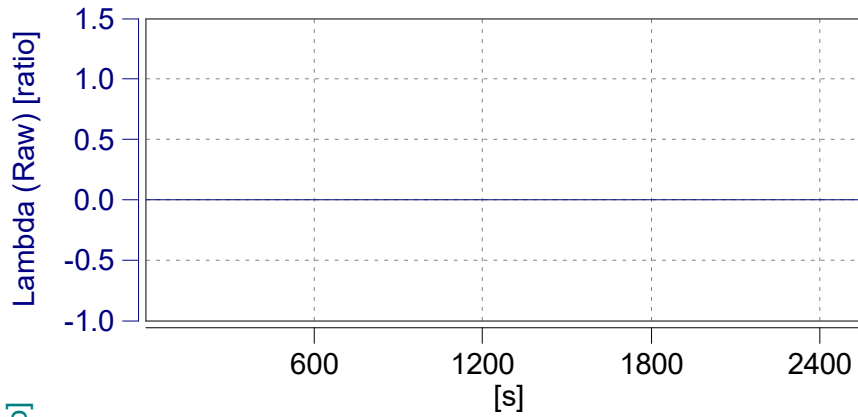


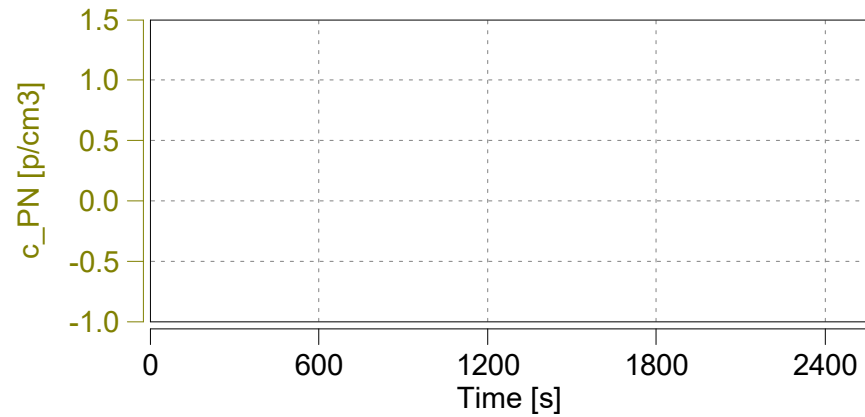
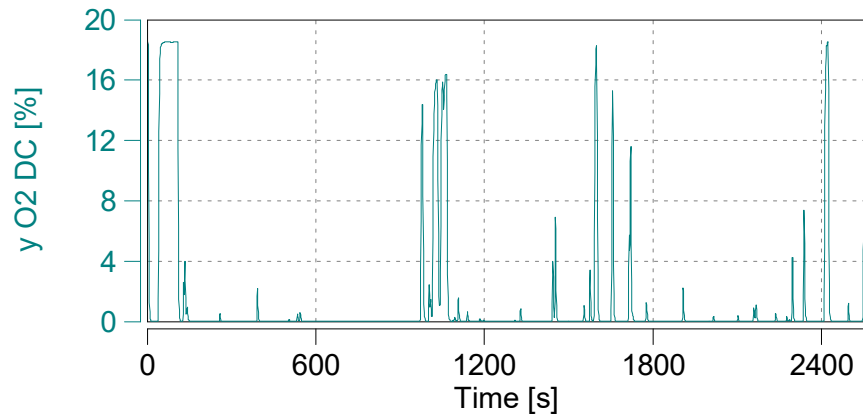
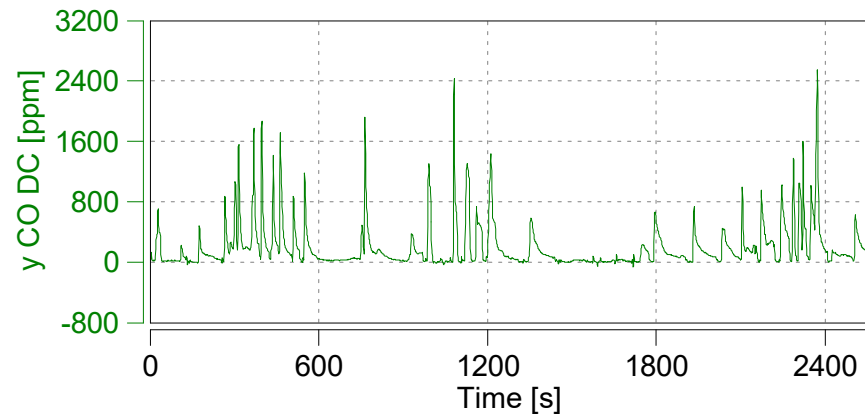
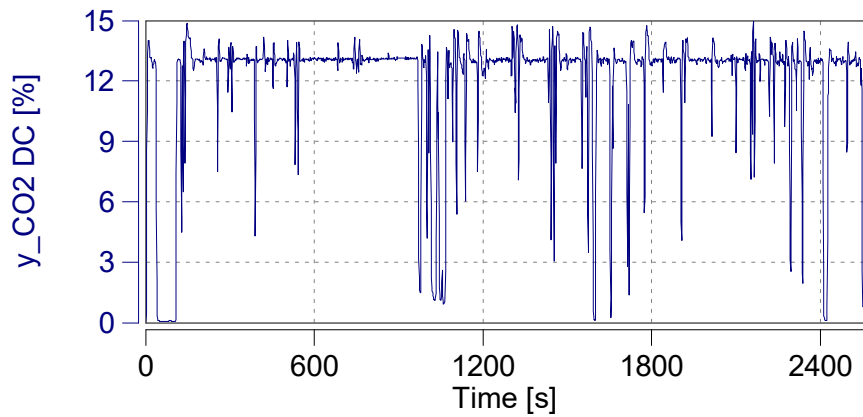


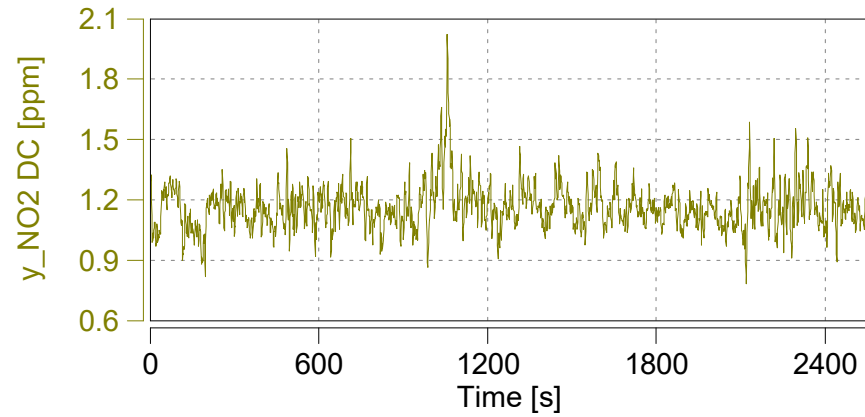
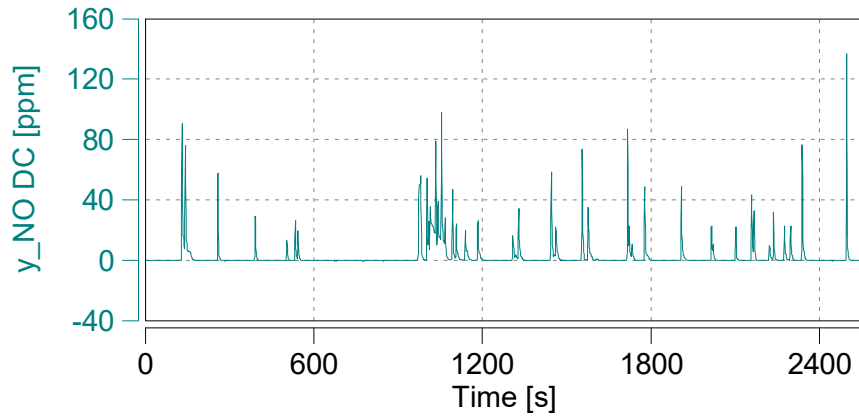
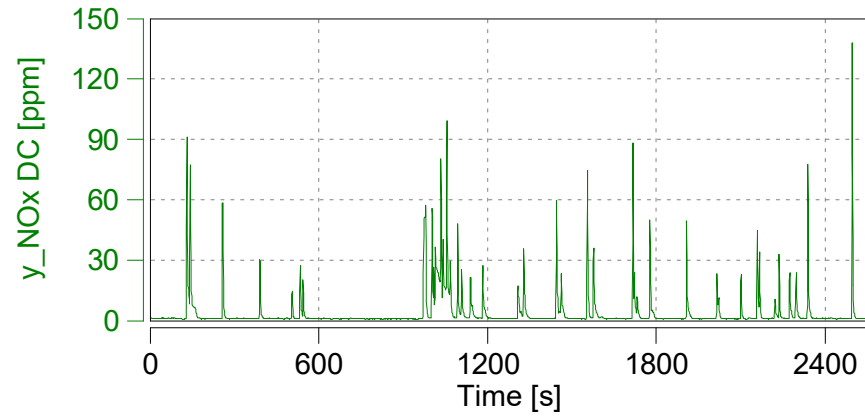
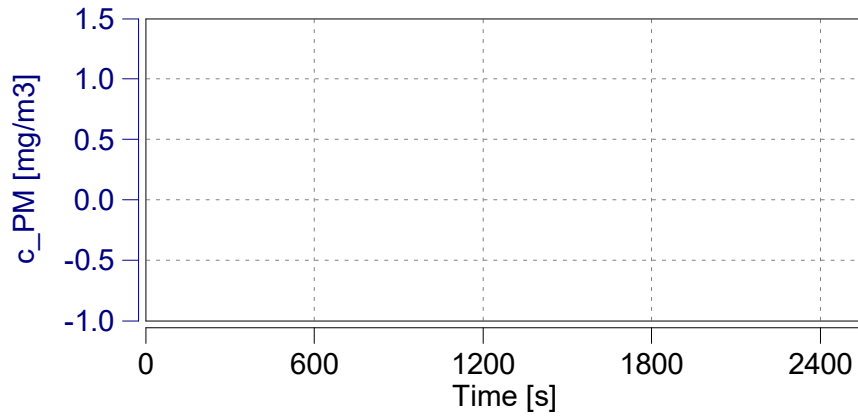


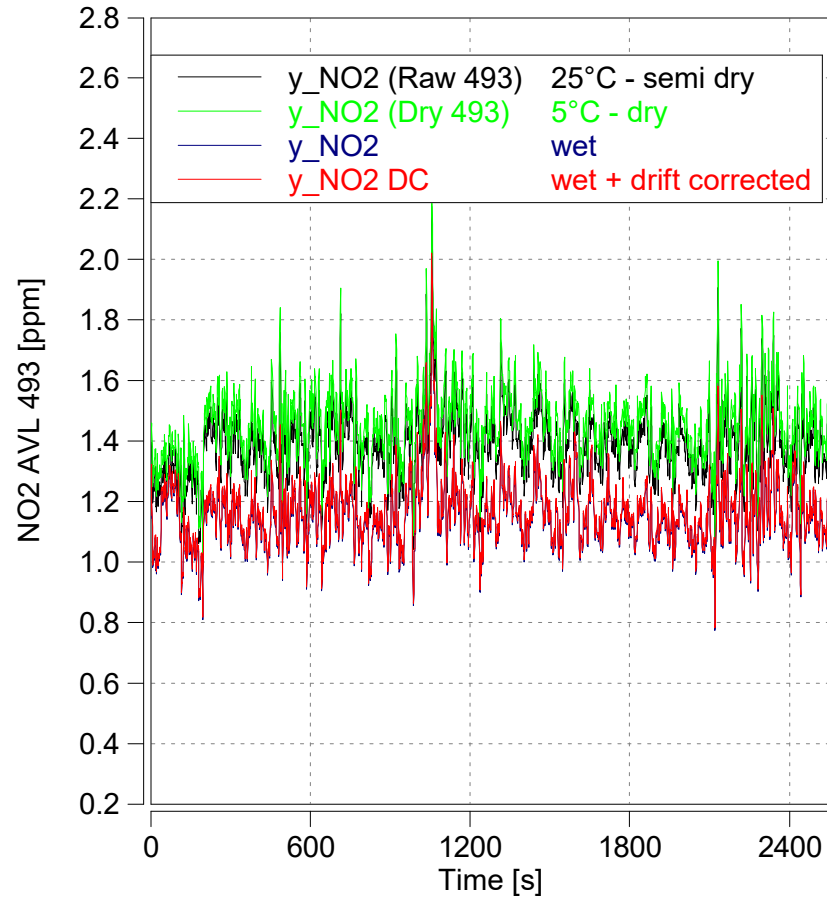
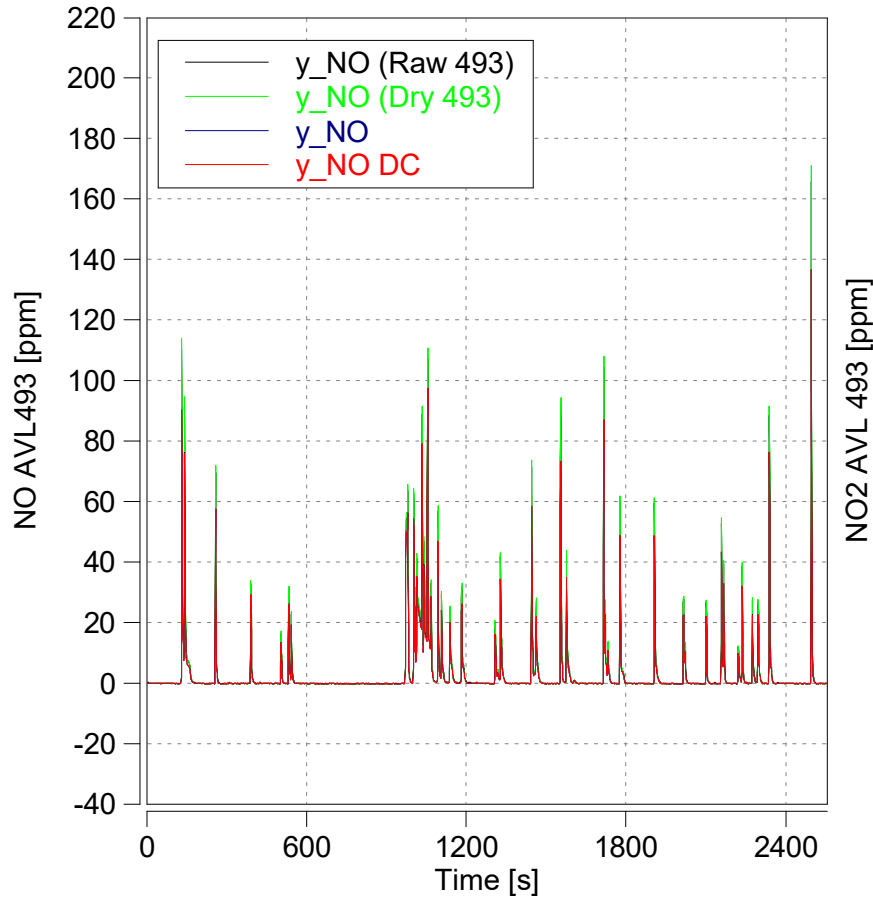


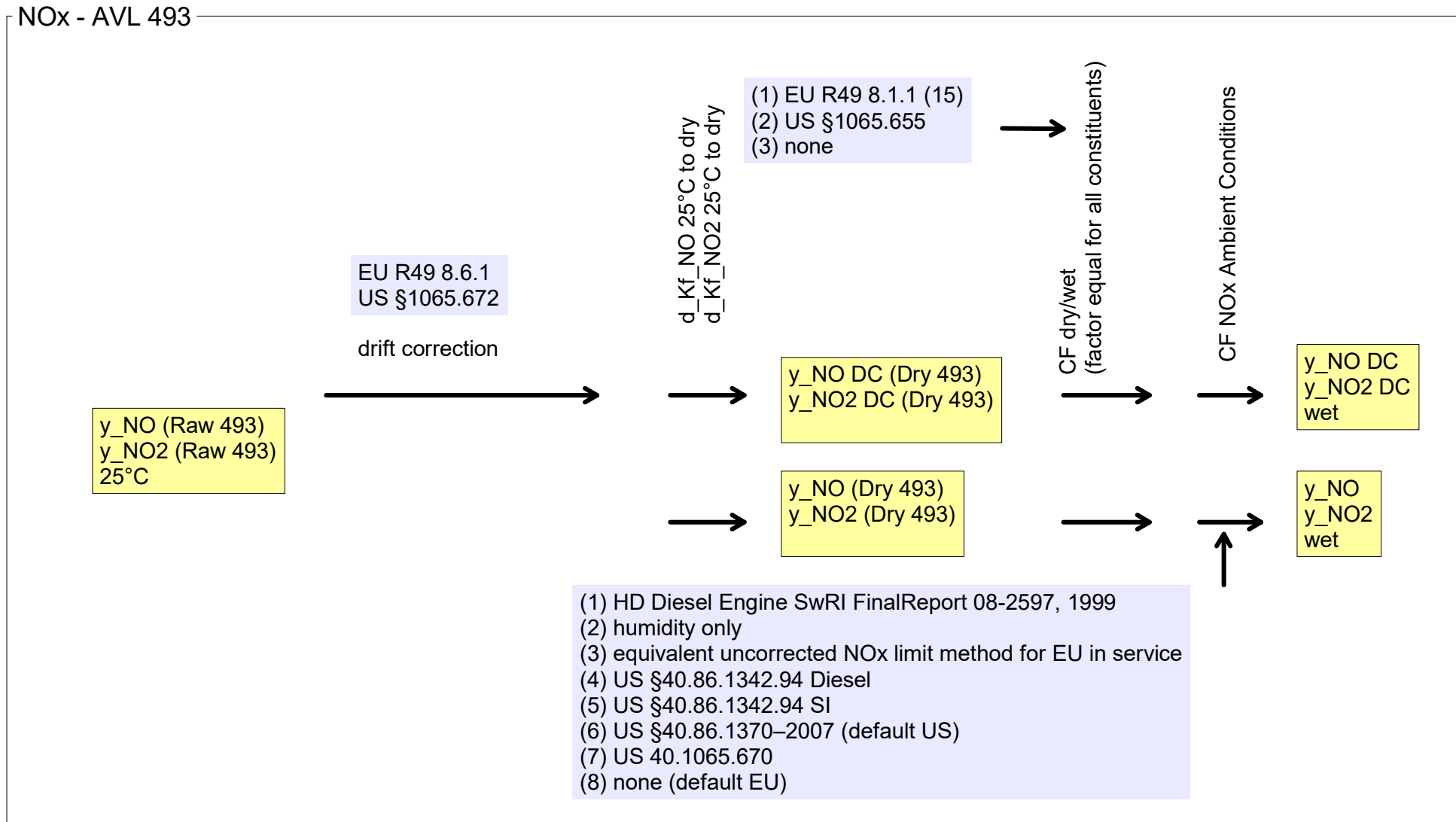


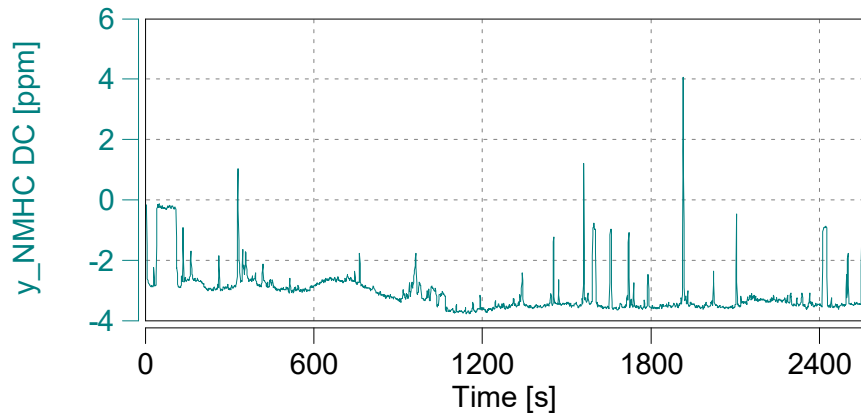
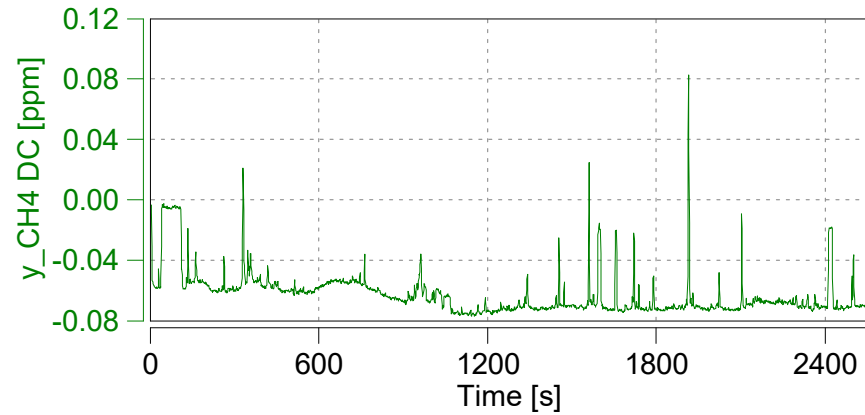
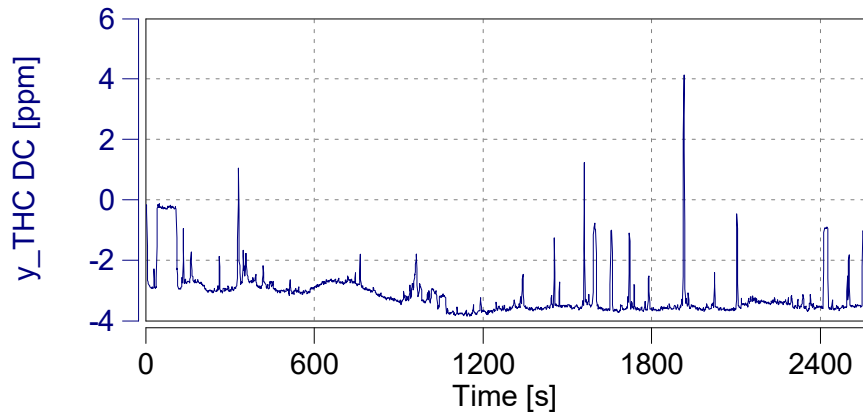


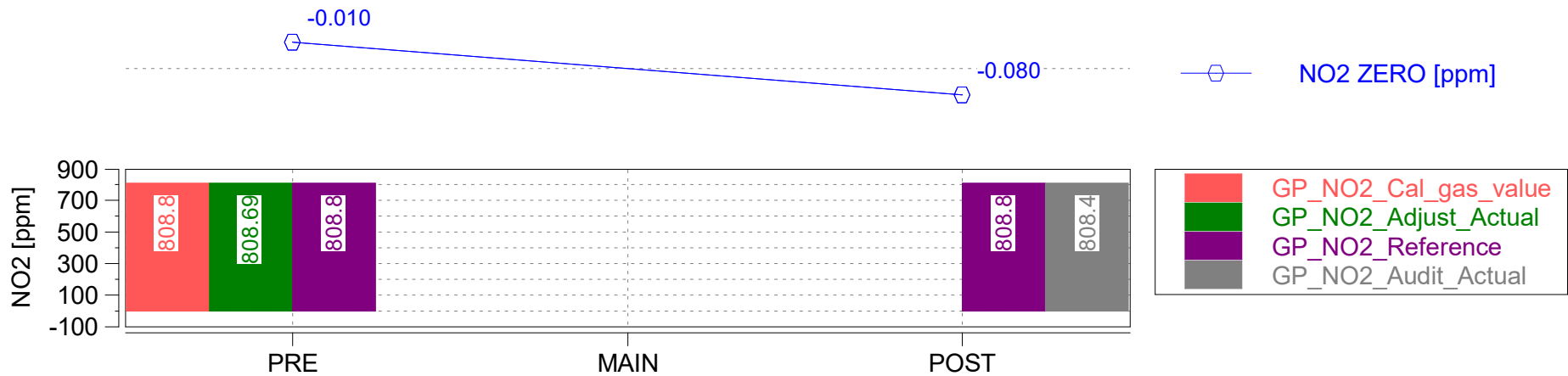
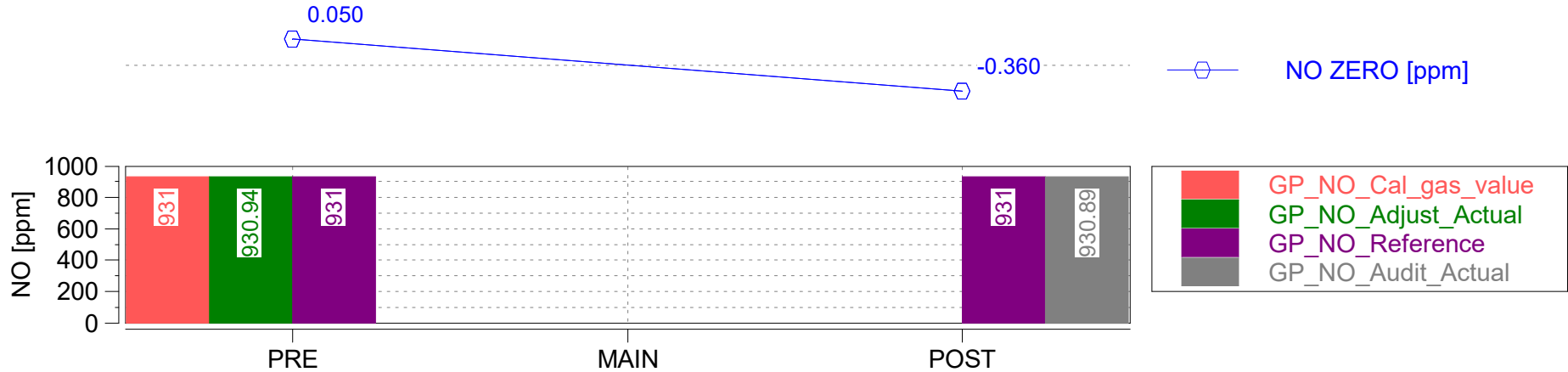




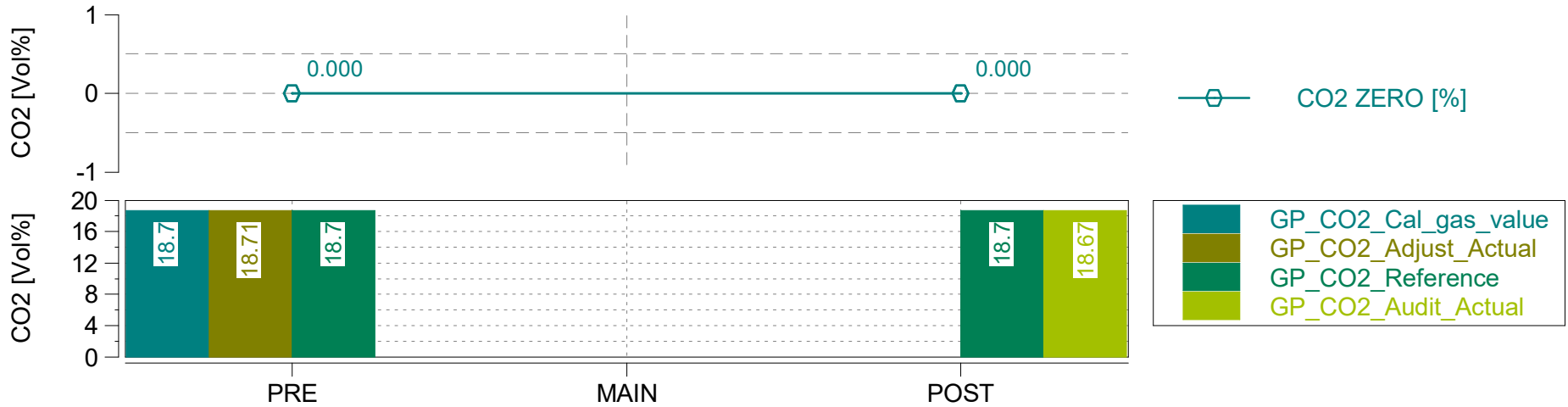
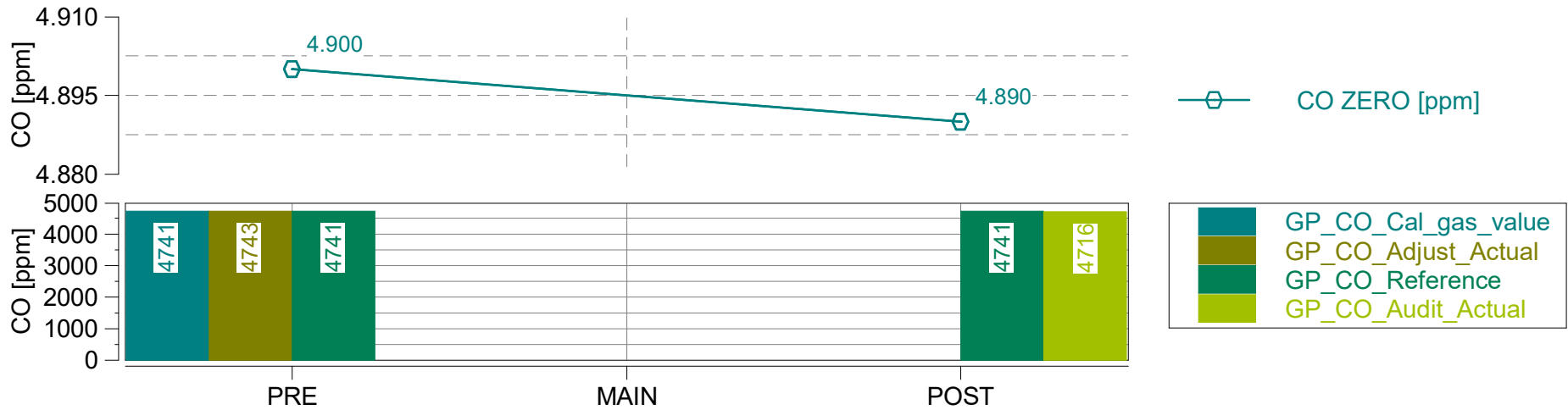


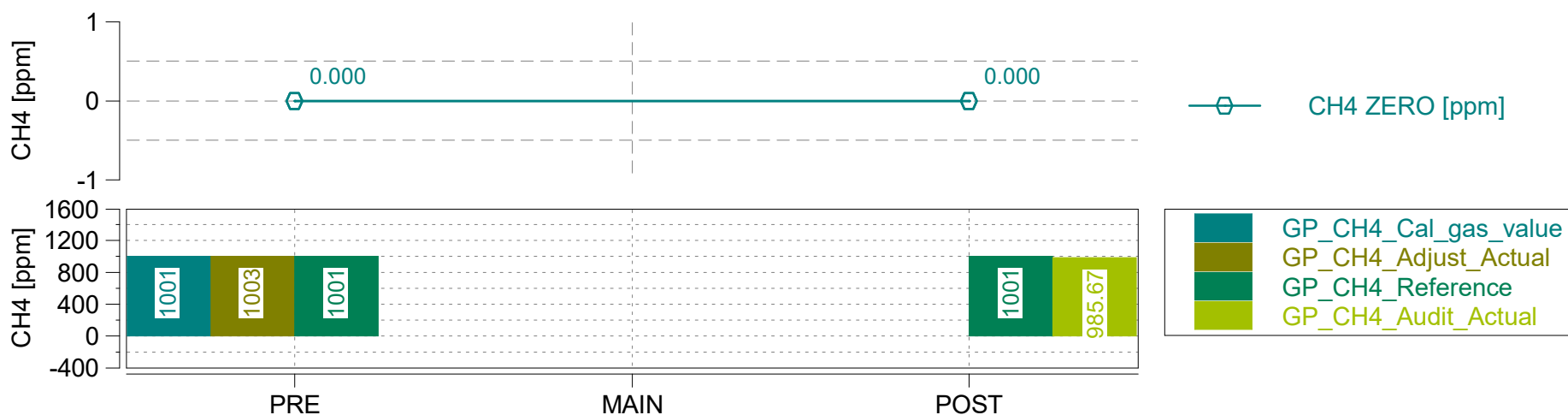
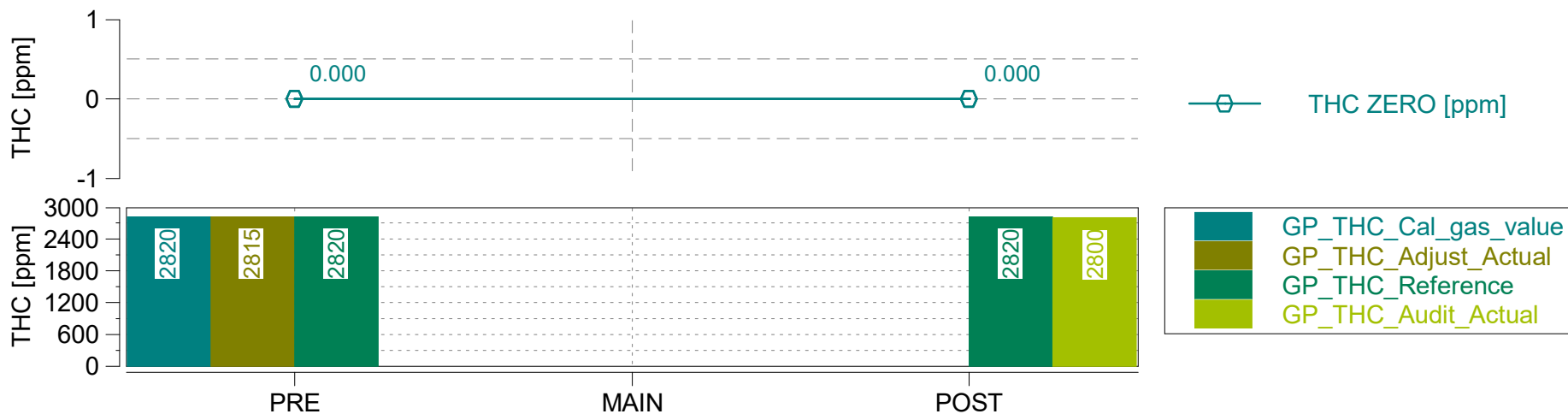














§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	<b>0.22</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-14
Leak Check Age [days]	0

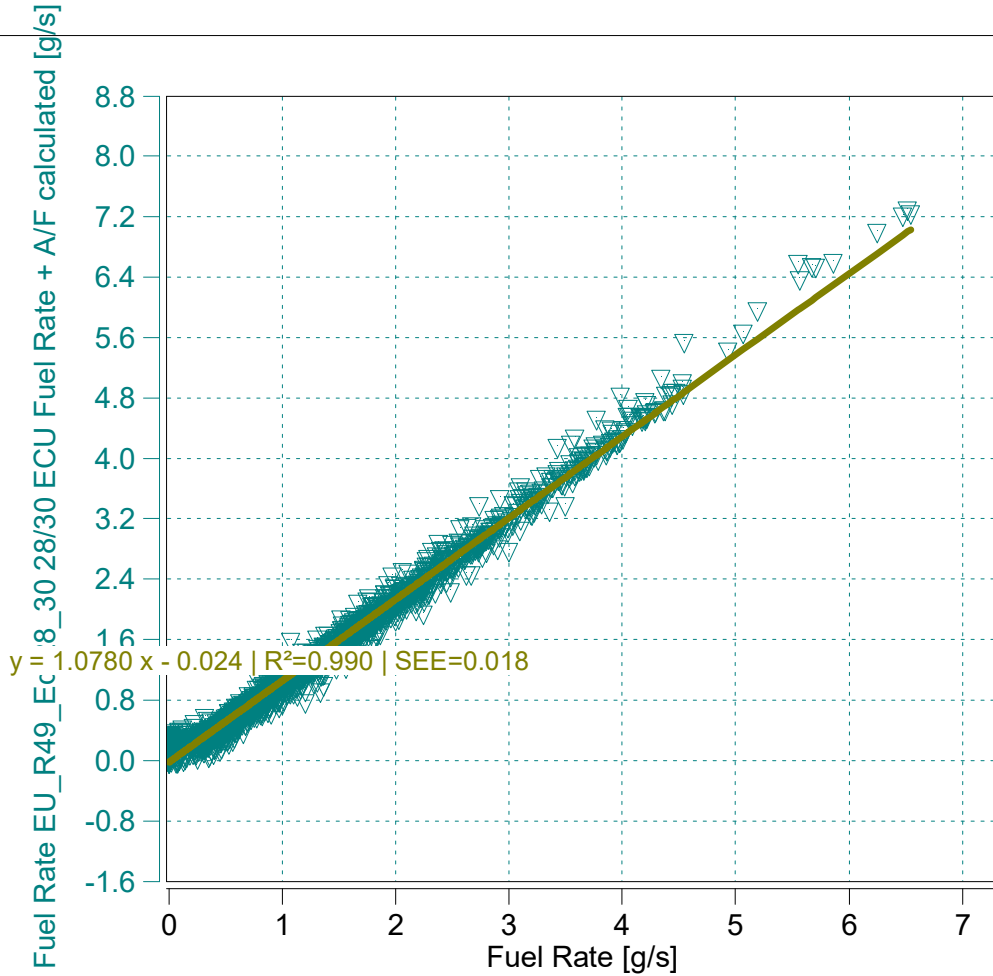
Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151



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

$y = 1.0780 x - 0.024 \mid R^2=0.990 \mid SEE=0.018$   
 $m = 1.08$  (0.9 - 1.1 recommended)  
 $R^2 = 0.99$  (min 0.9 mandatory)

Data from - to [% of Maximum]



Trip Duration	2396.00	s
Trip Duration (a)	2396.00	s
Trip Distance	17.90	mi
Trip Distance (a)	17.90	mi
Trip Fuel Cons. (b)	3.76	kg
Trip Fuel Cons. (ab)	3.76	kg
Trip Fuel Cons. EU (ac)	4.04	kg
Trip Fuel Cons. US (ac)	4.04	kg
Trip Fuel Economy (b)	13.46	mpg_US
Trip Fuel Economy (ab)	13.46	mpg_US
Trip Fuel Economy EU (ac)	12.53	mpg_US
Trip Fuel Economy US (ac)	12.54	mpg_US
Trip Fuel Economy GGE (b)	13.46	mpg_US
Trip Fuel Economy GGE (ab)	13.46	mpg_US
Trip Fuel Economy EU GGE (ac)	12.53	mpg_US
Trip Fuel Economy US GGE (ac)	12.54	mpg_US
Trip Av. Eng. Speed	1249.82	rpm
Trip Av. Torque	96.46	lbft
Trip Av. Power	32.22	hp
Trip Work		
Trip Work (a)	21.44	hphr
Trip Exhaust Mass	62.09	kg
Trip Exhaust Mass EU (ac)	58.03	kg
Trip Exhaust Mass US (ac)	58.10	kg
Trip Av. Amb. Temperature	54.37	deg_F
Trip Av. Humidity	42.27	%
Trip Av. GPS Altitude	505.91	m
Fuel Type	Petrol (E10)	

ave THC	0.20251	ppm
ave NMHC	0.19846	ppm
ave CH4	0.00405	ppm
ave CO	144.57899	ppm
ave CO2	10.92924	%
ave NOx	2.78379	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	0.17108	g
tot NMHC	0.15825	g
tot CH4	0.00379	g
tot CO	13.36818	g
tot CO2	12261.65270	g
tot NO (d)	0.07058	g
tot NO2	0.08406	g
tot NOx	0.13874	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	26.89285	mi/hr
Trip Distance Share Urban	20.55903	% distanc
Trip Distance Share Rural	75.25913	% distanc
Trip Distance Share Motorway	4.18183	% distanc

BS CO2	571.80949	g/hphr
BS CO	0.62341	g/hphr
BS THC	0.00798	g/hphr
BS NMHC	0.00738	g/hphr
BS CH4	0.00018	g/hphr
BS NO (d)	0.00329	g/hphr
BS NO2	0.00392	g/hphr
BS NOx	0.00647	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	685.05878	g/mi
DS CO	0.74688	g/mi
DS THC	0.00956	g/mi
DS NMHC	0.00884	g/mi
DS CH4	0.00021	g/mi
DS NO (d)	0.00394	g/mi
DS NO2	0.00470	g/mi
DS NOx	0.00775	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	3258.19138	g/kg
FS CO	3.55222	g/kg
FS THC	0.04546	g/kg
FS NMHC	0.04205	g/kg
FS CH4	0.00101	g/kg
FS NO (d)	0.01875	g/kg
FS NO2	0.02234	g/kg
FS NOx	0.03687	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

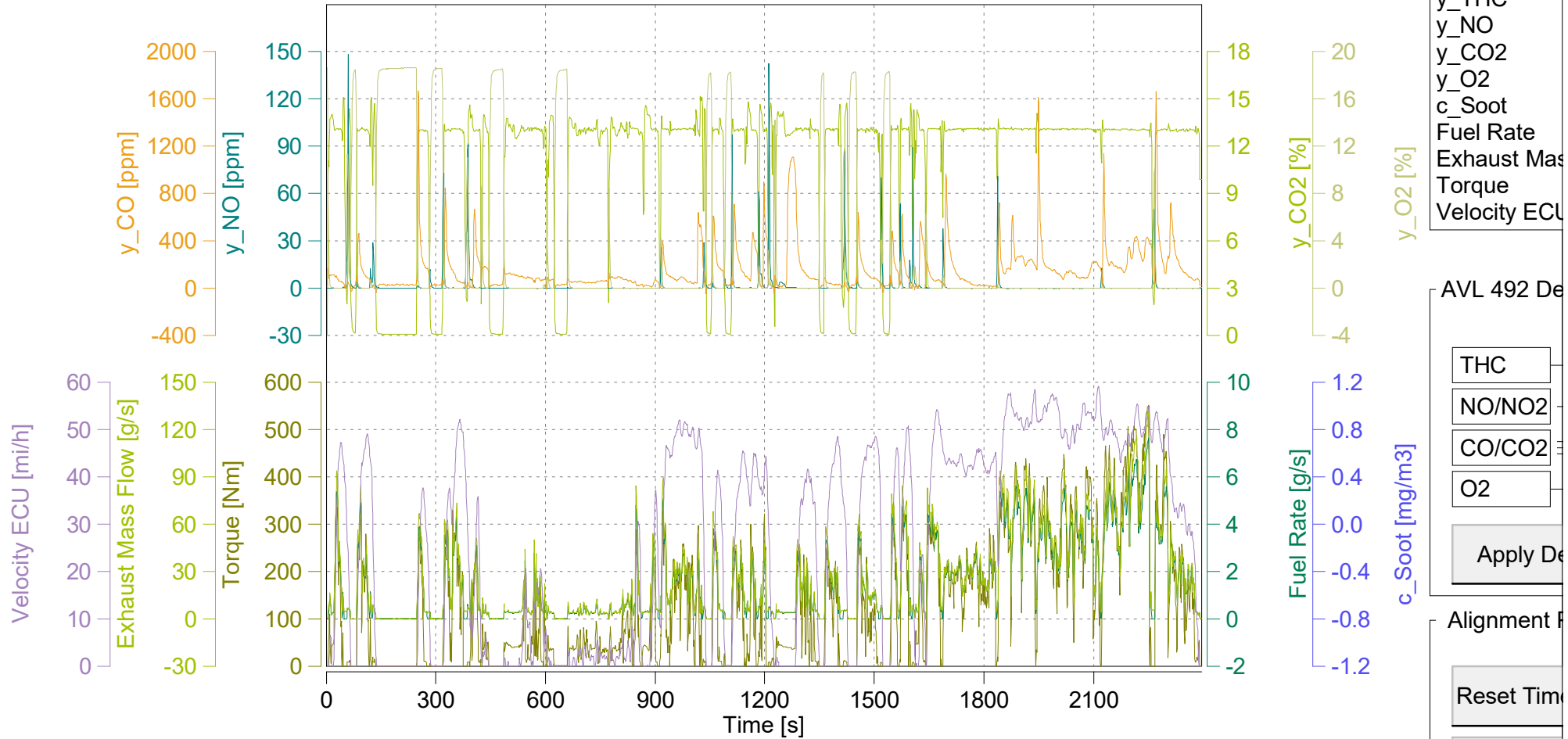


Trip Duration	2396.00	s
Trip Duration (a)	2396.00	s
Trip Distance	17.90	mi
Trip Distance (a)	17.90	mi
Trip Fuel Cons. (b)	3.76	kg
Trip Fuel Cons. (ab)	3.76	kg
Trip Fuel Cons. EU (ac)	4.04	kg
Trip Fuel Cons. US (ac)	4.04	kg
Trip Fuel Economy (b)	13.46	mpg_US
Trip Fuel Economy (ab)	13.46	mpg_US
Trip Fuel Economy EU (ac)	12.53	mpg_US
Trip Fuel Economy US (ac)	12.54	mpg_US
Trip Fuel Economy GGE (b)	13.46	mpg_US
Trip Fuel Economy GGE (ab)	13.46	mpg_US
Trip Fuel Economy EU GGE (ac)	12.53	mpg_US
Trip Fuel Economy US GGE (ac)	12.54	mpg_US
Trip Av. Eng. Speed	1249.82	rpm
Trip Av. Torque	96.46	lbft
Trip Av. Power	32.22	hp
Trip Work		
Trip Work (a)	21.44	hphr
Trip Exhaust Mass	62.09	kg
Trip Exhaust Mass EU (ac)	58.03	kg
Trip Exhaust Mass US (ac)	58.10	kg
Trip Av. Amb. Temperature	54.37	deg_F
Trip Av. Humidity	42.27	%
Trip Av. GPS Altitude	505.91	m
Fuel Type	Petrol (E10)	

ave THC DC	0.20342	ppm
ave NMHC DC	0.19935	ppm
ave CH4 DC	0.00407	ppm
ave CO DC	140.66129	ppm
ave CO2 DC	10.93509	%
ave NOx DC	2.75228	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	0.17185	g
tot NMHC DC	0.15896	g
tot CH4 DC	0.00381	g
tot CO DC	13.15548	g
tot CO2 DC	12268.21324	g
tot NO DC (d)	0.06997	g
tot NO2 DC	0.08486	g
tot NOx DC	0.13569	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	26.89285	mi/hr
Trip Distance Share Urban	20.55903	% distanc
Trip Distance Share Rural	75.25913	% distanc
Trip Distance Share Motorway	4.18183	% distanc

BS CO2 DC	572.11543	g/hphr
BS CO DC	0.61349	g/hphr
BS THC DC	0.00801	g/hphr
BS NMHC DC	0.00741	g/hphr
BS CH4 DC	0.00018	g/hphr
BS NO DC (d)	0.00326	g/hphr
BS NO2 DC	0.00396	g/hphr
BS NOx DC	0.00633	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	685.42532	g/mi
DS CO DC	0.73500	g/mi
DS THC DC	0.00960	g/mi
DS NMHC DC	0.00888	g/mi
DS CH4 DC	0.00021	g/mi
DS NO DC (d)	0.00391	g/mi
DS NO2 DC	0.00474	g/mi
DS NOx DC	0.00758	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	3259.93467	g/kg
FS CO DC	3.49570	g/kg
FS THC DC	0.04566	g/kg
FS NMHC DC	0.04224	g/kg
FS CH4 DC	0.00101	g/kg
FS NO DC (d)	0.01859	g/kg
FS NO2 DC	0.02255	g/kg
FS NOx DC	0.03606	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



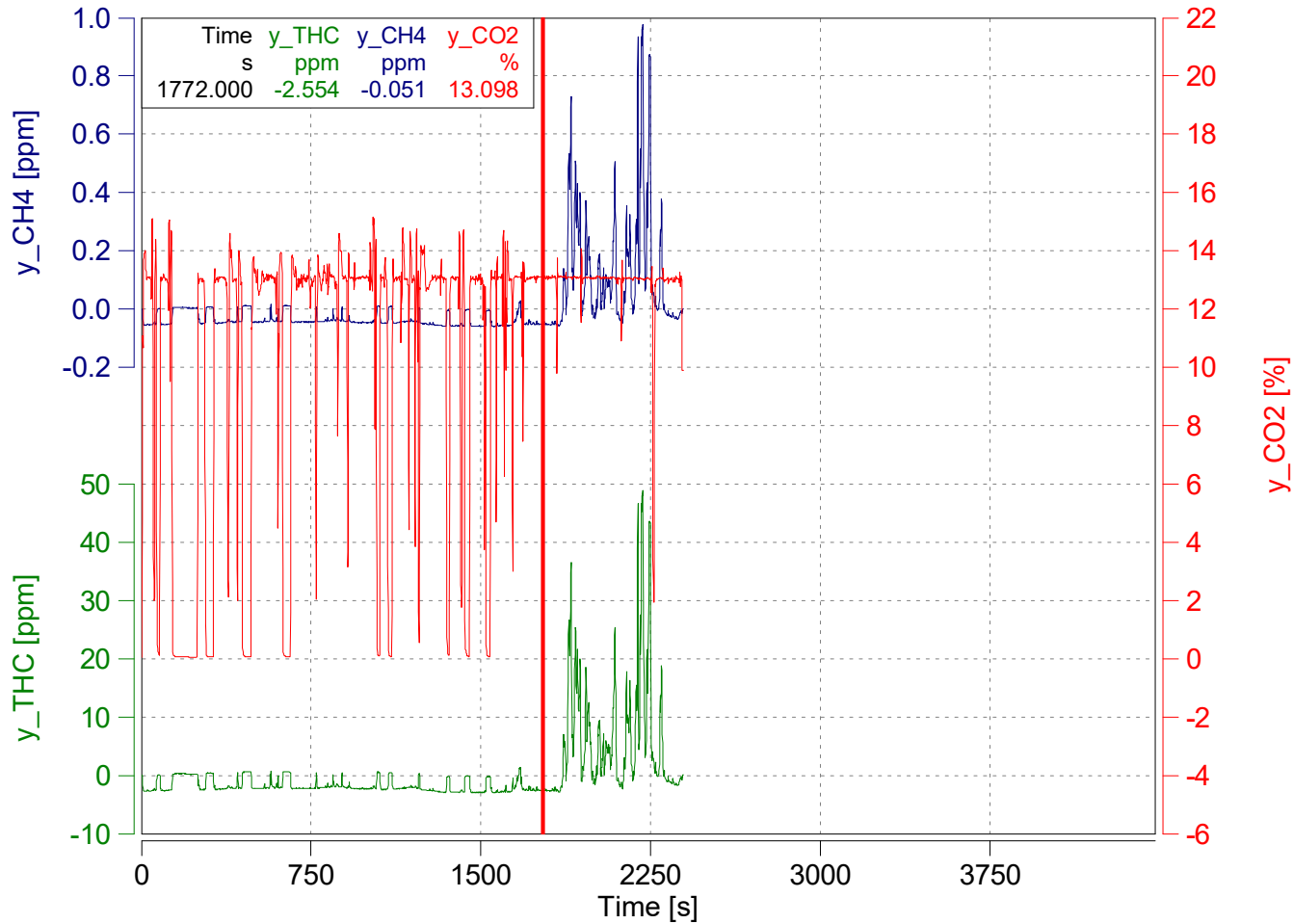
AVL 492 De

- y\_THC
- y\_NO
- y\_CO2
- y\_O2
- c\_Soot
- Fuel Rate
- Exhaust Mas
- Torque
- Velocity ECU

Apply De

Alignment F

- Concerto Version: 505 Build 61, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R4.1\_B340  
Legislation:



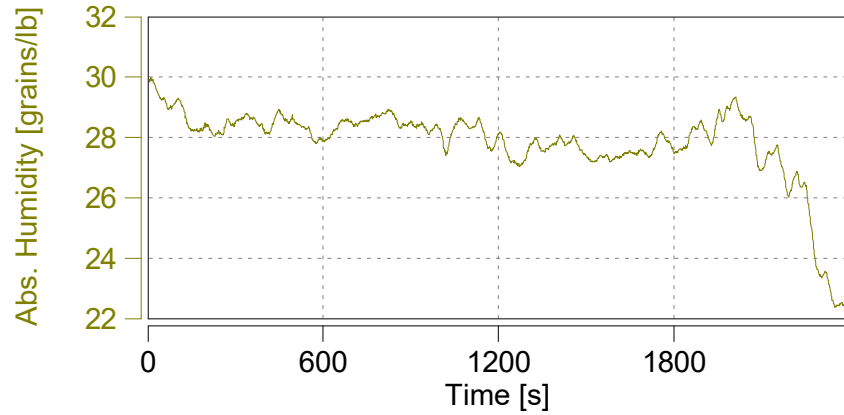
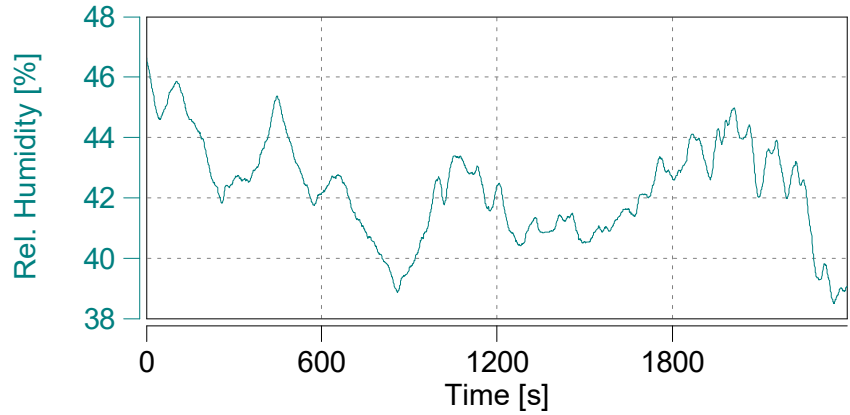
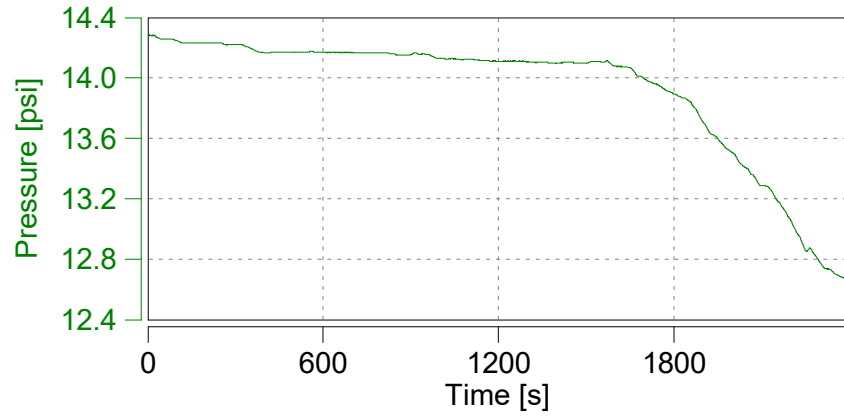
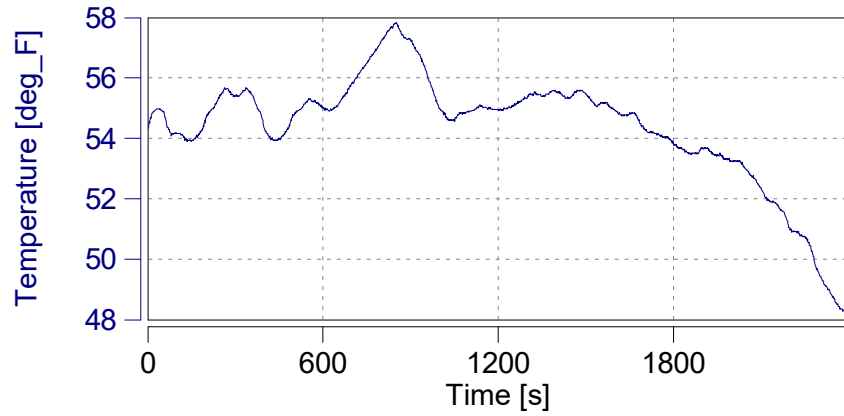
Absolute Time Shifts

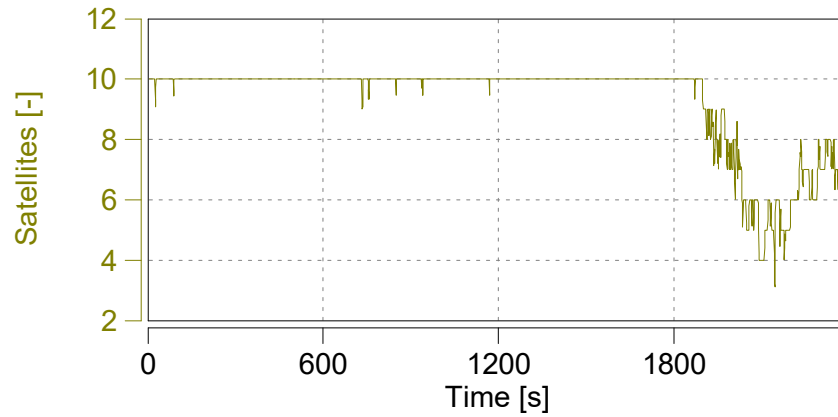
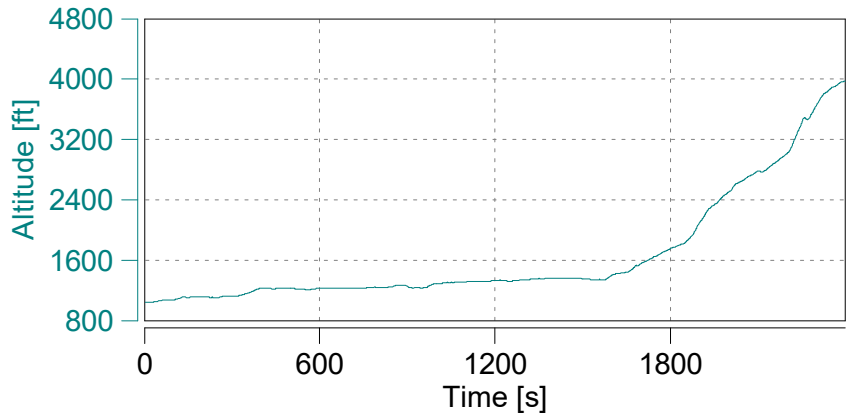
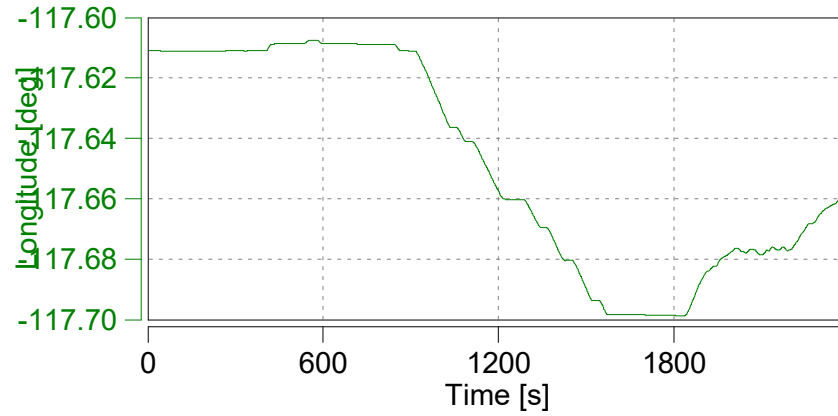
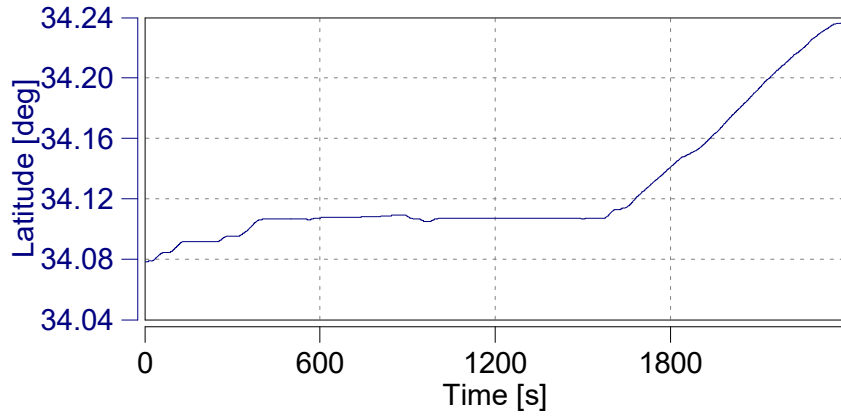
y_THC	s	0.0
y_CH4	s	0.0

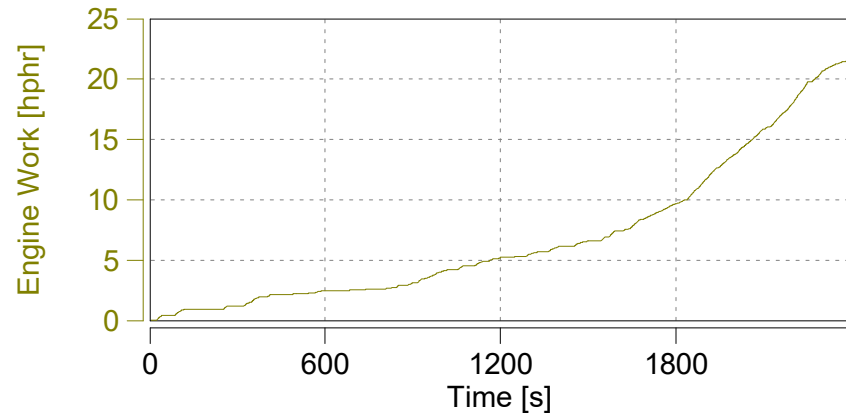
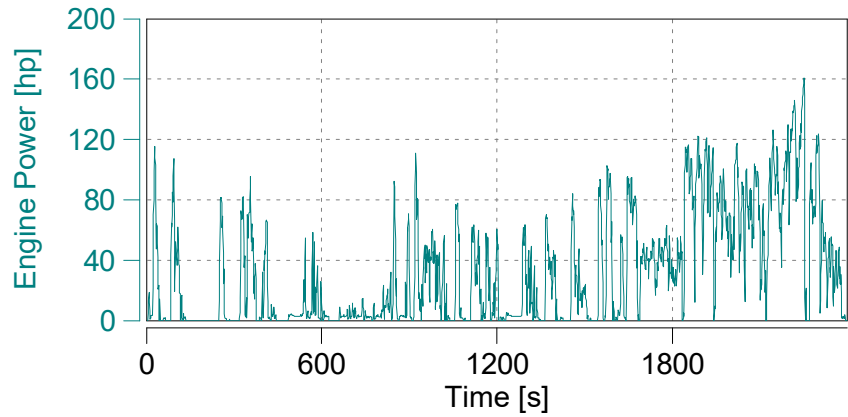
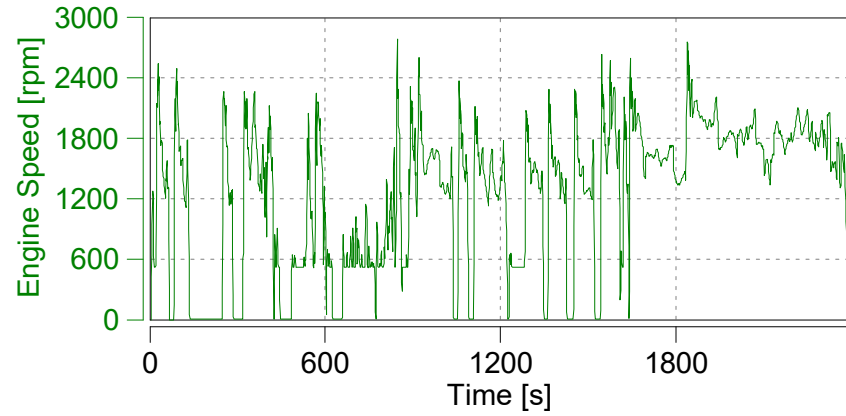
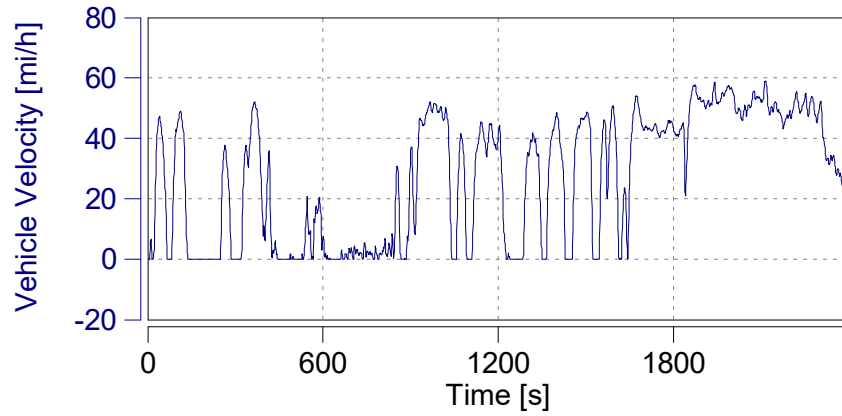
Reset Time Shifts in Plot

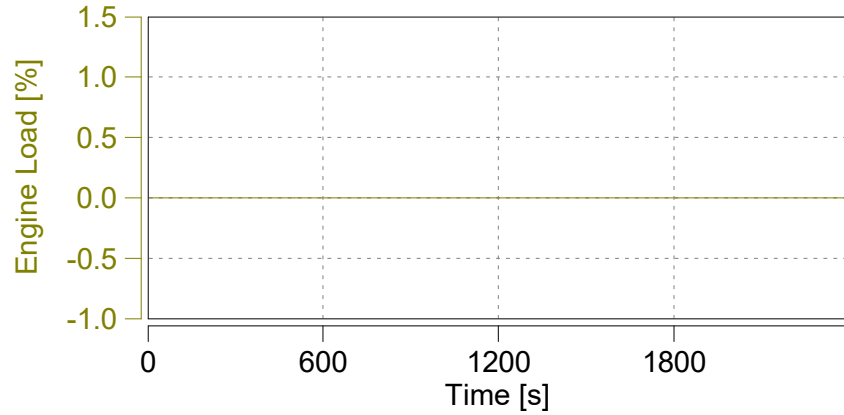
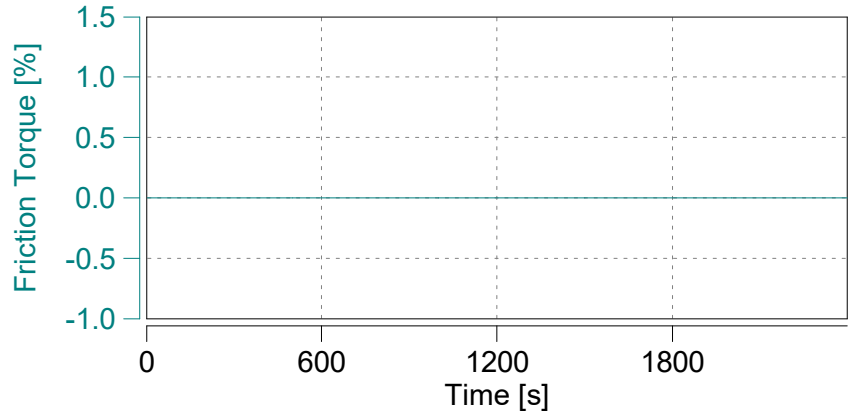
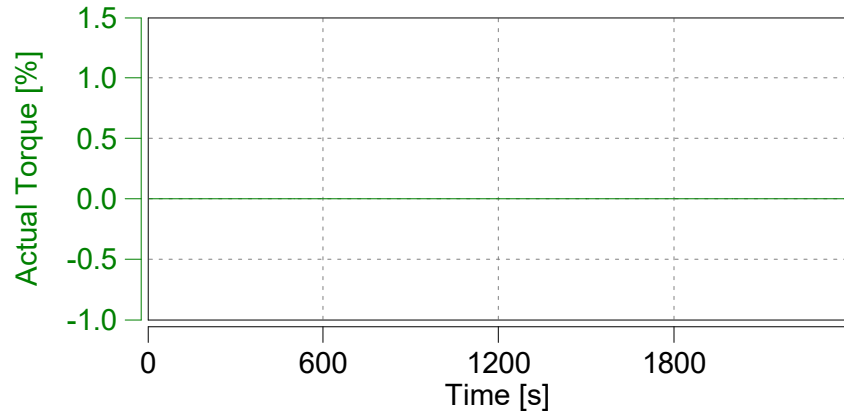
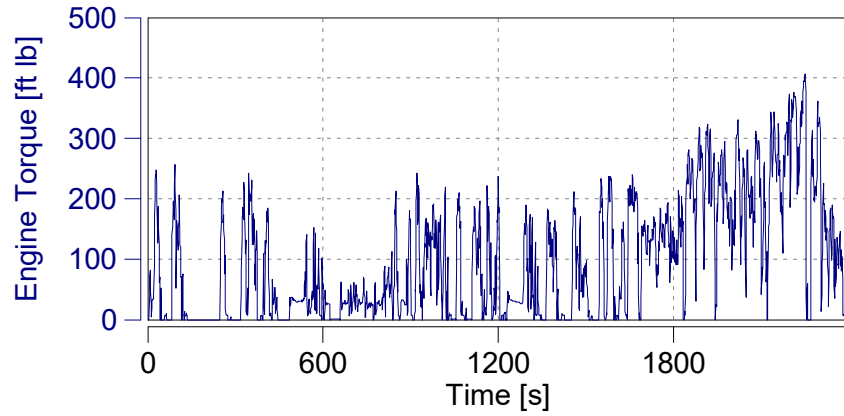
Apply Current Values

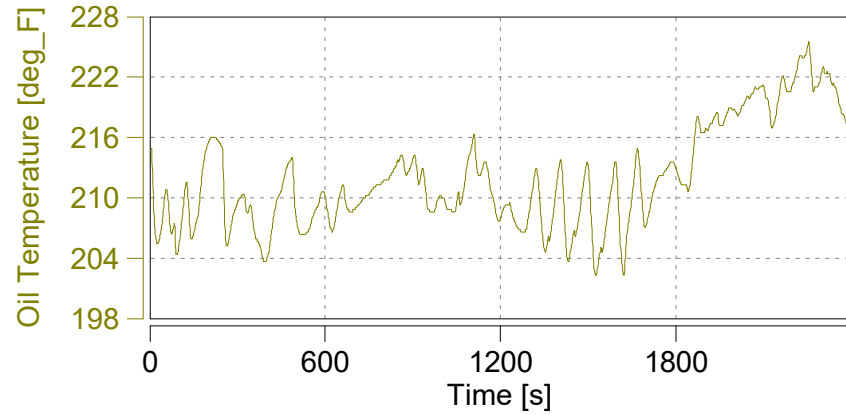
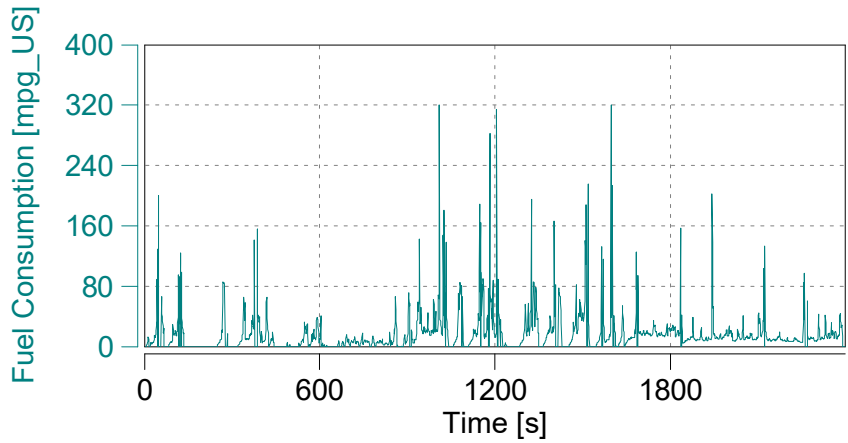
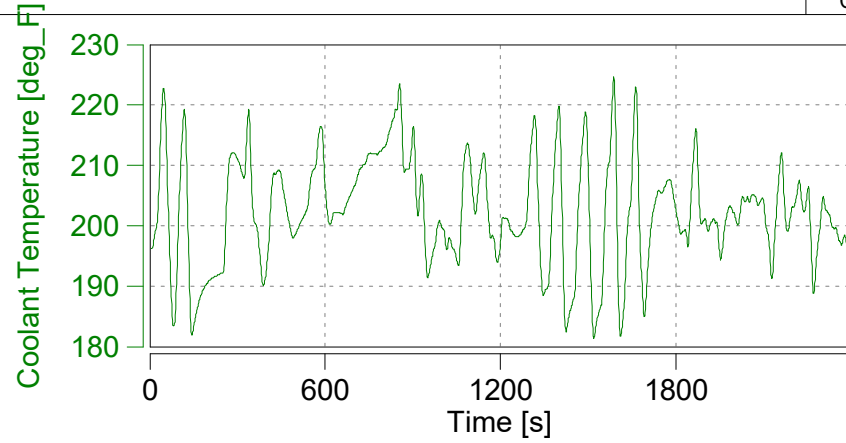
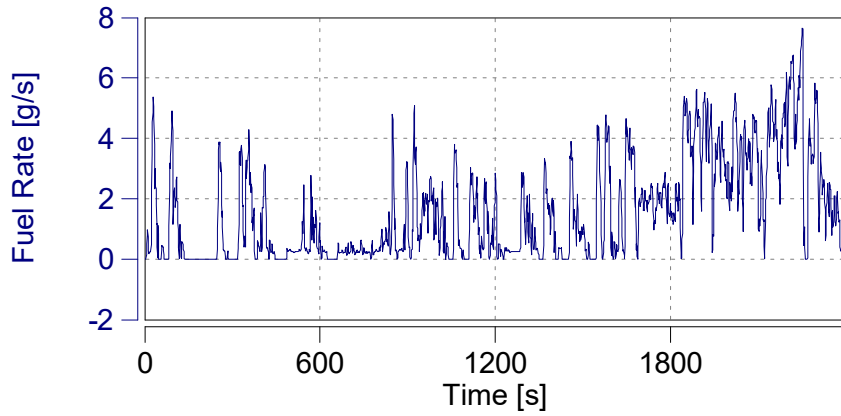


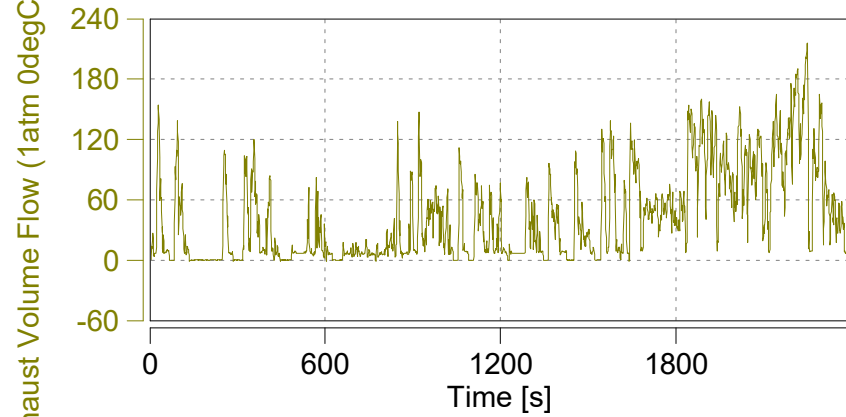
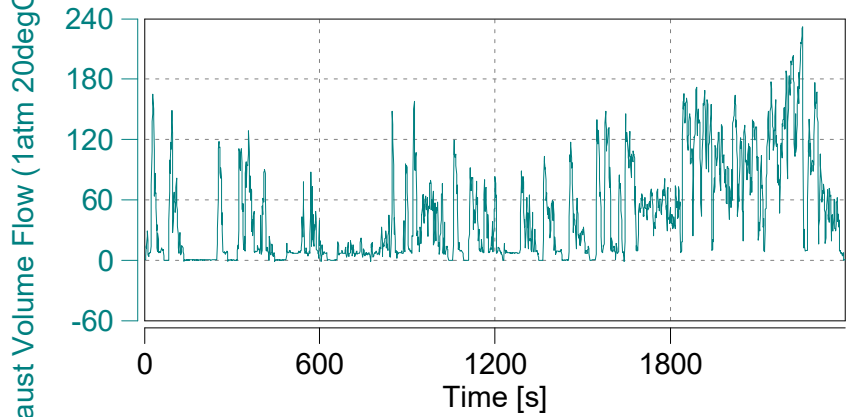
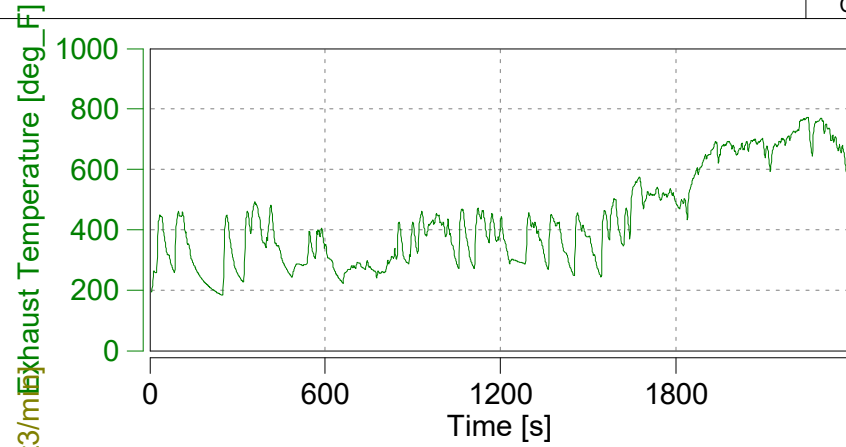
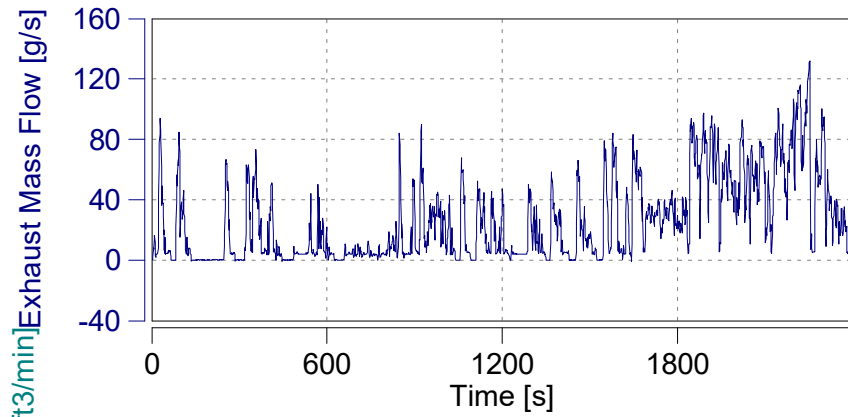


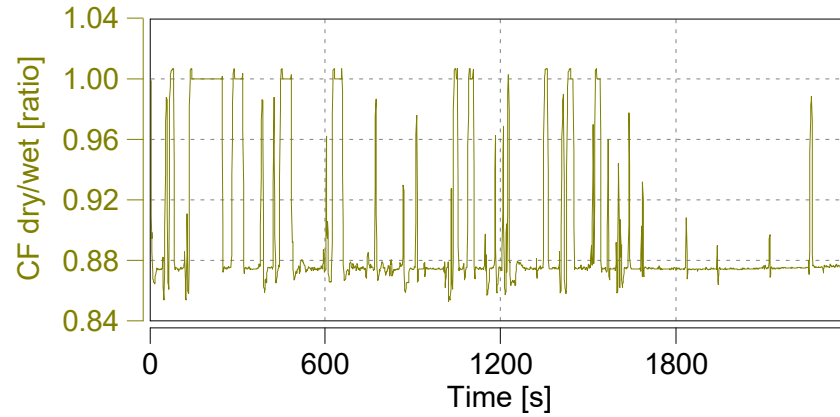
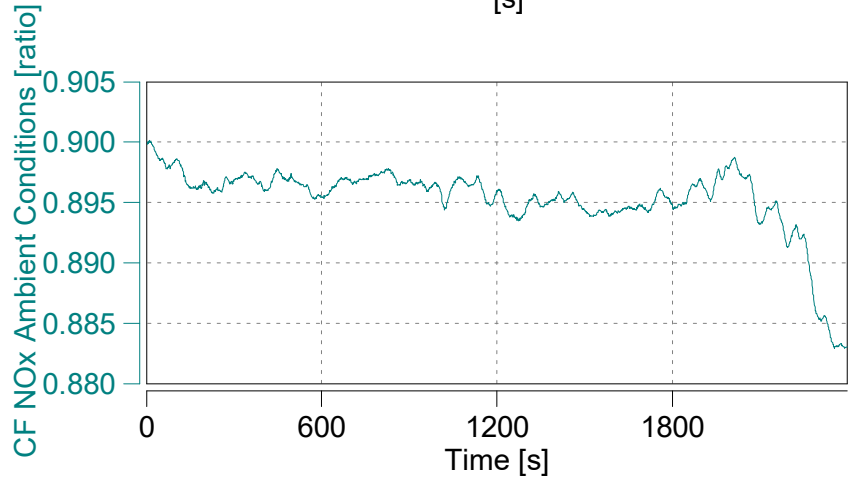
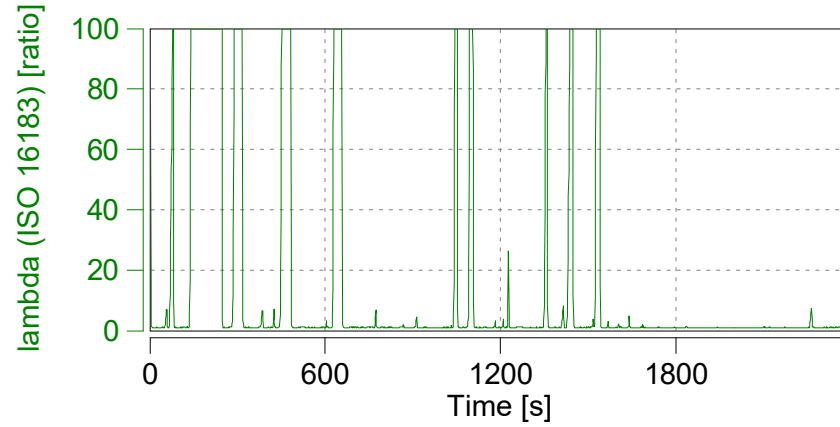
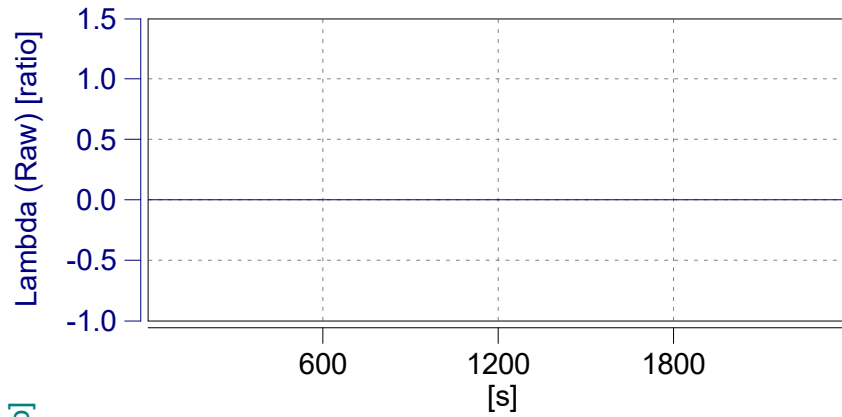


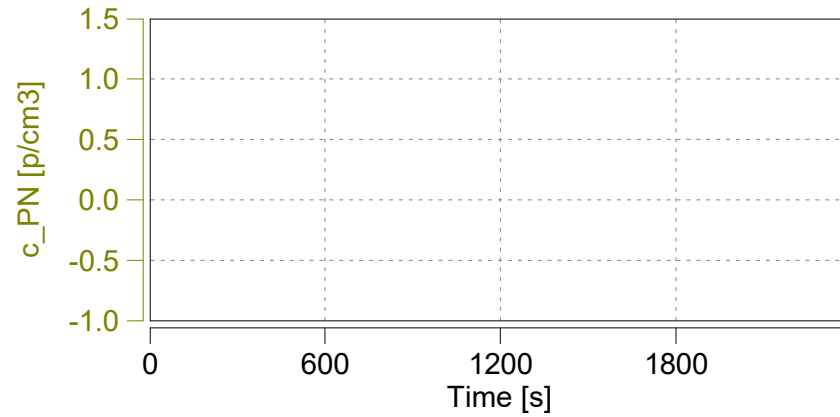
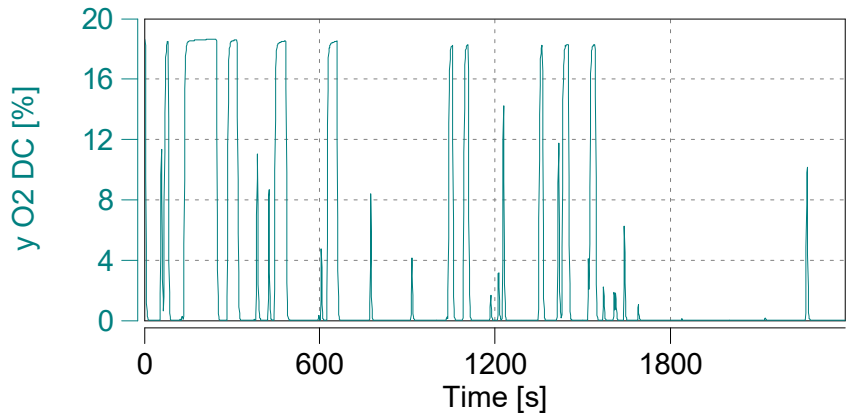
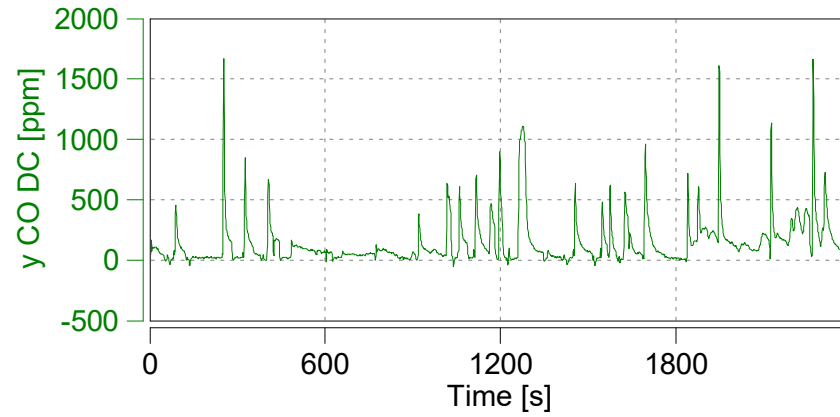
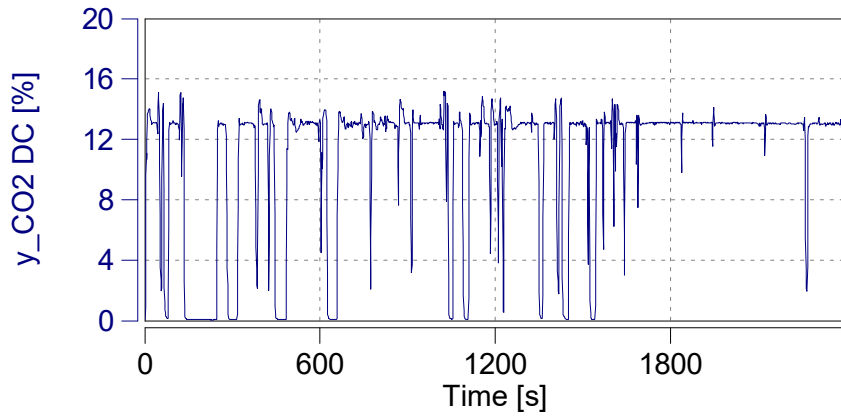




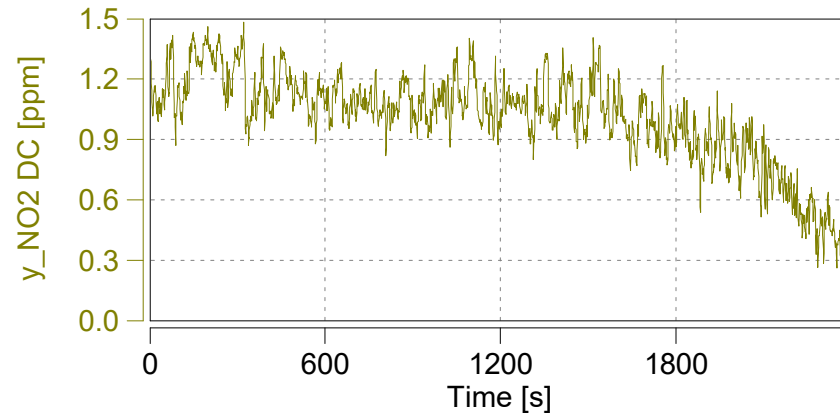
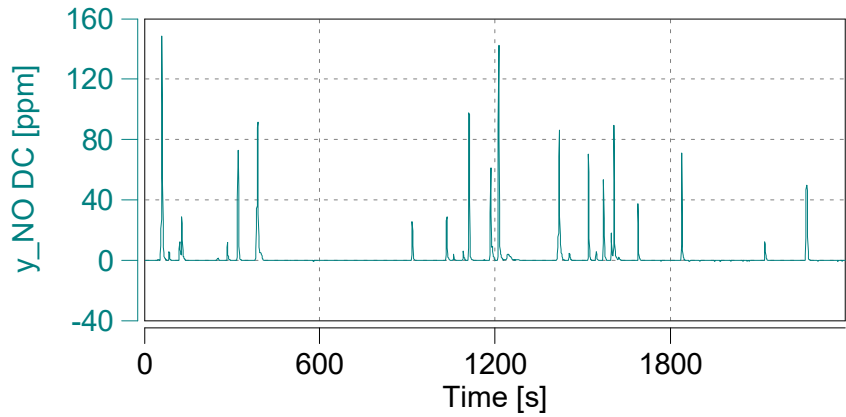
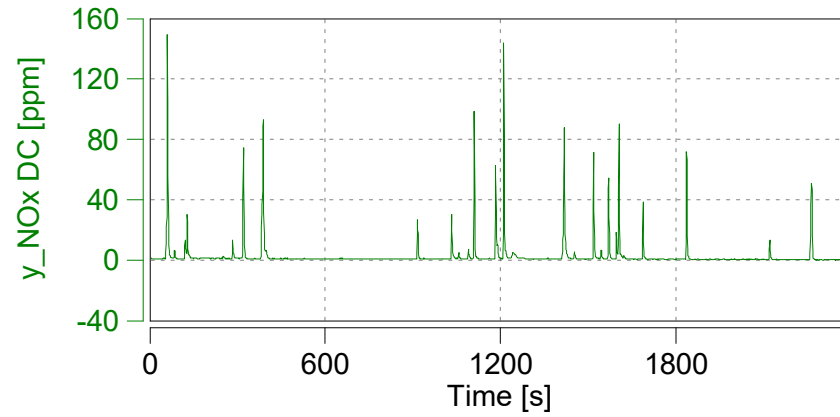
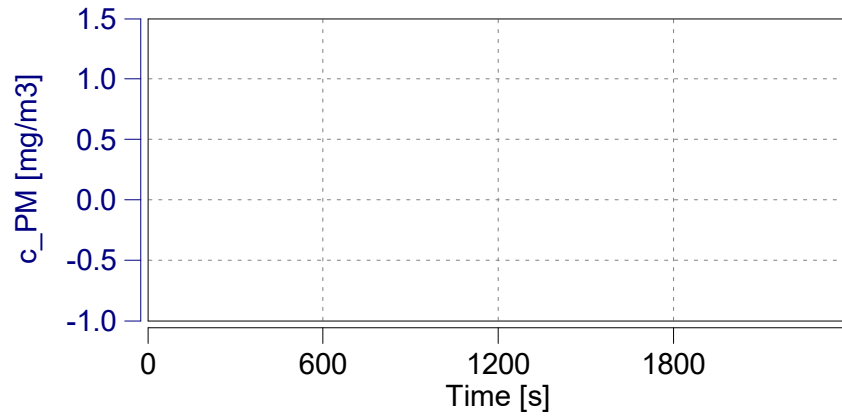


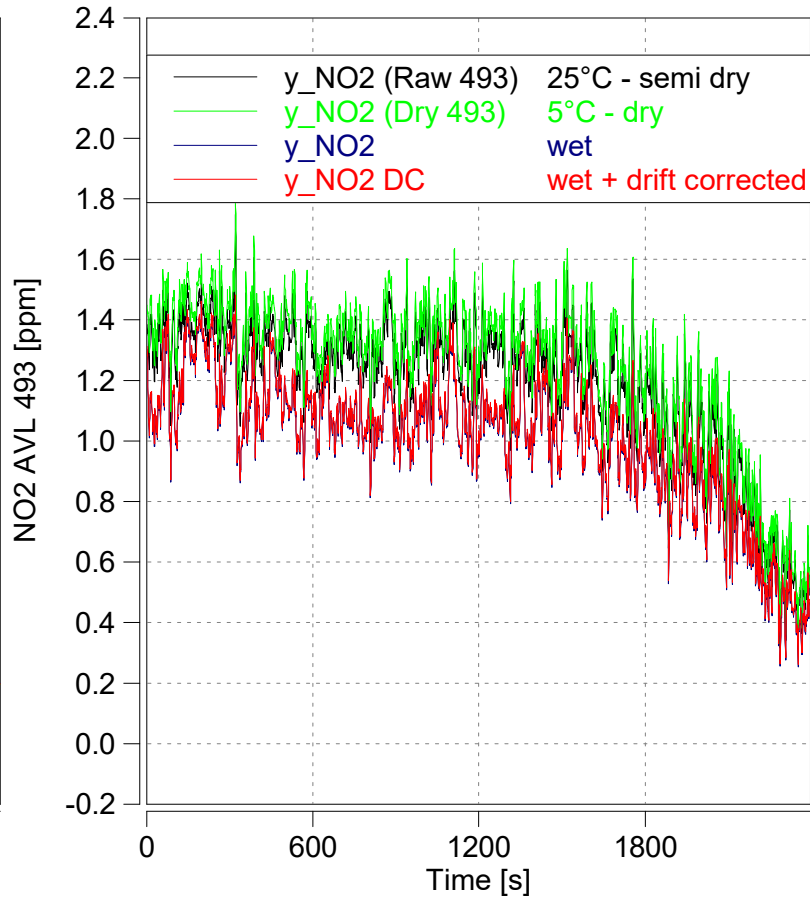
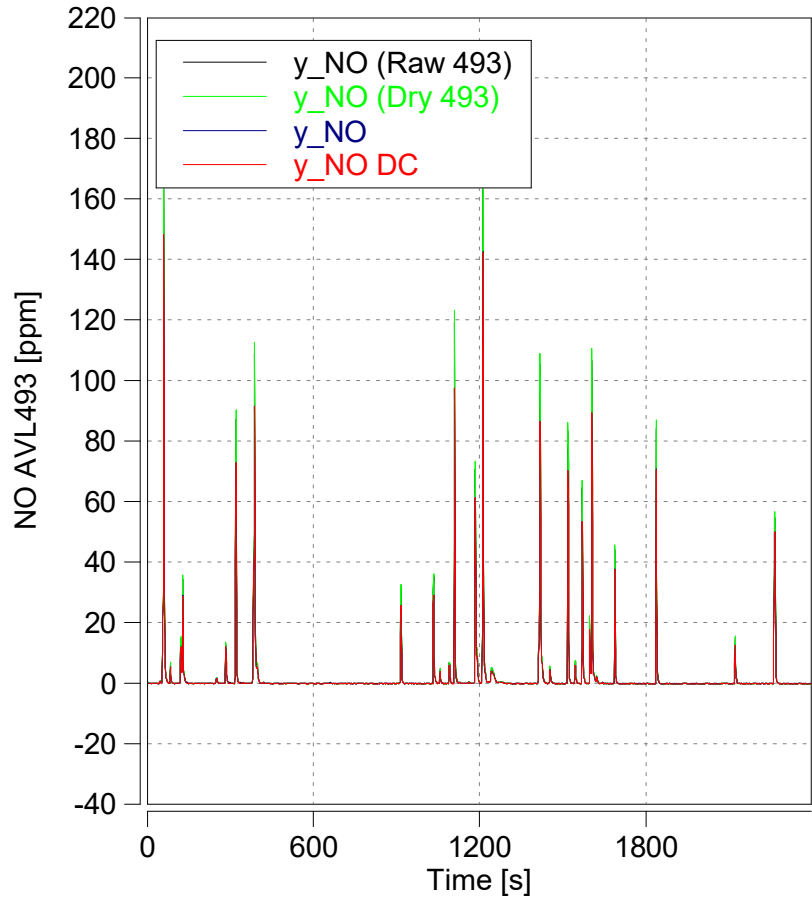


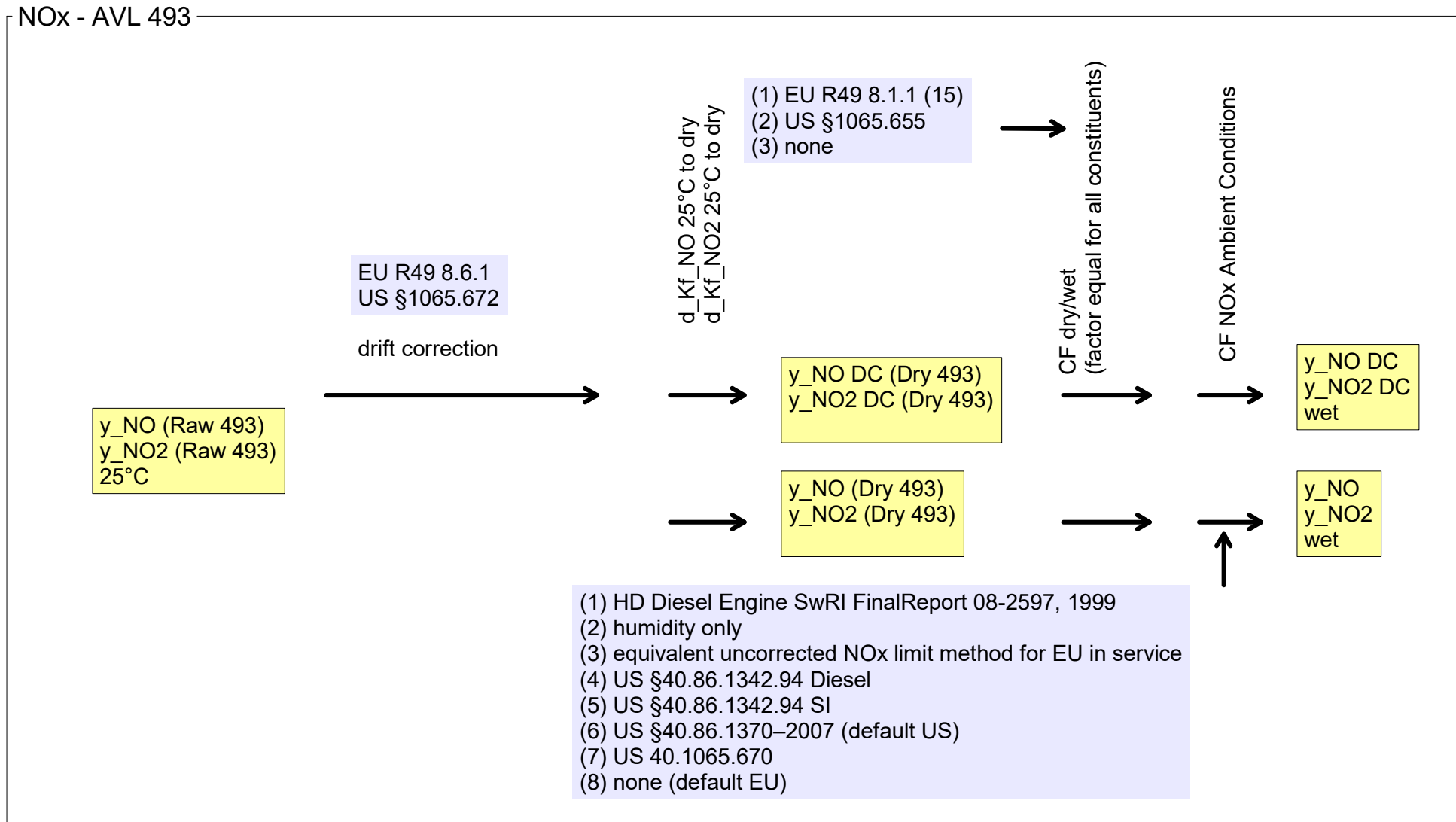


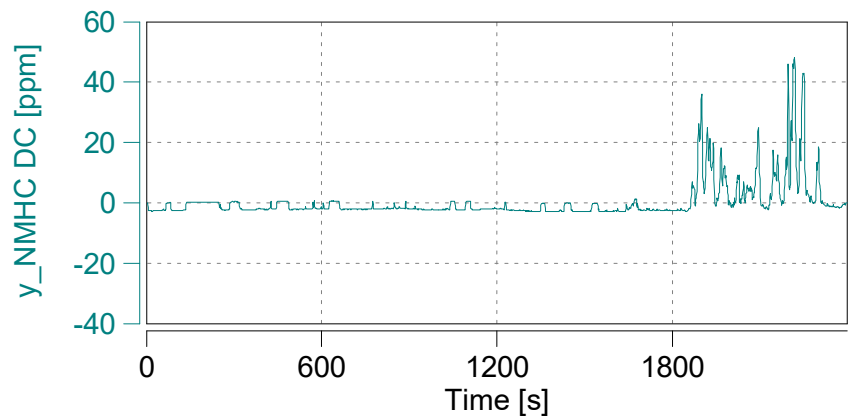
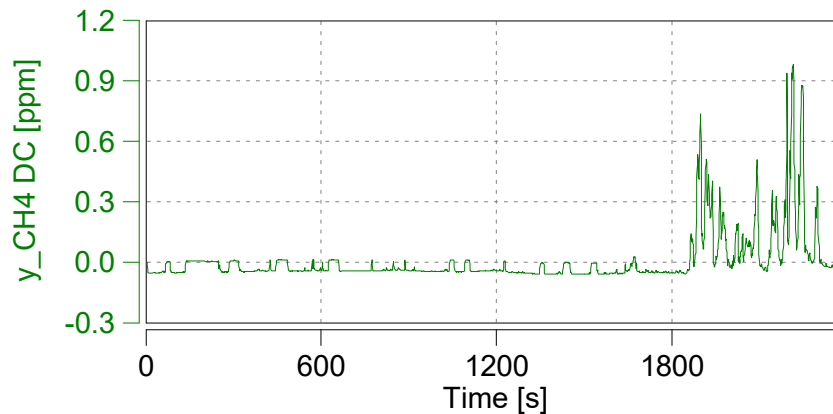
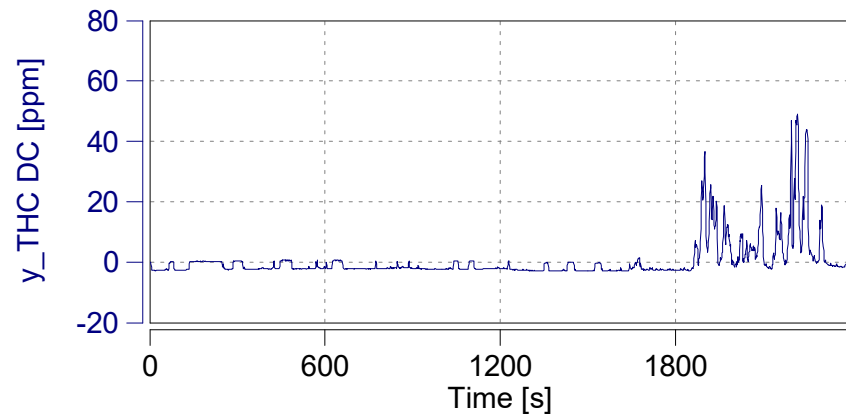


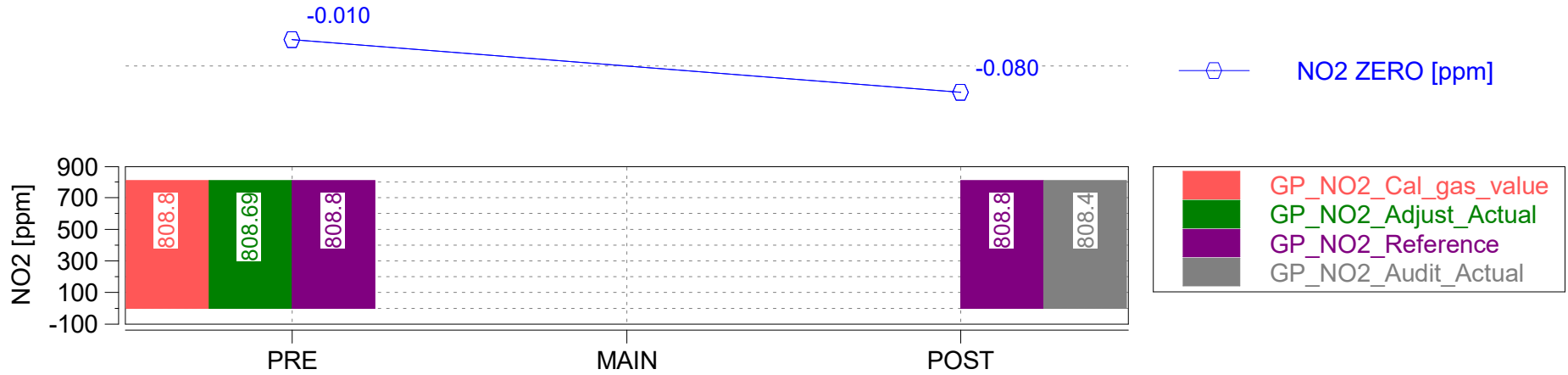
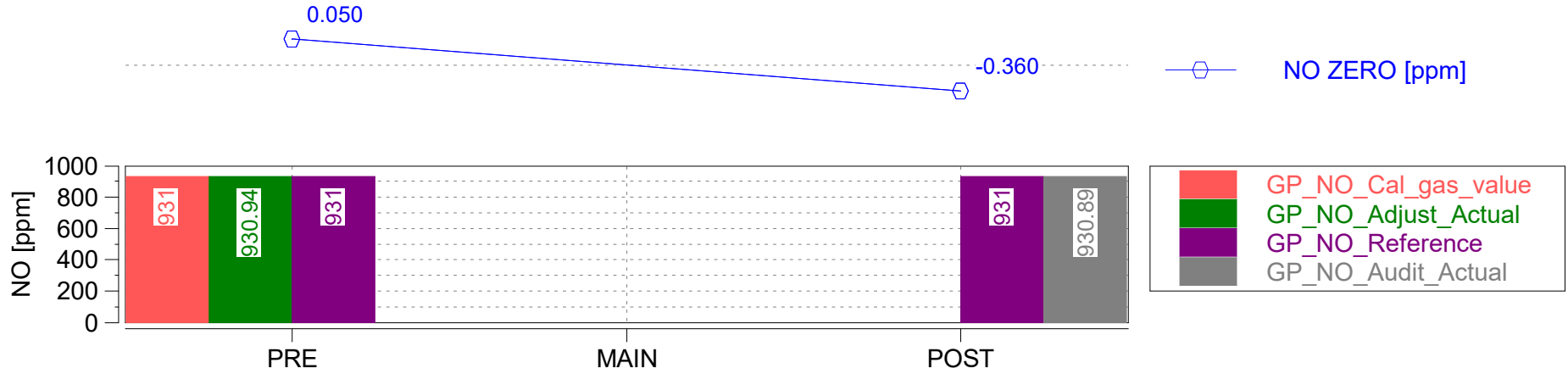


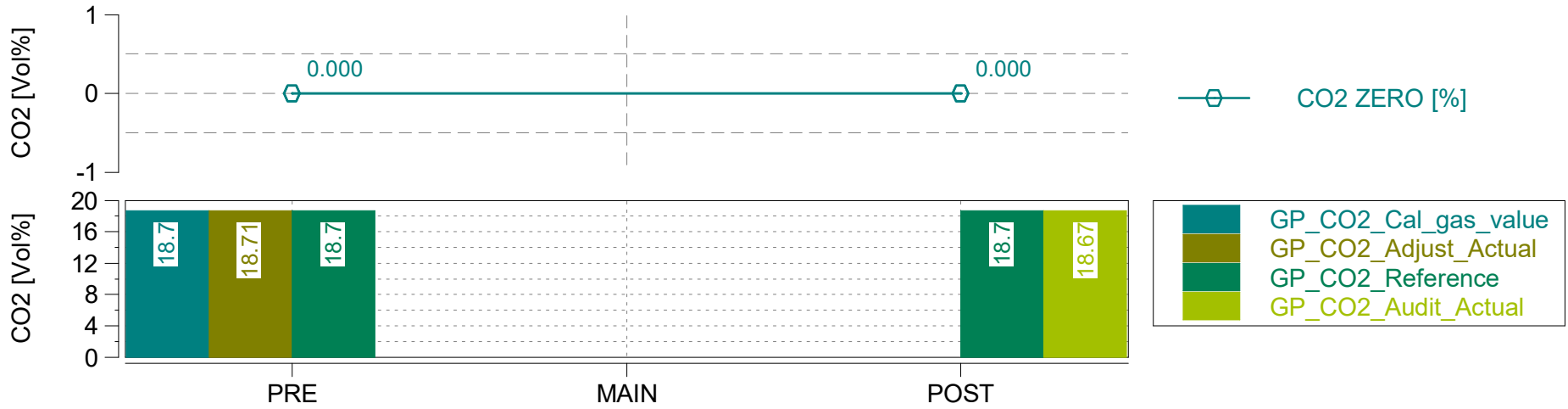
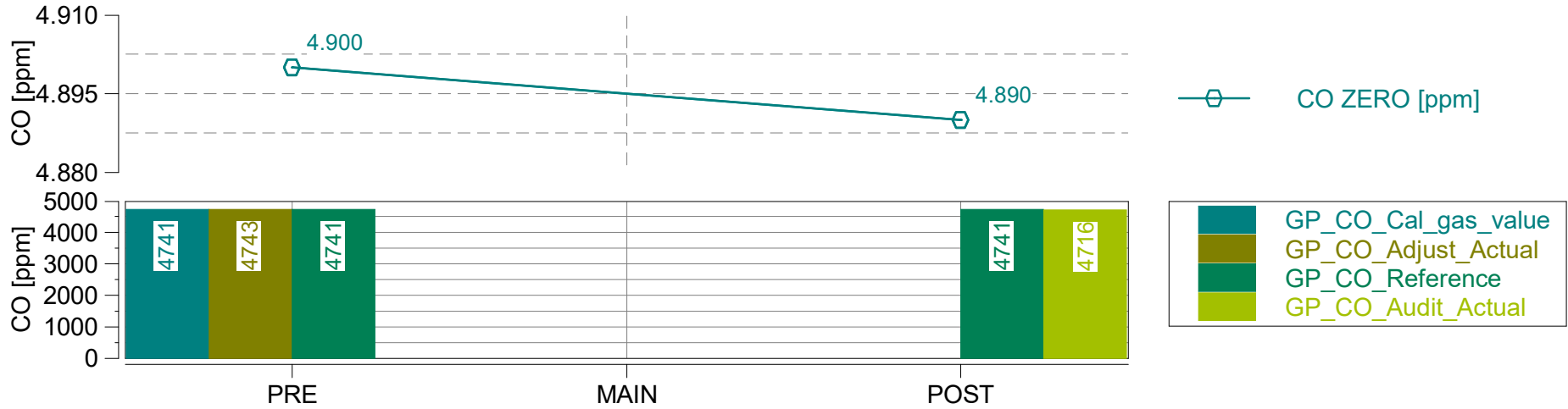


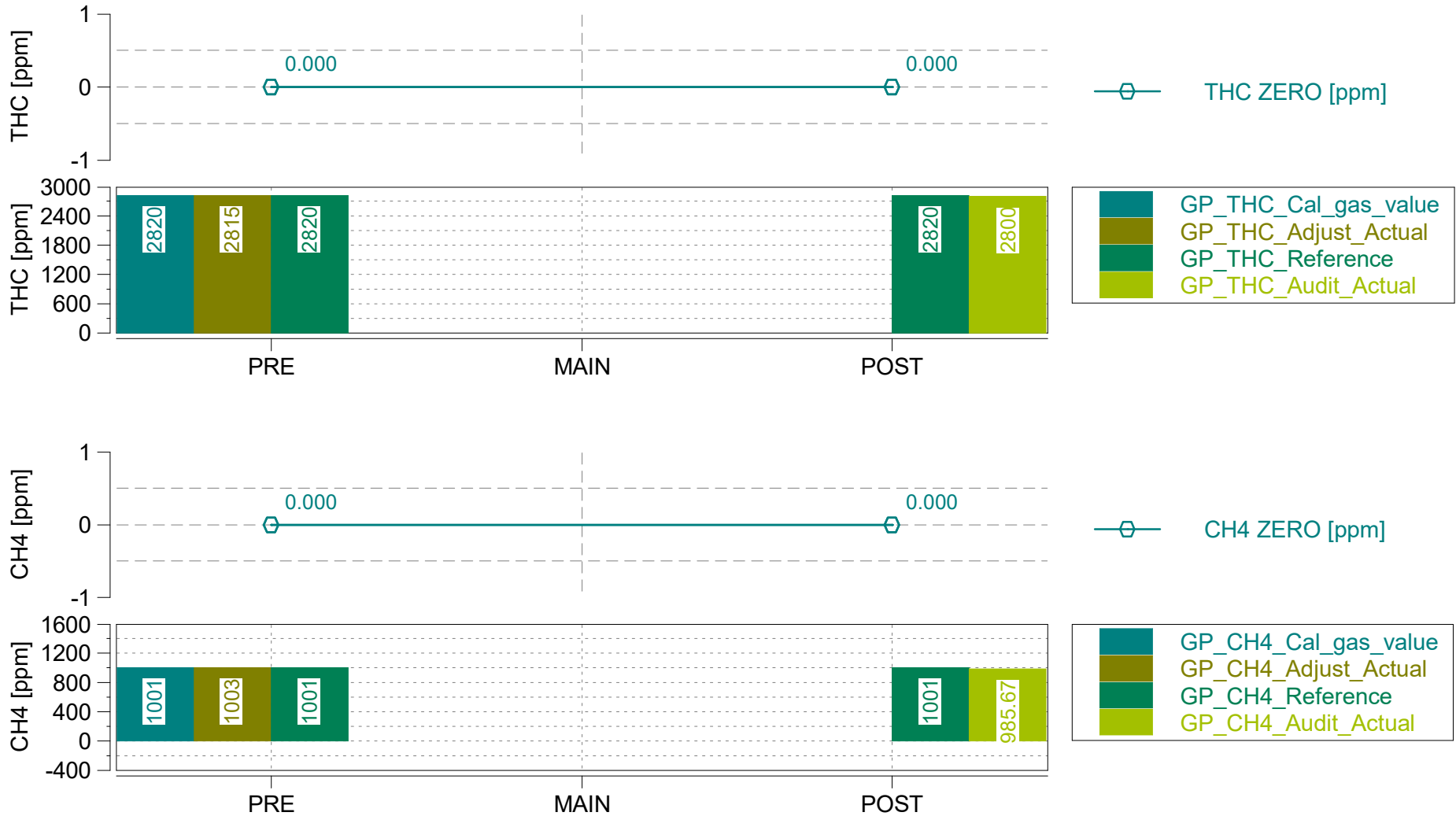














§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	<b>0.22</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-14
Leak Check Age [days]	0

Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

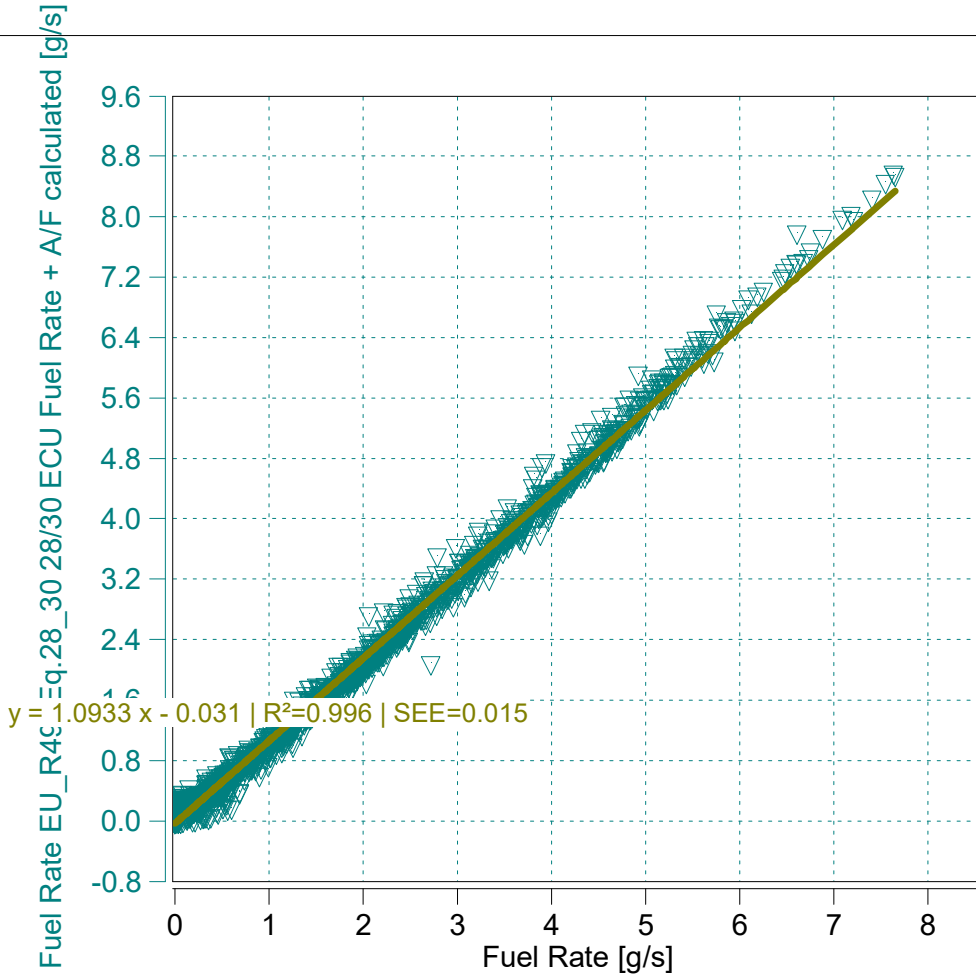
EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151





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

$y = 1.0933 x - 0.031 \mid R^2=0.996 \mid SEE=0.015$

m = 1.09 (0.9 - 1.1 recommended)

R<sup>2</sup> = 1.00 (min 0.9 mandatory)

Data from - to [% of Maximum]

0

100



Trip Duration	1620.00	s
Trip Duration (a)	1620.00	s
Trip Distance	17.98	mi
Trip Distance (a)	17.98	mi
Trip Fuel Cons. (b)	1.19	kg
Trip Fuel Cons. (ab)	1.19	kg
Trip Fuel Cons. EU (ac)	1.29	kg
Trip Fuel Cons. US (ac)	1.29	kg
Trip Fuel Economy (b)	42.73	mpg_US
Trip Fuel Economy (ab)	42.73	mpg_US
Trip Fuel Economy EU (ac)	39.57	mpg_US
Trip Fuel Economy US (ac)	39.60	mpg_US
Trip Fuel Economy GGE (b)	42.73	mpg_US
Trip Fuel Economy GGE (ab)	42.73	mpg_US
Trip Fuel Economy EU GGE (ac)	39.57	mpg_US
Trip Fuel Economy US GGE (ac)	39.60	mpg_US
Trip Av. Eng. Speed	1473.70	rpm
Trip Av. Torque	39.95	lbft
Trip Av. Power	13.48	hp
Trip Work		
Trip Work (a)	6.07	hphr
Trip Exhaust Mass	22.14	kg
Trip Exhaust Mass EU (ac)	19.53	kg
Trip Exhaust Mass US (ac)	19.60	kg
Trip Av. Amb. Temperature	54.56	deg_F
Trip Av. Humidity	41.84	%
Trip Av. GPS Altitude	574.71	m
Fuel Type	Petrol (E10)	

ave THC	-2.17116	ppm
ave NMHC	-2.12774	ppm
ave CH4	-0.04342	ppm
ave CO	82.72075	ppm
ave CO2	8.34315	%
ave NOx	5.42656	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	0.00891	g
tot NMHC	0.00824	g
tot CH4	0.00020	g
tot CO	3.11322	g
tot CO2	3904.16779	g
tot NO (d)	0.10772	g
tot NO2	0.02847	g
tot NOx	0.13473	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	39.96069	mi/hr
Trip Distance Share Urban	13.23989	% distanc
Trip Distance Share Rural	52.20628	% distanc
Trip Distance Share Motorway	34.55383	% distanc

BS CO2	643.52369	g/hphr
BS CO	0.51315	g/hphr
BS THC	0.00147	g/hphr
BS NMHC	0.00136	g/hphr
BS CH4	0.00003	g/hphr
BS NO (d)	0.01776	g/hphr
BS NO2	0.00469	g/hphr
BS NOx	0.02221	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	217.11158	g/mi
DS CO	0.17313	g/mi
DS THC	0.00050	g/mi
DS NMHC	0.00046	g/mi
DS CH4	0.00001	g/mi
DS NO (d)	0.00599	g/mi
DS NO2	0.00158	g/mi
DS NOx	0.00749	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	3278.38233	g/kg
FS CO	2.61422	g/kg
FS THC	0.00748	g/kg
FS NMHC	0.00692	g/kg
FS CH4	0.00017	g/kg
FS NO (d)	0.09046	g/kg
FS NO2	0.02391	g/kg
FS NOx	0.11313	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



Trip Duration	1620.00	s
Trip Duration (a)	1620.00	s
Trip Distance	17.98	mi
Trip Distance (a)	17.98	mi
Trip Fuel Cons. (b)	1.19	kg
Trip Fuel Cons. (ab)	1.19	kg
Trip Fuel Cons. EU (ac)	1.29	kg
Trip Fuel Cons. US (ac)	1.29	kg
Trip Fuel Economy (b)	42.73	mpg_US
Trip Fuel Economy (ab)	42.73	mpg_US
Trip Fuel Economy EU (ac)	39.57	mpg_US
Trip Fuel Economy US (ac)	39.60	mpg_US
Trip Fuel Economy GGE (b)	42.73	mpg_US
Trip Fuel Economy GGE (ab)	42.73	mpg_US
Trip Fuel Economy EU GGE (ac)	39.57	mpg_US
Trip Fuel Economy US GGE (ac)	39.60	mpg_US
Trip Av. Eng. Speed	1473.70	rpm
Trip Av. Torque	39.95	lbft
Trip Av. Power	13.48	hp
Trip Work		
Trip Work (a)	6.07	hphr
Trip Exhaust Mass	22.14	kg
Trip Exhaust Mass EU (ac)	19.53	kg
Trip Exhaust Mass US (ac)	19.60	kg
Trip Av. Amb. Temperature	54.56	deg_F
Trip Av. Humidity	41.84	%
Trip Av. GPS Altitude	574.71	m
Fuel Type	Petrol (E10)	

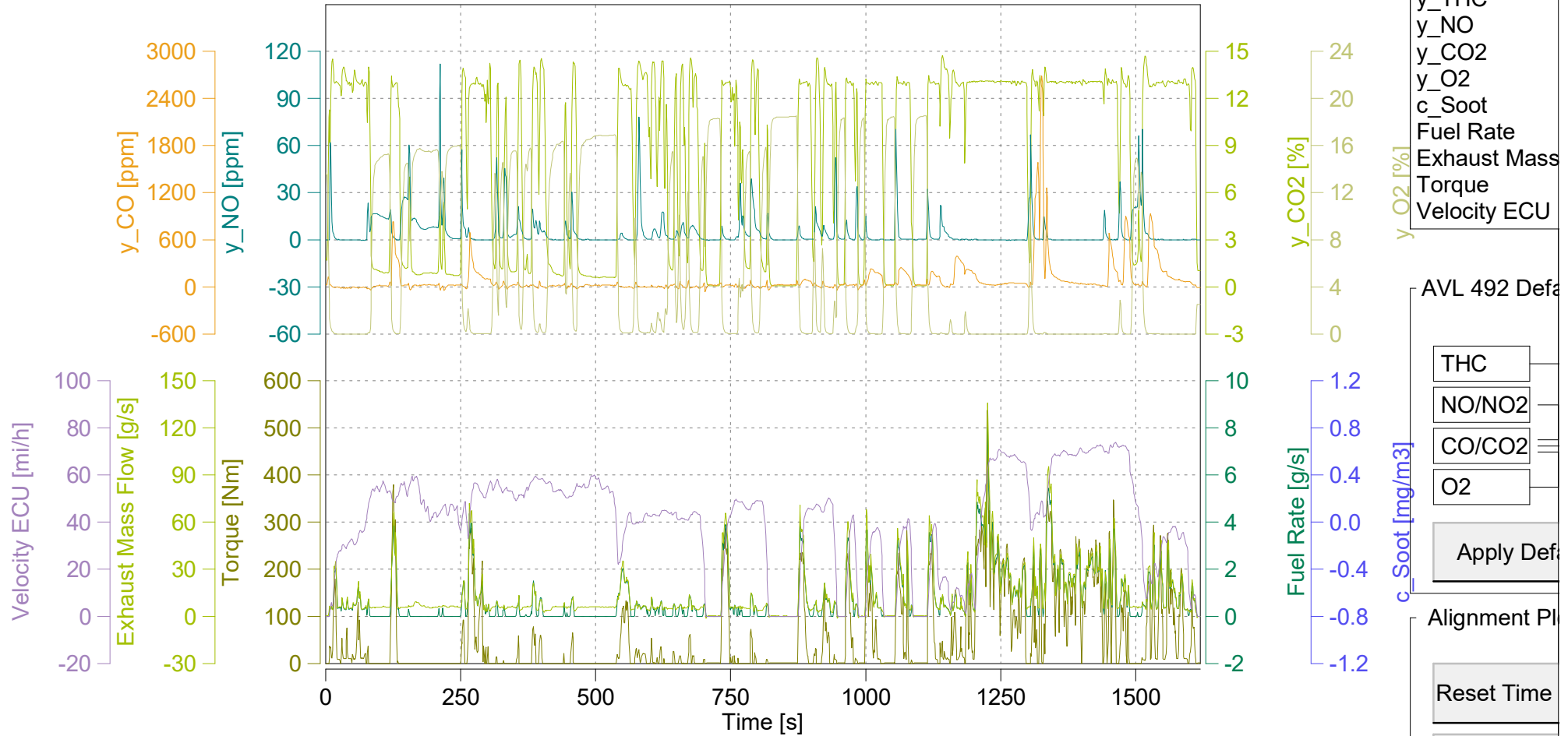
ave THC DC	-2.18090	ppm
ave NMHC DC	-2.13728	ppm
ave CH4 DC	-0.04362	ppm
ave CO DC	78.46443	ppm
ave CO2 DC	8.34762	%
ave NOx DC	5.39444	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC		
tot THC DC	0.00895	g
tot NMHC DC	0.00828	g
tot CH4 DC	0.00020	g
tot CO DC	3.04080	g
tot CO2 DC	3906.25669	g
tot NO DC (d)	0.10680	g
tot NO2 DC	0.02876	g
tot NOx DC	0.13363	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	39.96069	mi/hr
Trip Distance Share Urban	13.23989	% distanc
Trip Distance Share Rural	52.20628	% distanc
Trip Distance Share Motorway	34.55383	% distanc

BS CO2 DC	643.86800	g/hphr
BS CO DC	0.50122	g/hphr
BS THC DC	0.00147	g/hphr
BS NMHC DC	0.00136	g/hphr
BS CH4 DC	0.00003	g/hphr
BS NO DC (d)	0.01760	g/hphr
BS NO2 DC	0.00474	g/hphr
BS NOx DC	0.02203	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	217.22774	g/mi
DS CO DC	0.16910	g/mi
DS THC DC	0.00050	g/mi
DS NMHC DC	0.00046	g/mi
DS CH4 DC	0.00001	g/mi
DS NO DC (d)	0.00594	g/mi
DS NO2 DC	0.00160	g/mi
DS NOx DC	0.00743	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	3280.13641	g/kg
FS CO DC	2.55340	g/kg
FS THC DC	0.00751	g/kg
FS NMHC DC	0.00695	g/kg
FS CH4 DC	0.00017	g/kg
FS NO DC (d)	0.08968	g/kg
FS NO2 DC	0.02415	g/kg
FS NOx DC	0.11221	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 Absolute Time



- y\_THC
- y\_NO
- y\_CO2
- y\_O2
- c\_Soot
- Fuel Rate
- Exhaust Mass
- Torque
- Velocity ECU

AVL 492 Defa

- THC
- NO/NO2
- CO/CO2
- O2

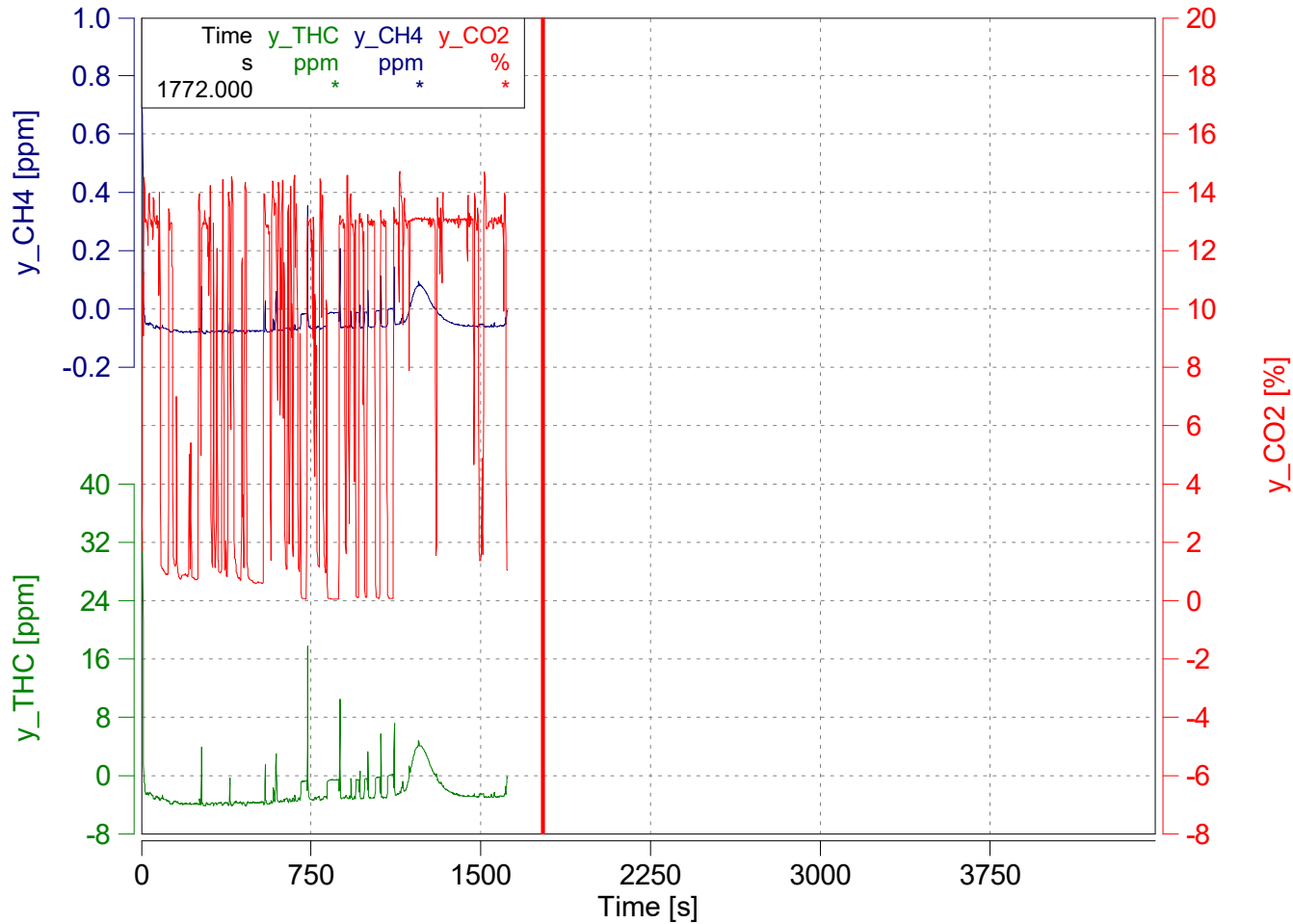
Apply Defa

Alignment Pl

- 
- 
- 

Concerto Version: 505 Build 61, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R4.1\_B340  
 Legislation:

Vehicle: V167-5409 /  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

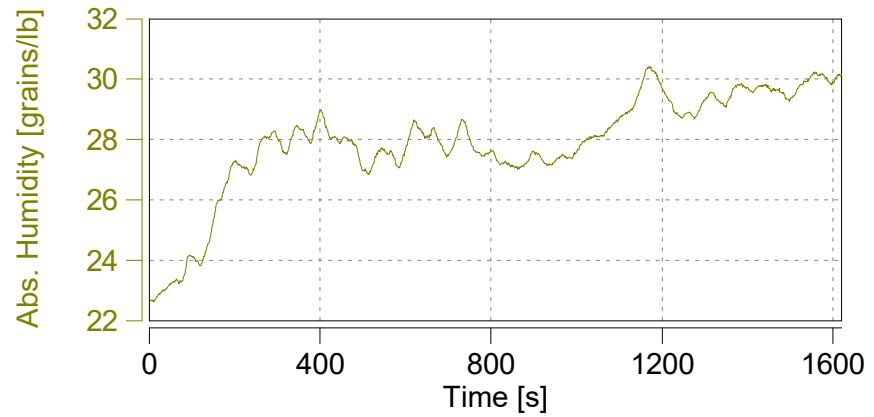
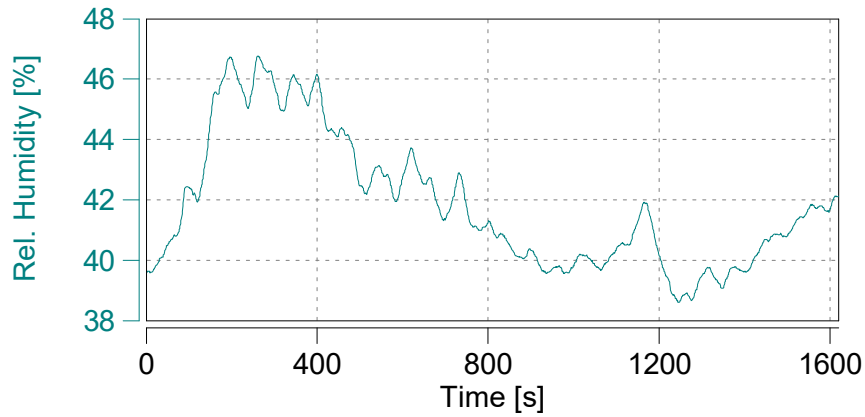
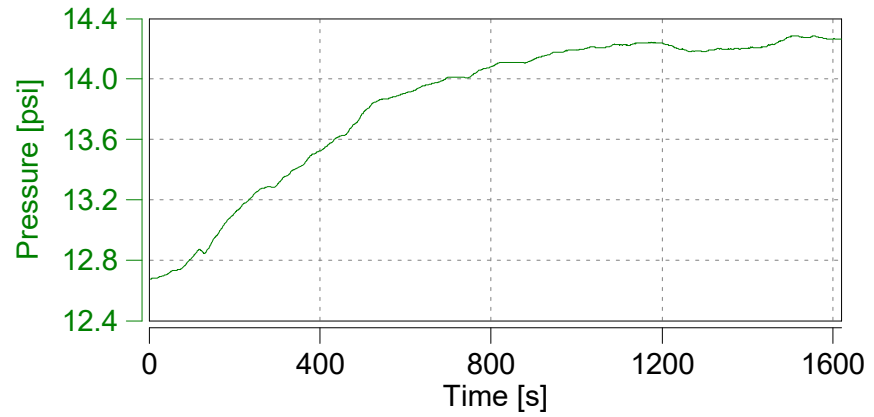
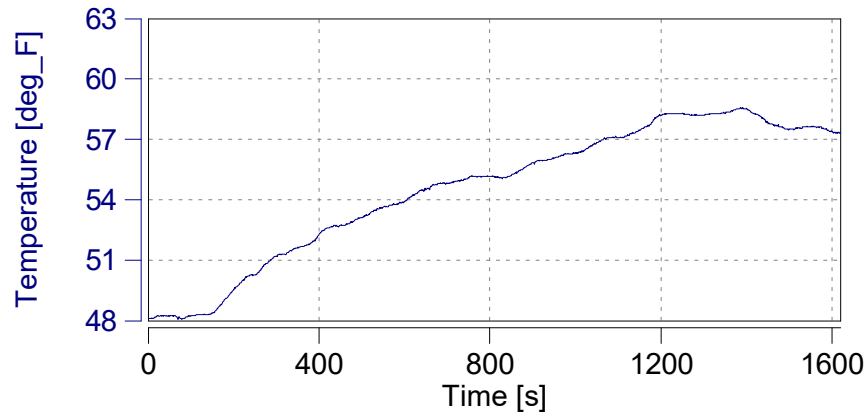


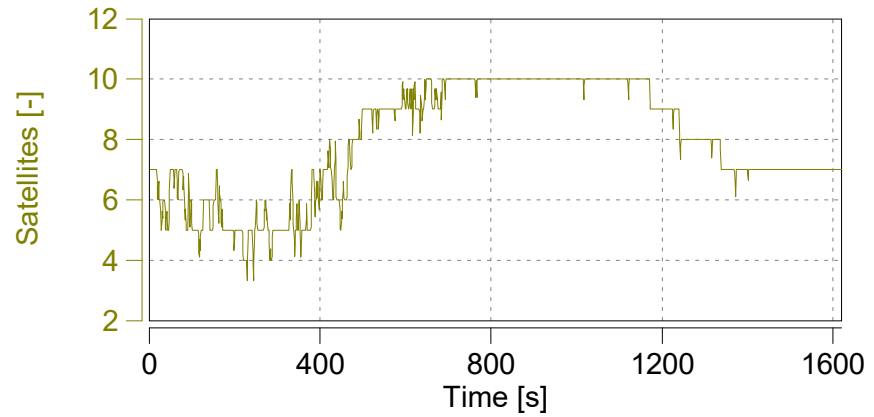
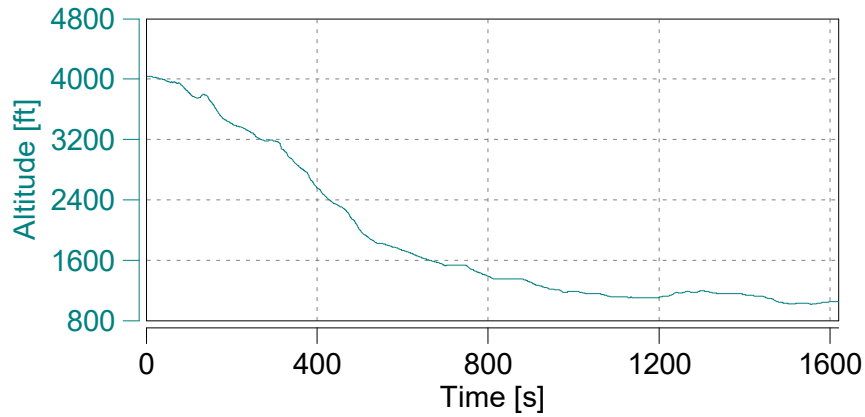
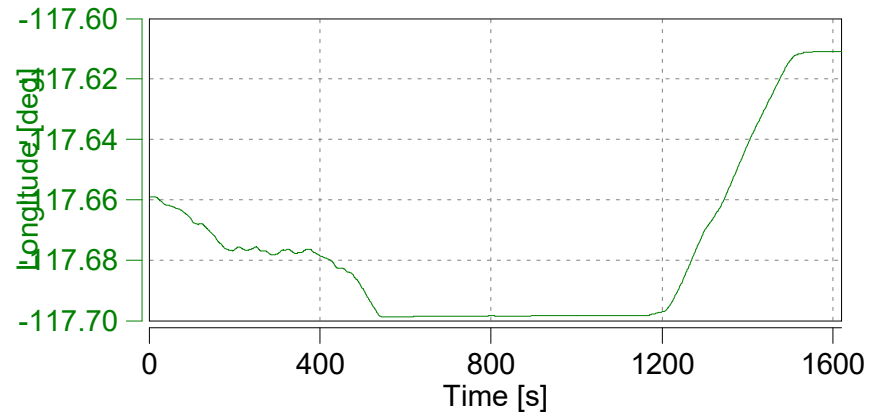
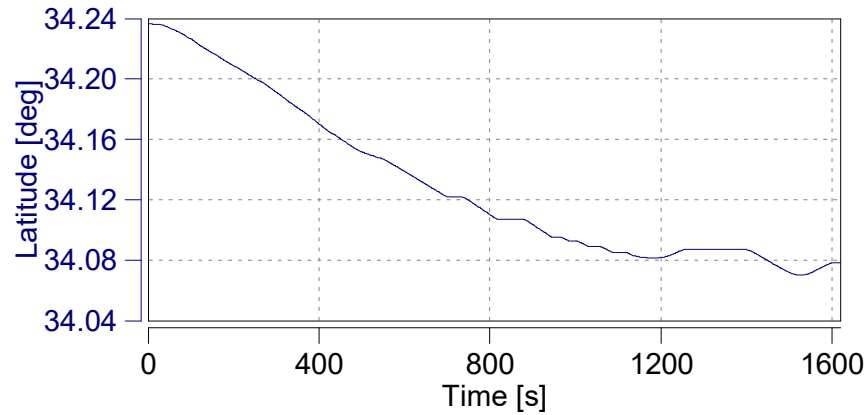
Absolute Time Shifts

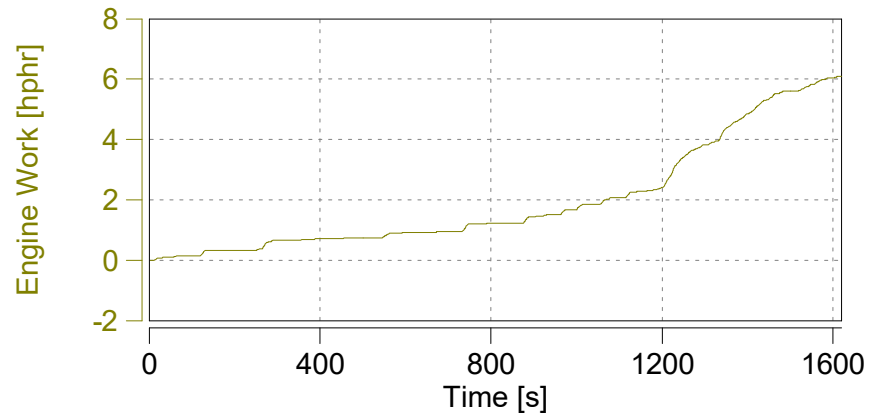
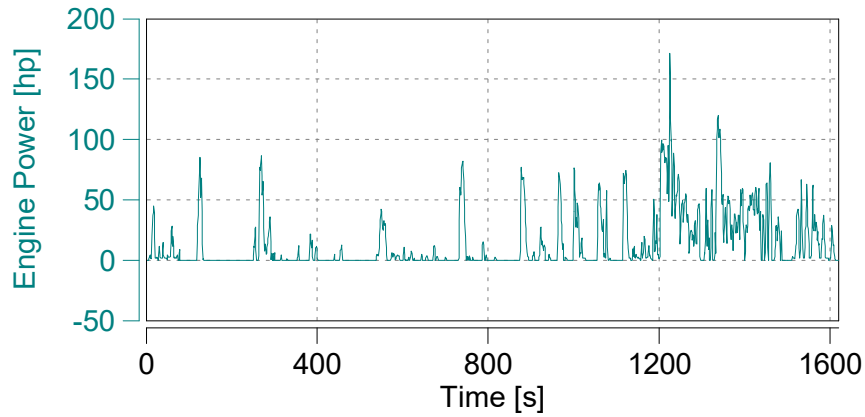
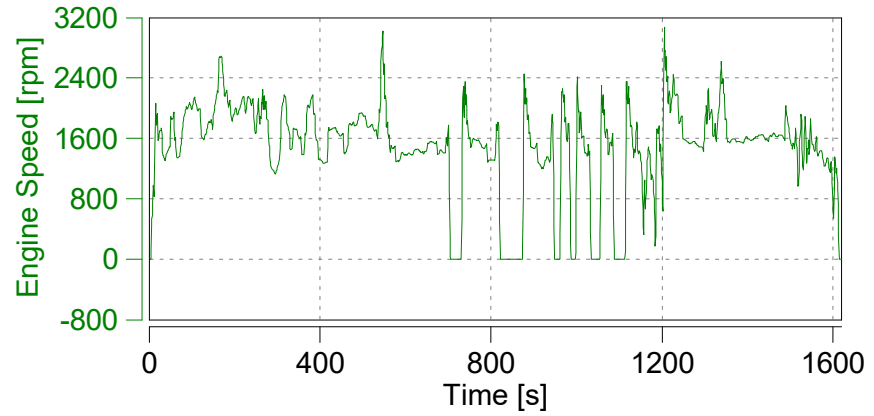
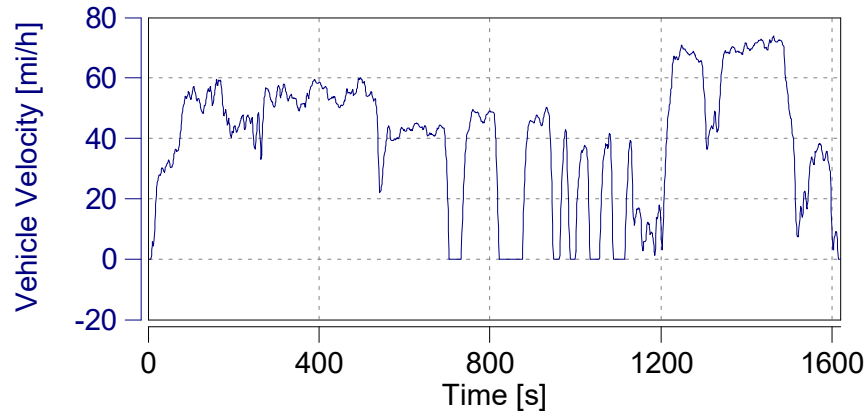
y_THC	s	0.0
y_CH4	s	0.0

Reset Time Shifts in Plot

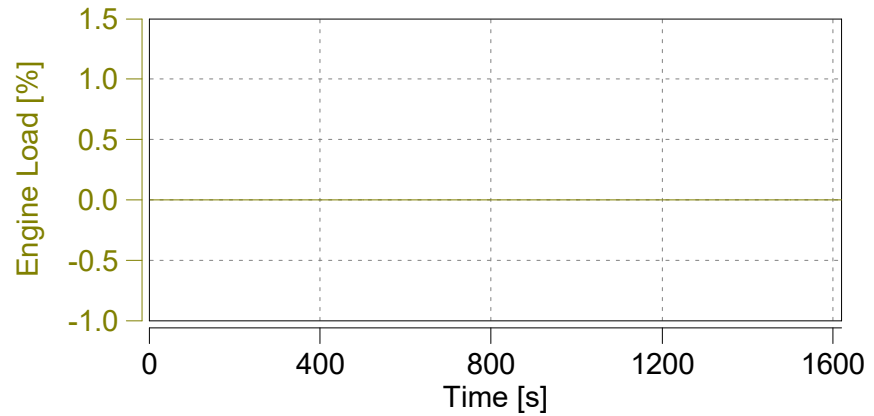
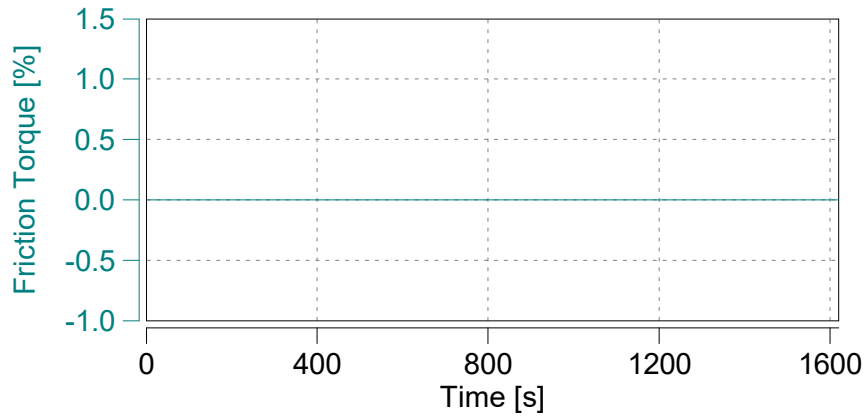
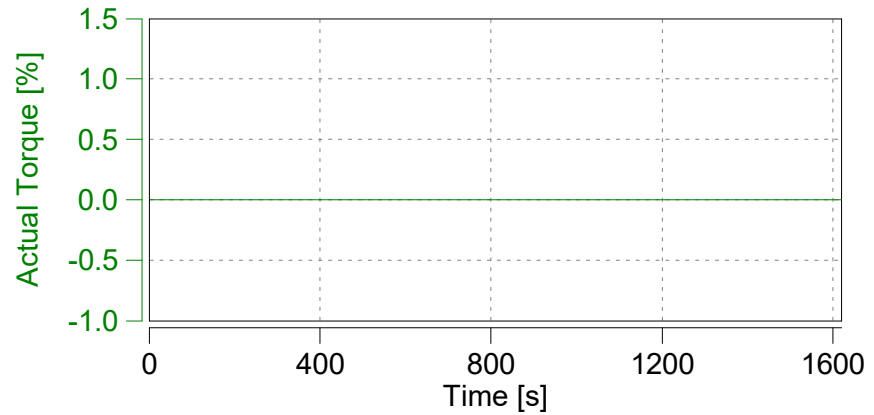
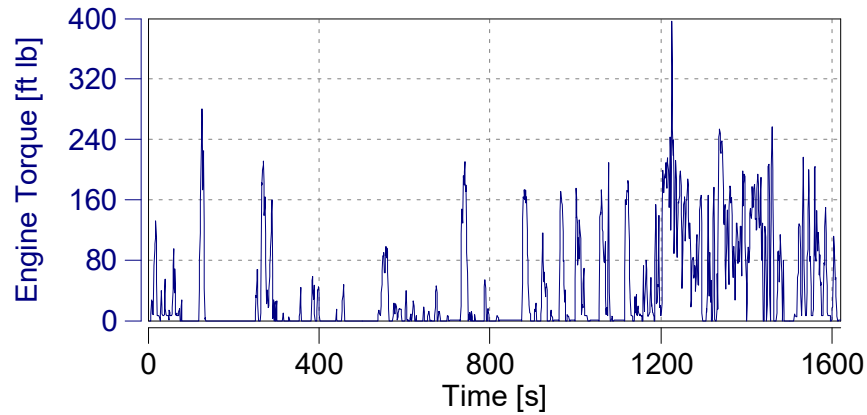
Apply Current Values

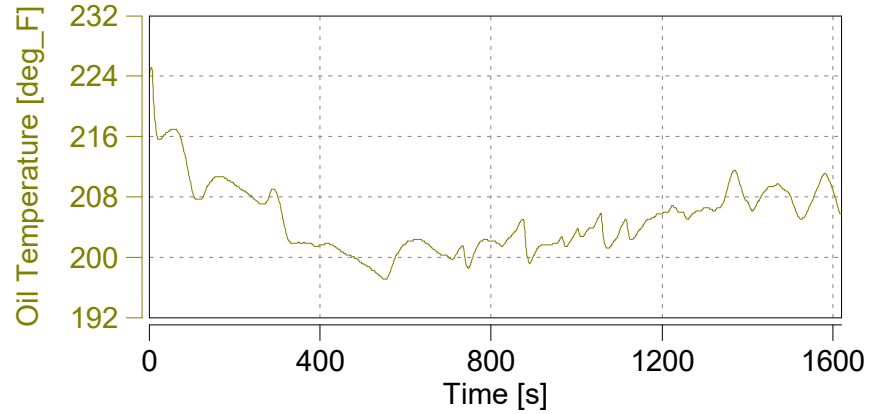
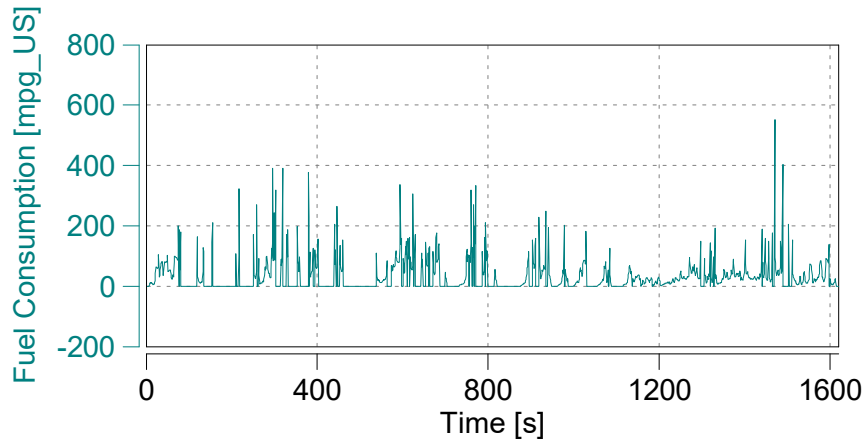
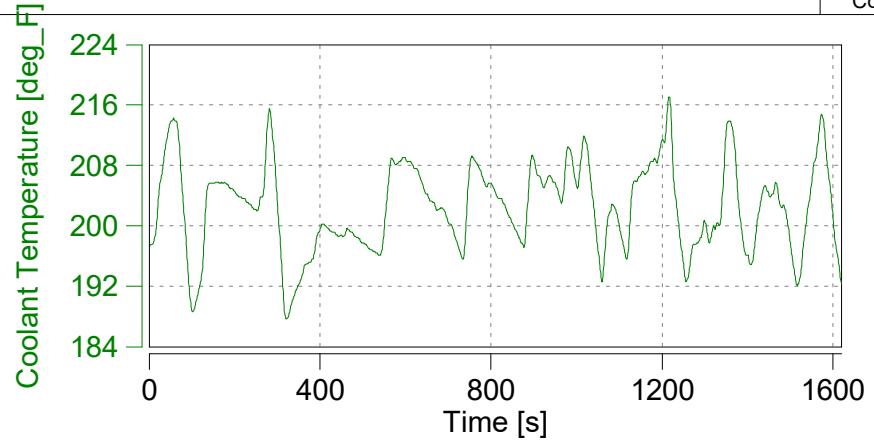
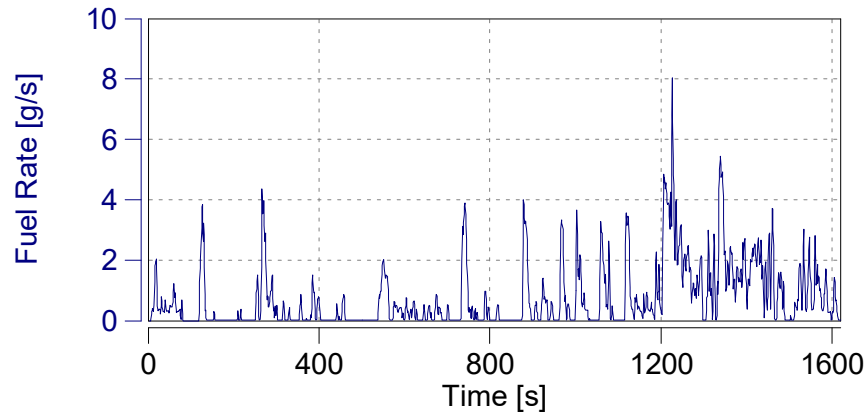


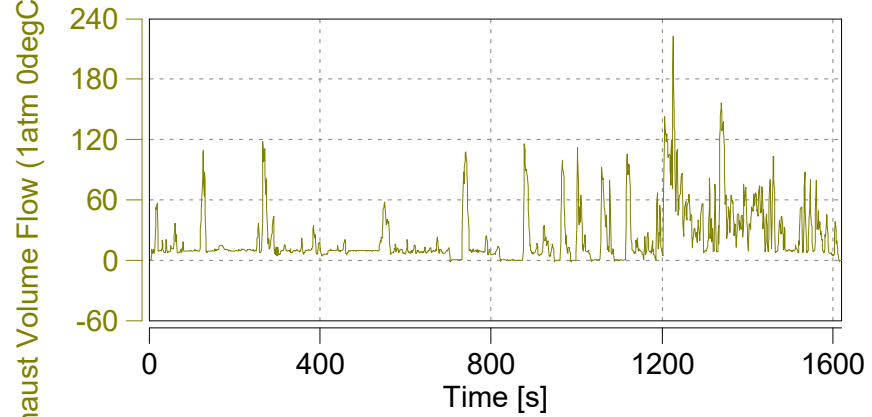
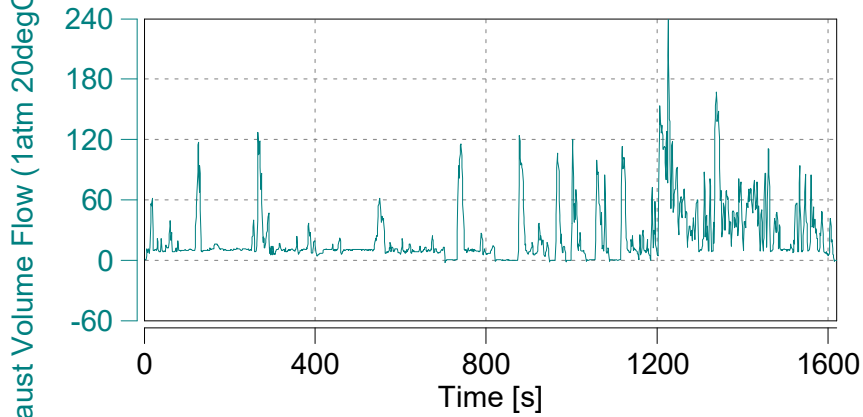
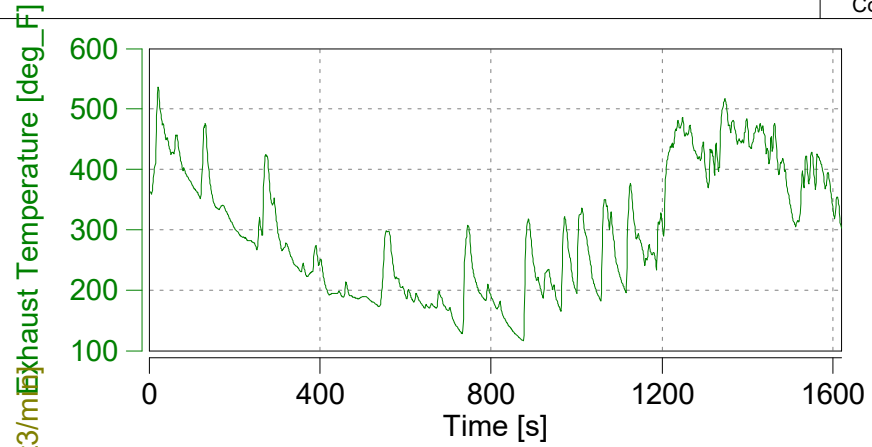
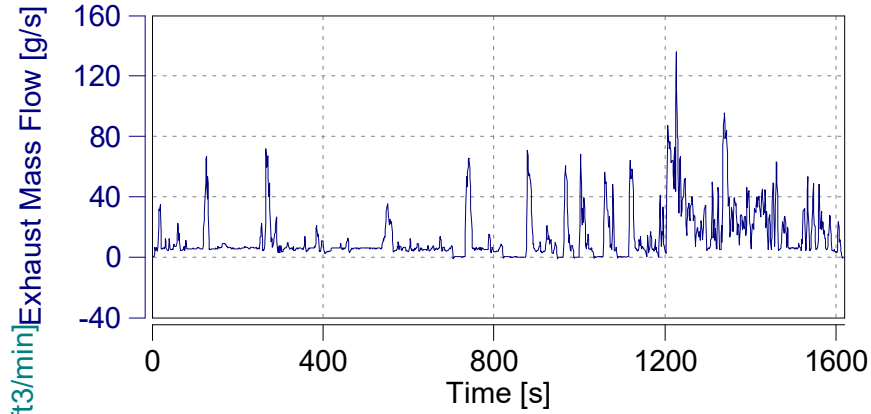


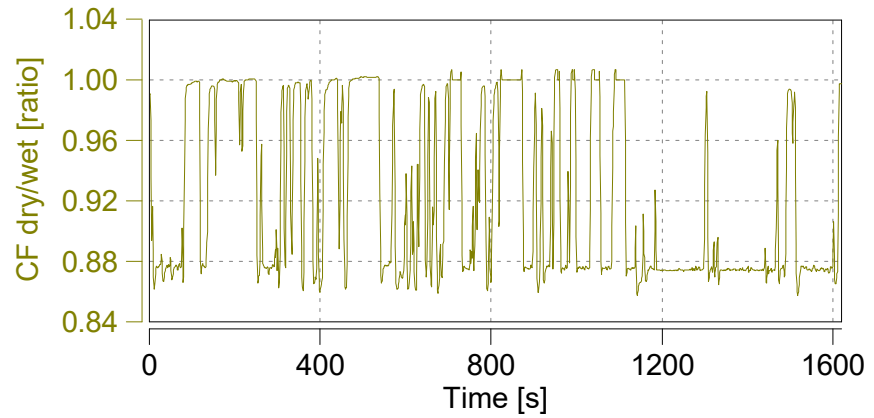
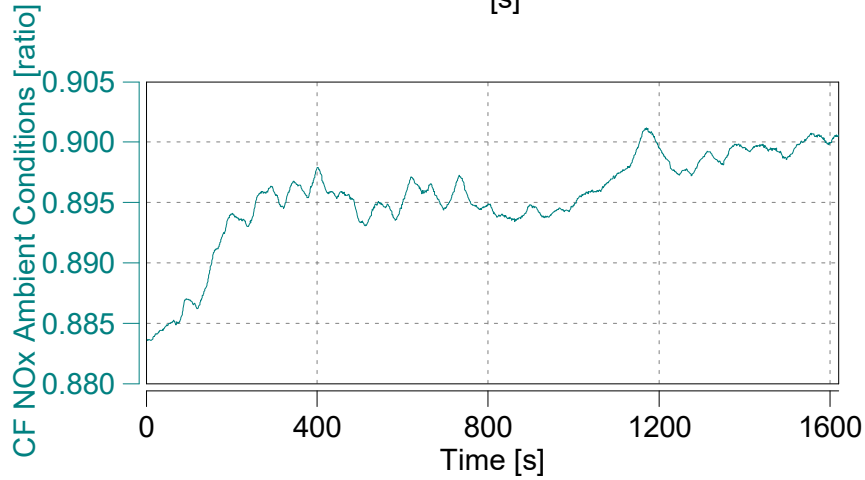
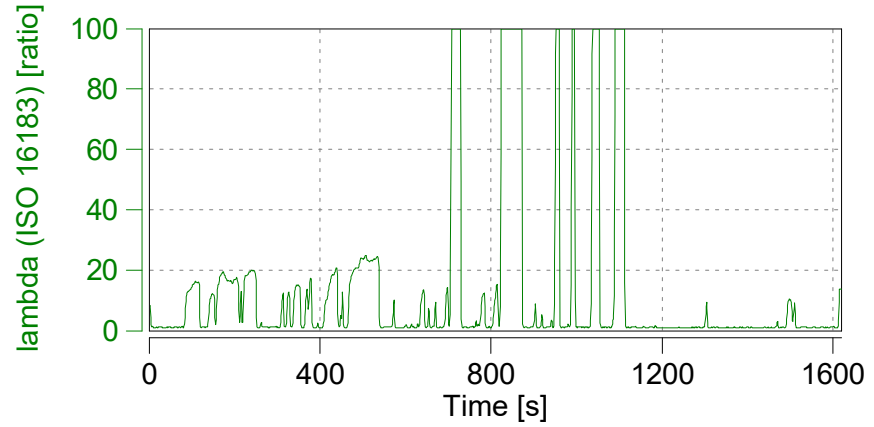
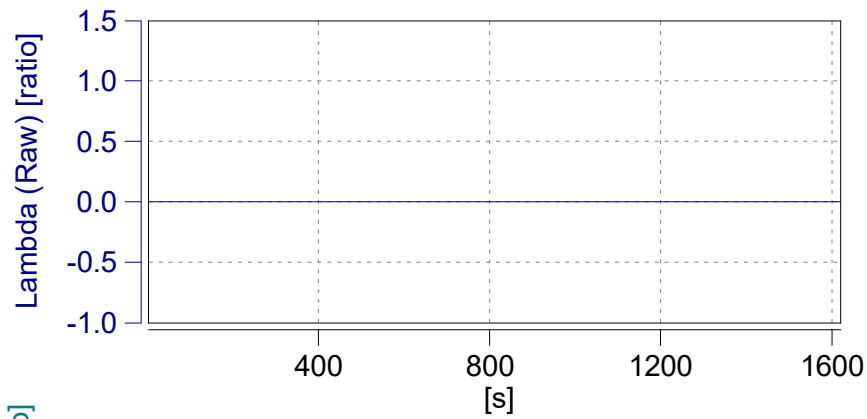


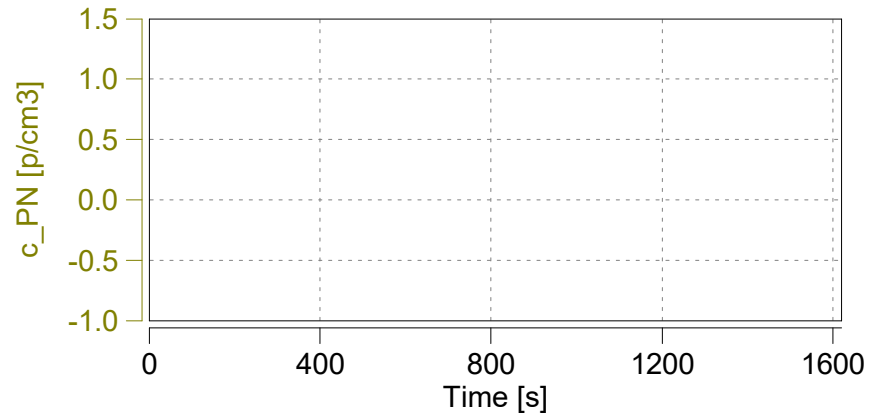
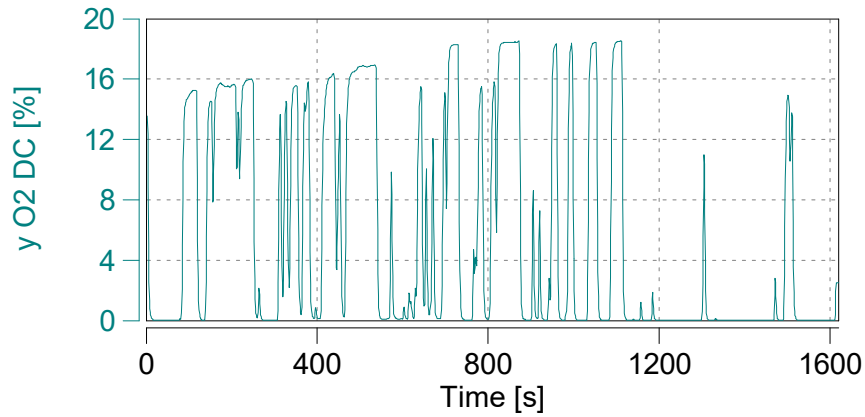
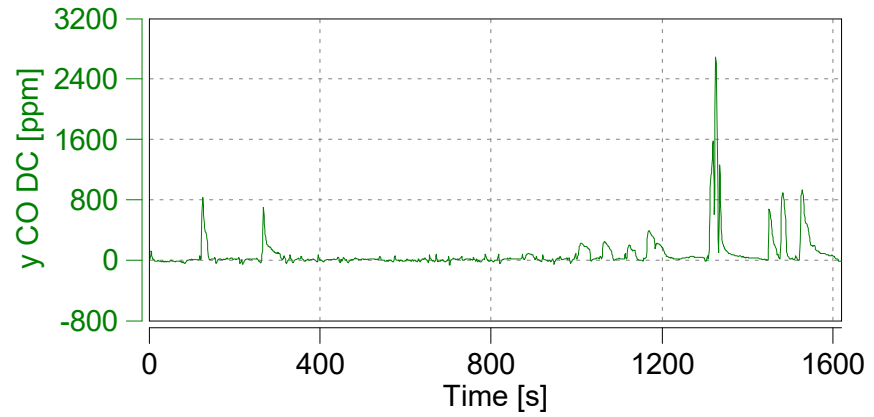
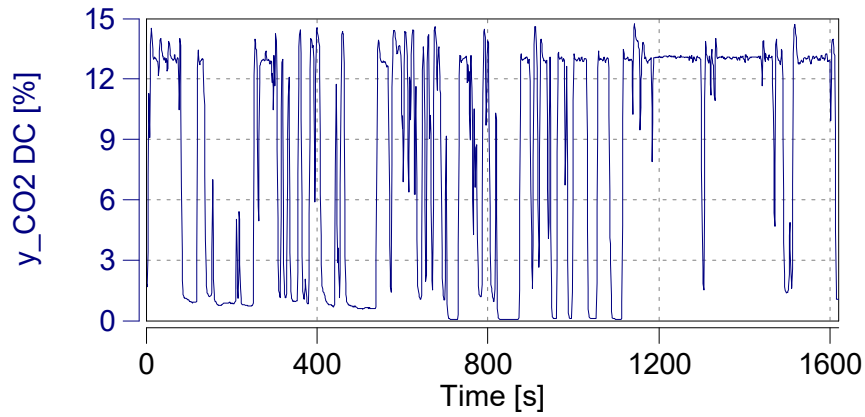


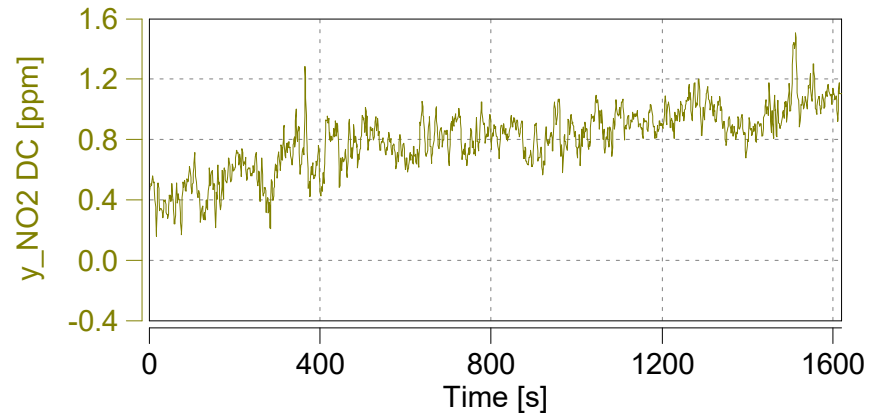
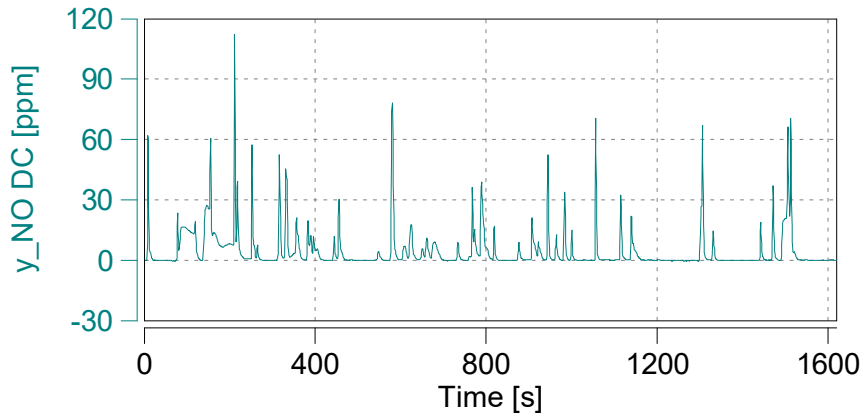
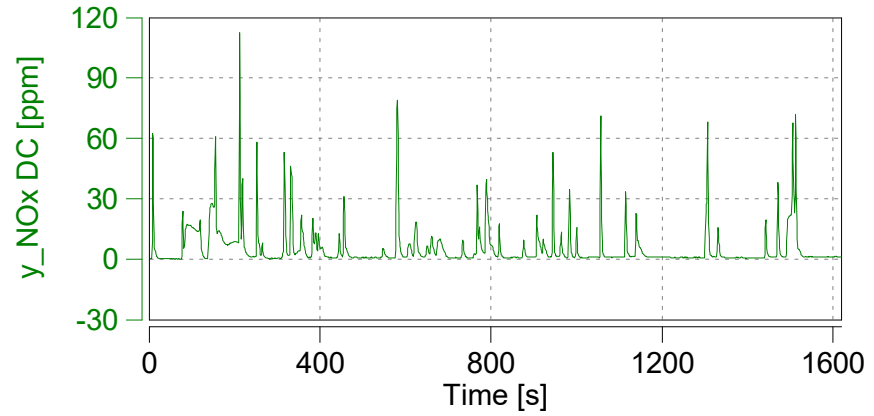
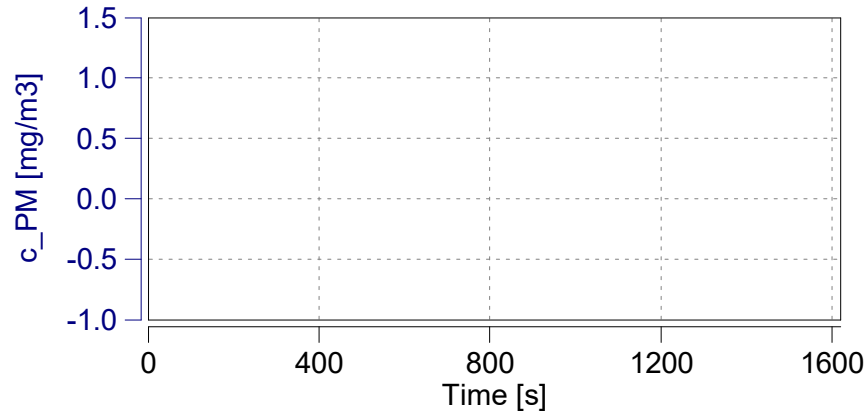


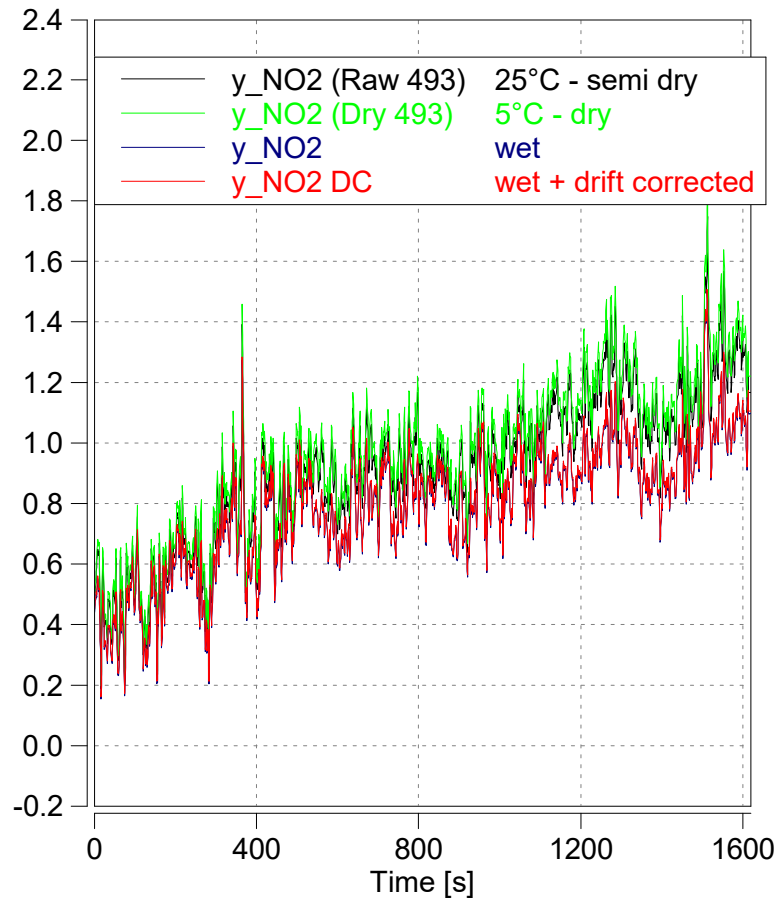
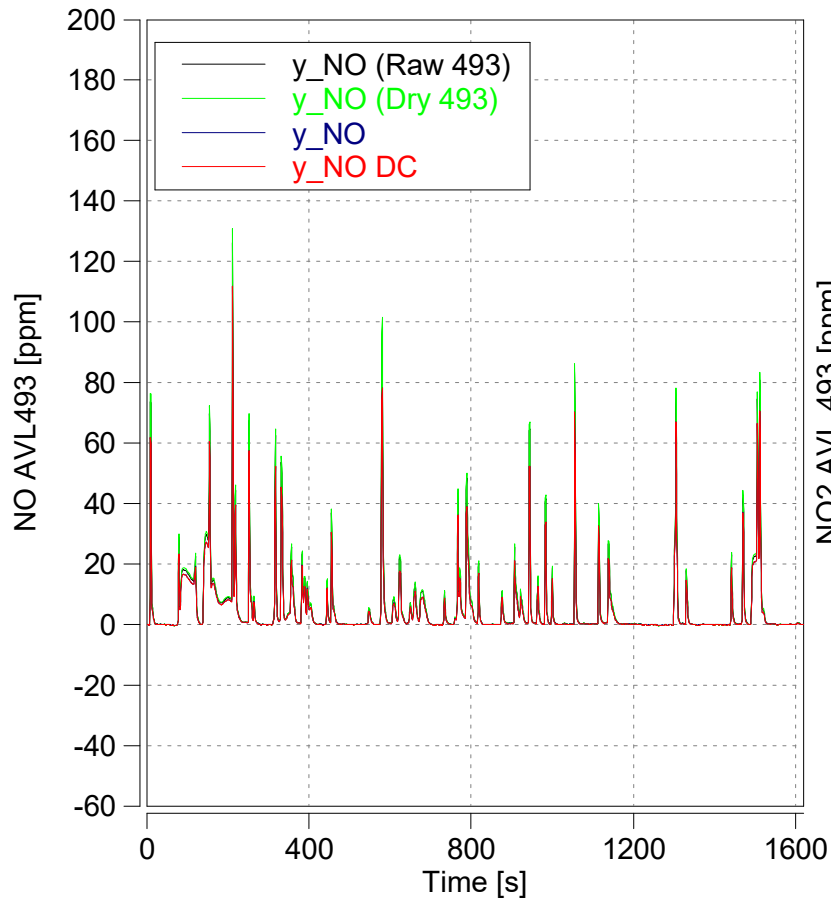


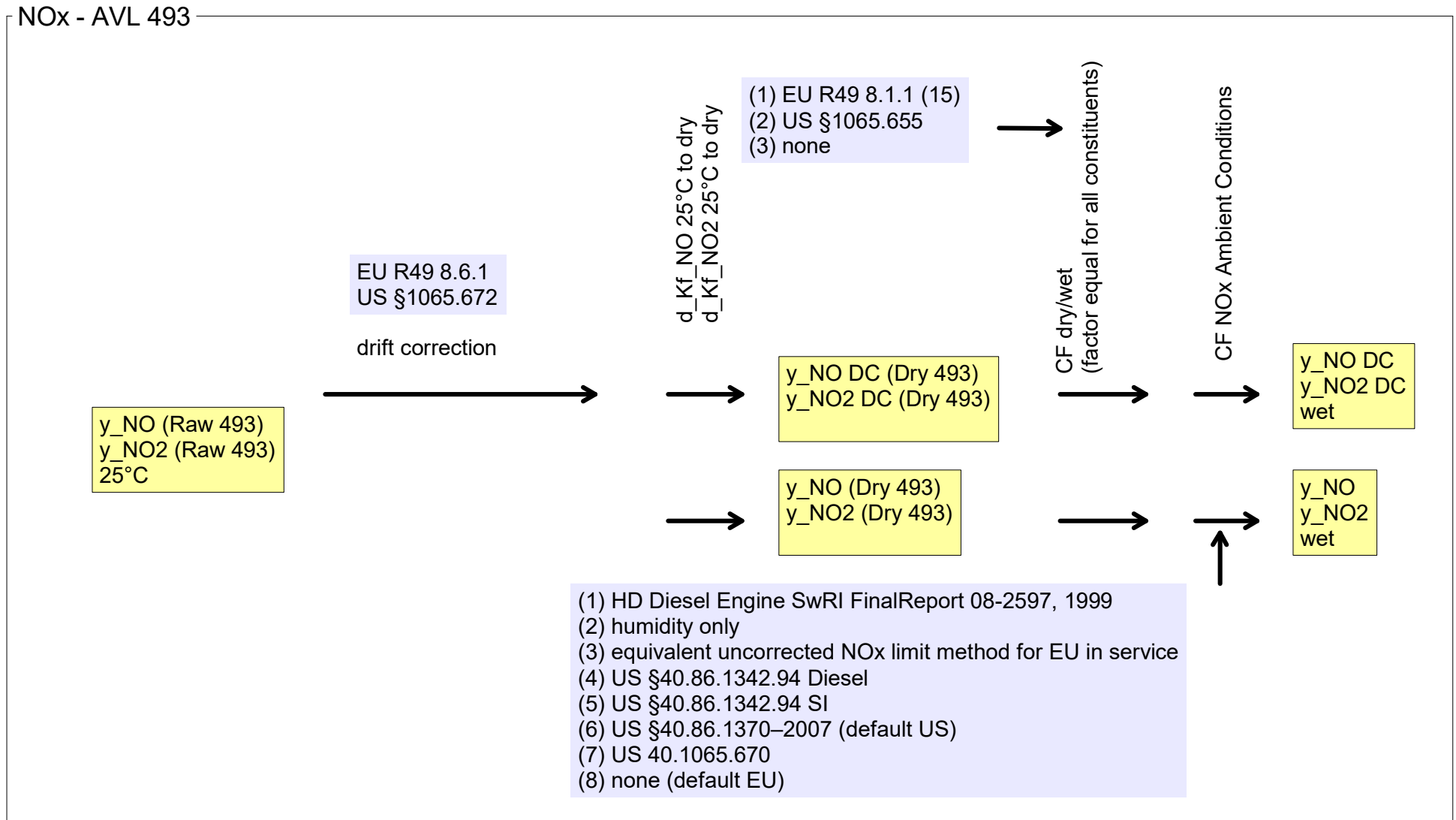




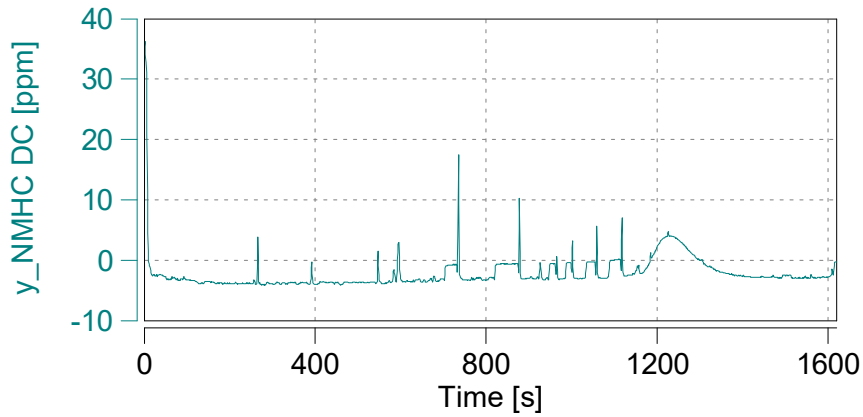
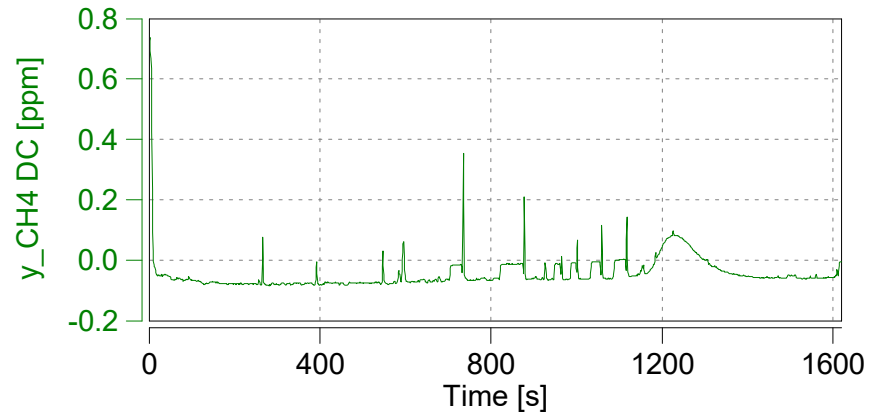
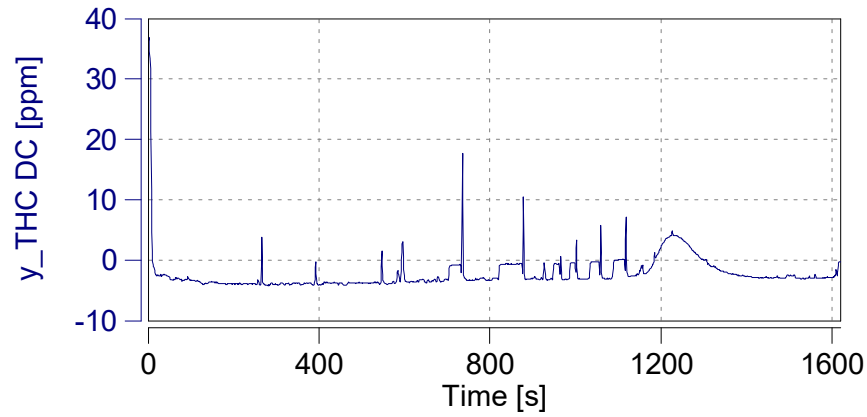


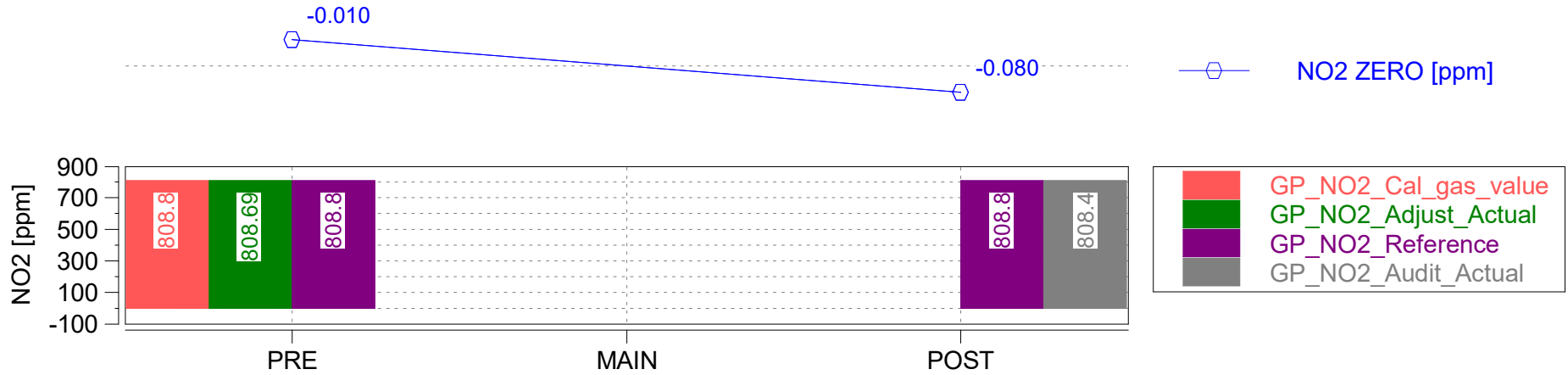
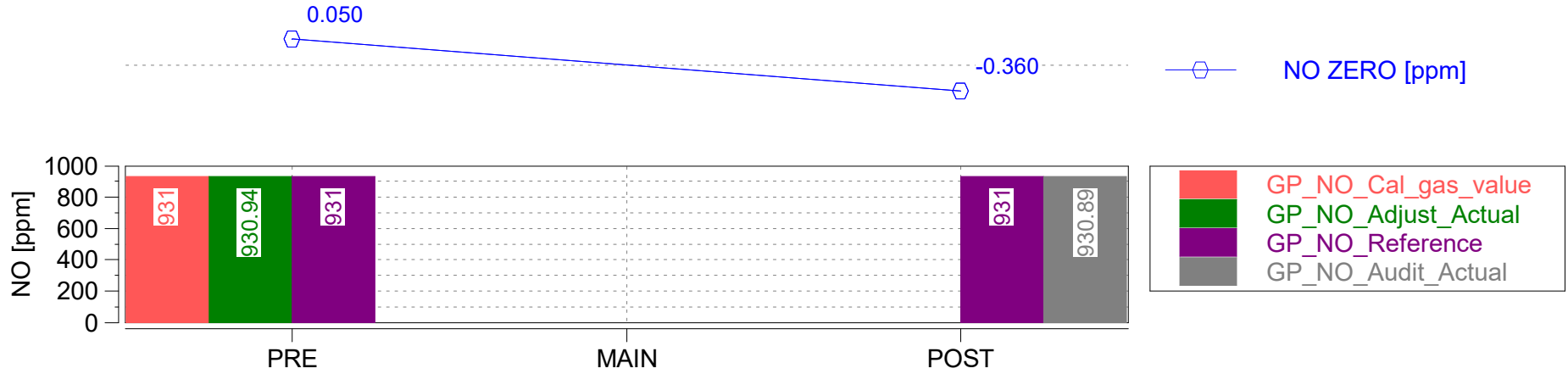


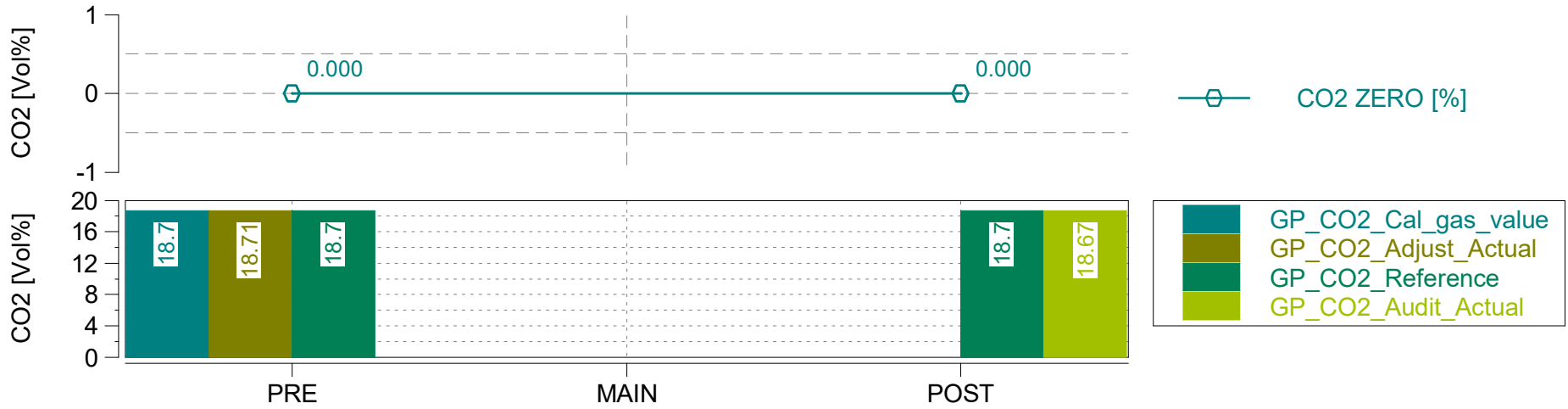
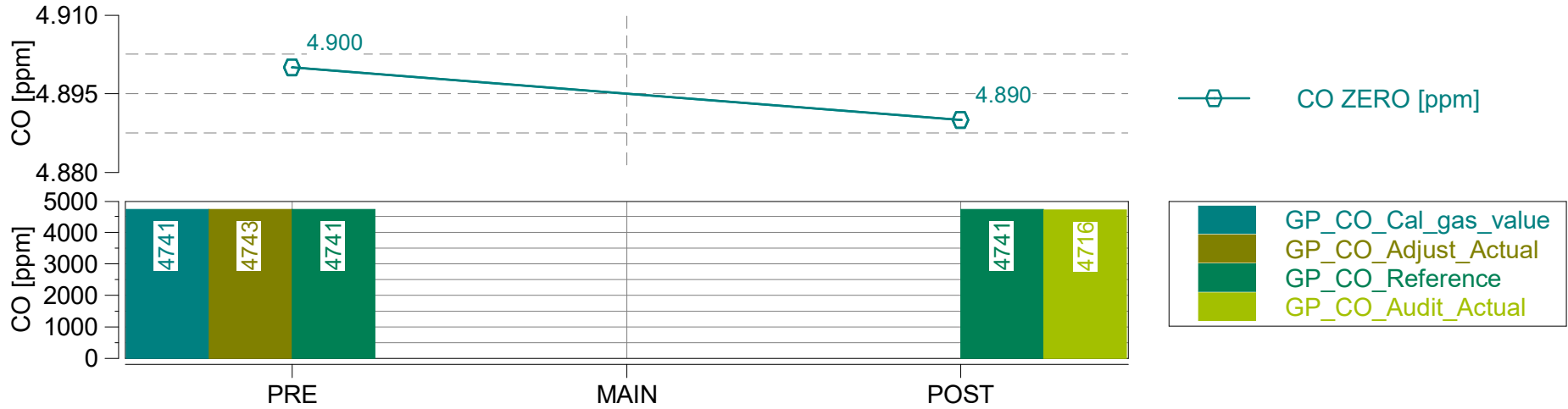


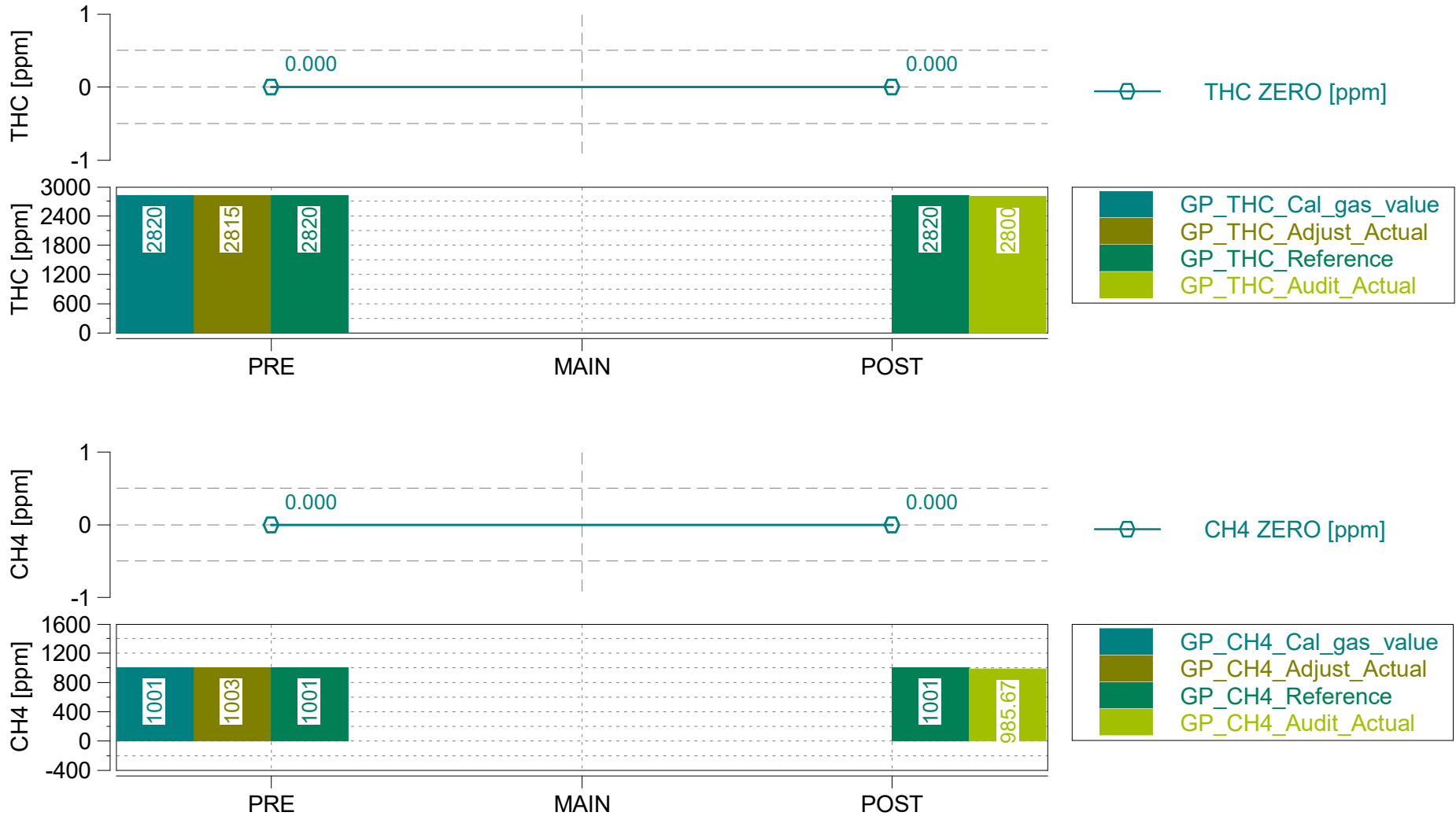














§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	<b>0.22</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-14
Leak Check Age [days]	0

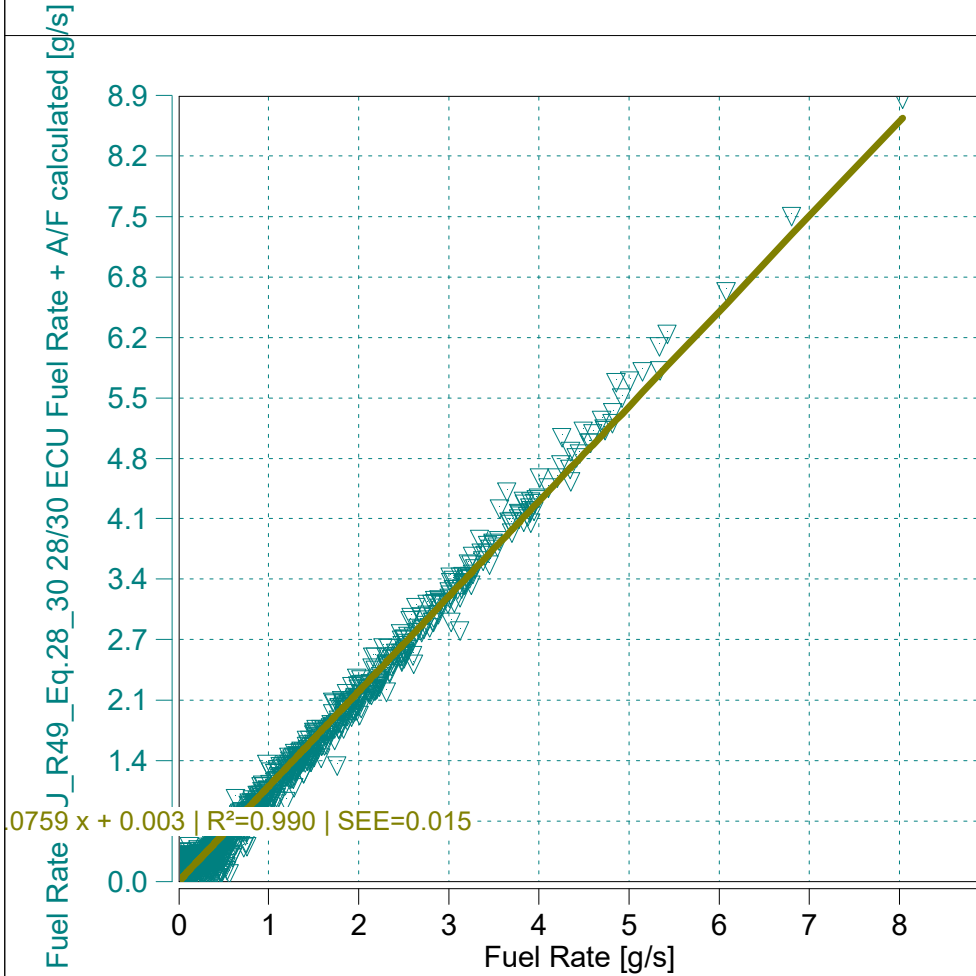
Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151



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

$y = 1.0759x + 0.003 \mid R^2=0.990 \mid SEE=0.015$   
 $m = 1.08$  (0.9 - 1.1 recommended)  
 $R^2 = 0.99$  (min 0.9 mandatory)

Data from - to [% of Maximum]

0

100



Trip Duration	2154.00	s
Trip Duration (a)	2154.00	s
Trip Distance	24.20	mi
Trip Distance (a)	24.20	mi
Trip Fuel Cons. (b)	2.92	kg
Trip Fuel Cons. (ab)	2.92	kg
Trip Fuel Cons. EU (ac)	3.07	kg
Trip Fuel Cons. US (ac)	3.07	kg
Trip Fuel Economy (b)	23.45	mpg_US
Trip Fuel Economy (ab)	23.45	mpg_US
Trip Fuel Economy EU (ac)	22.29	mpg_US
Trip Fuel Economy US (ac)	22.32	mpg_US
Trip Fuel Economy GGE (b)	23.45	mpg_US
Trip Fuel Economy GGE (ab)	23.45	mpg_US
Trip Fuel Economy EU GGE (ac)	22.29	mpg_US
Trip Fuel Economy US GGE (ac)	22.32	mpg_US
Trip Av. Eng. Speed	1368.02	rpm
Trip Av. Torque	89.35	lbft
Trip Av. Power	25.91	hp
Trip Work		
Trip Work (a)	15.50	hphr
Trip Exhaust Mass	47.61	kg
Trip Exhaust Mass EU (ac)	45.29	kg
Trip Exhaust Mass US (ac)	45.38	kg
Trip Av. Amb. Temperature	56.48	deg_F
Trip Av. Humidity	49.51	%
Trip Av. GPS Altitude	48.90	m
Fuel Type	Petrol (E10)	

ave THC	16.31770	ppm
ave NMHC	15.99134	ppm
ave CH4	0.32635	ppm
ave CO	266.64490	ppm
ave CO2	11.93168	%
ave NOx	3.38467	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	0.27529	g
tot NMHC	0.25465	g
tot CH4	0.00610	g
tot CO	12.82644	g
tot CO2	9310.34957	g
tot NO (d)	0.08793	g
tot NO2	0.09693	g
tot NOx	0.18356	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	40.45024	mi/hr
Trip Distance Share Urban	19.41920	% distanc
Trip Distance Share Rural	20.19333	% distanc
Trip Distance Share Motorway	60.38747	% distanc

BS CO2	600.53388	g/hphr
BS CO	0.82733	g/hphr
BS THC	0.01776	g/hphr
BS NMHC	0.01643	g/hphr
BS CH4	0.00039	g/hphr
BS NO (d)	0.00567	g/hphr
BS NO2	0.00625	g/hphr
BS NOx	0.01184	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	384.68186	g/mi
DS CO	0.52996	g/mi
DS THC	0.01137	g/mi
DS NMHC	0.01052	g/mi
DS CH4	0.00025	g/mi
DS NO (d)	0.00363	g/mi
DS NO2	0.00401	g/mi
DS NOx	0.00758	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	3187.33359	g/kg
FS CO	4.39104	g/kg
FS THC	0.09424	g/kg
FS NMHC	0.08718	g/kg
FS CH4	0.00209	g/kg
FS NO (d)	0.03010	g/kg
FS NO2	0.03318	g/kg
FS NOx	0.06284	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



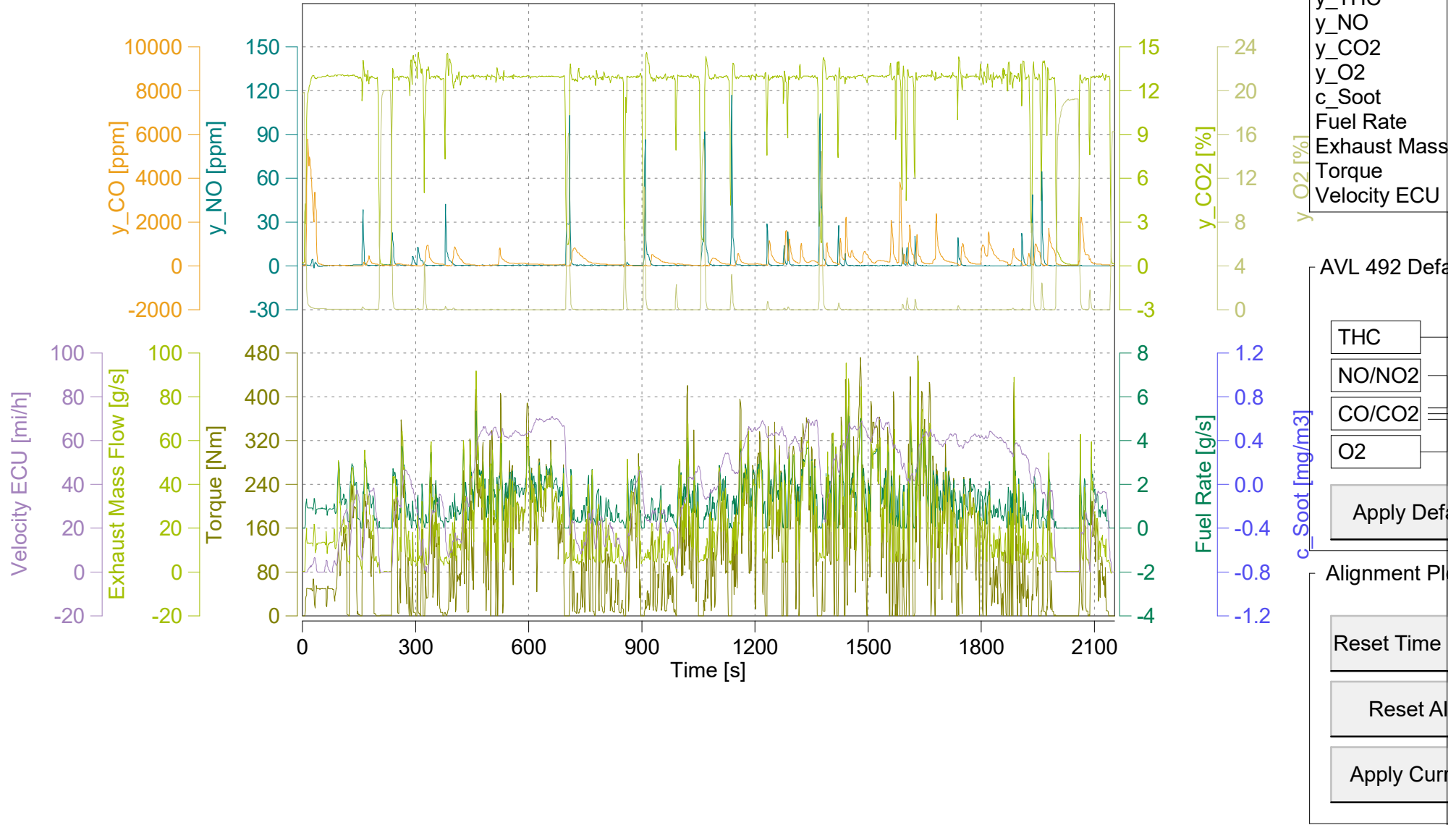
Trip Duration	2154.00	s	ave THC DC	16.39092	ppm	BS CO2 DC	600.85519	g/hphr
Trip Duration (a)	2154.00	s	ave NMHC DC	16.06310	ppm	BS CO DC	0.81789	g/hphr
Trip Distance	24.20	mi	ave CH4 DC	0.32782	ppm	BS THC DC	0.01784	g/hphr
Trip Distance (a)	24.20	mi	ave CO DC	263.19065	ppm	BS NMHC DC	0.01650	g/hphr
Trip Fuel Cons. (b)	2.92	kg	ave CO2 DC	11.93806	%	BS CH4 DC	0.00040	g/hphr
Trip Fuel Cons. (ab)	2.92	kg	ave NOx DC	3.35326	ppm	BS NO DC (d)	0.00551	g/hphr
Trip Fuel Cons. EU (ac)	3.07	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00629	g/hphr
Trip Fuel Cons. US (ac)	3.07	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.01169	g/hphr
Trip Fuel Economy (b)	23.45	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	23.45	mpg_US	ave PN DC			BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	22.29	mpg_US	tot THC DC	0.27653	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	22.32	mpg_US	tot NMHC DC	0.25579	g	BS PN DC		
Trip Fuel Economy GGE (b)	23.45	mpg_US	tot CH4 DC	0.00613	g	DS CO2 DC	384.88768	g/mi
Trip Fuel Economy GGE (ab)	23.45	mpg_US	tot CO DC	12.68010	g	DS CO DC	0.52391	g/mi
Trip Fuel Economy EU GGE (ac)	22.29	mpg_US	tot CO2 DC	9315.33103	g	DS THC DC	0.01143	g/mi
Trip Fuel Economy US GGE (ac)	22.32	mpg_US	tot NO DC (d)	0.08542	g	DS NMHC DC	0.01057	g/mi
Trip Av. Eng. Speed	1368.02	rpm	tot NO2 DC	0.09756	g	DS CH4 DC	0.00025	g/mi
Trip Av. Torque	89.35	lbft	tot NOx DC	0.18120	g	DS NO DC (d)	0.00353	g/mi
Trip Av. Power	25.91	hp	tot Soot	n/a	g	DS NO2 DC	0.00403	g/mi
Trip Work			tot Soot meas	n/a	g	DS NOx DC	0.00749	g/mi
Trip Work (a)	15.50	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	47.61	kg	tot PN DC			DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	45.29	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	45.38	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN DC		
Trip Av. Amb. Temperature	56.48	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2 DC	3189.03895	g/kg
Trip Av. Humidity	49.51	%	Trip Av. Veh. Speed	40.45024	mi/hr	FS CO DC	4.34094	g/kg
Trip Av. GPS Altitude	48.90	m	Trip Distance Share Urban	19.41920	% distanc	FS THC DC	0.09467	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	20.19333	% distanc	FS NMHC DC	0.08757	g/kg
			Trip Distance Share Motorway	60.38747	% distanc	FS CH4 DC	0.00210	g/kg
						FS NO DC (d)	0.02924	g/kg
						FS NO2 DC	0.03340	g/kg
						FS NOx DC	0.06203	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



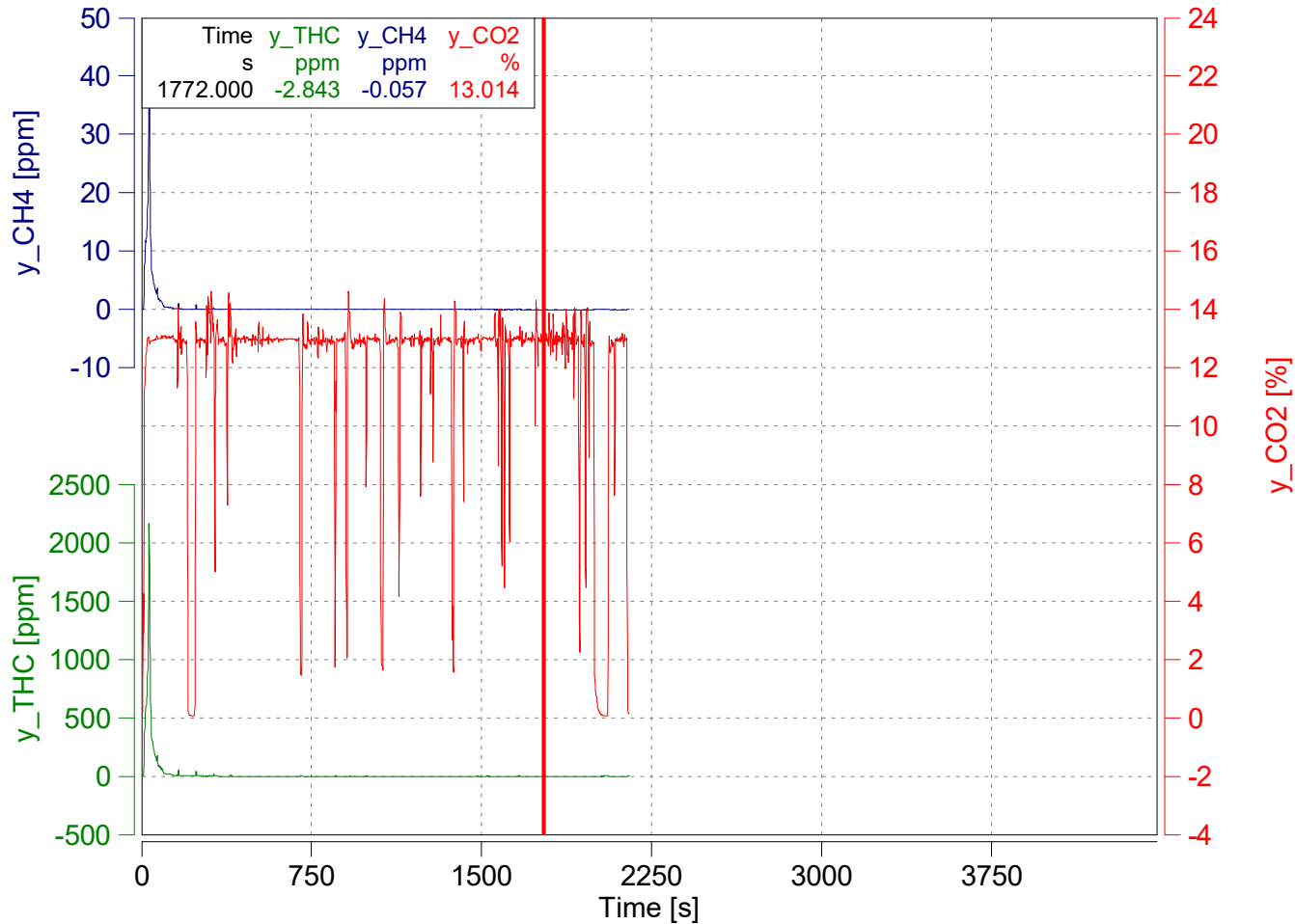


Concerto Absolute Time



Concerto Version: 505 Build 61, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R4.1\_B340  
 Legislation:

Vehicle: V167-5409 /  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

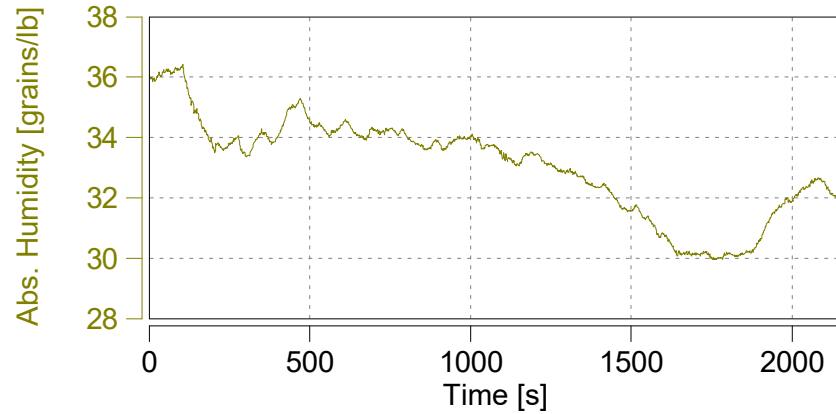
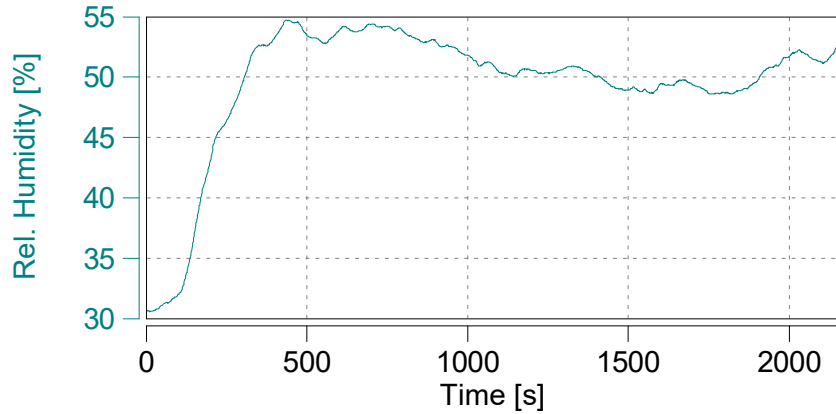
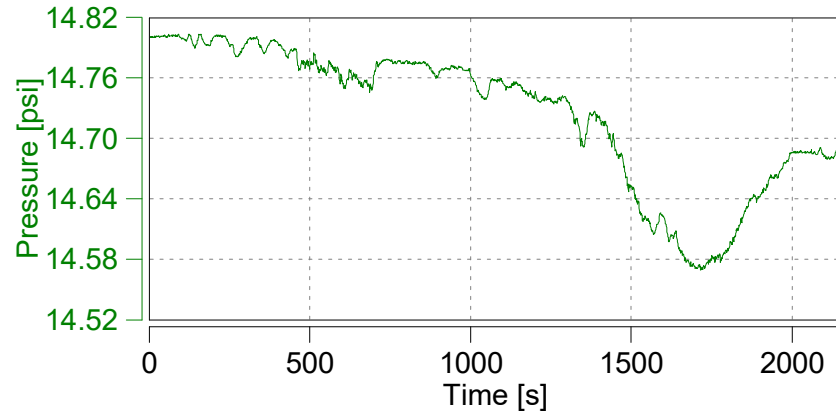
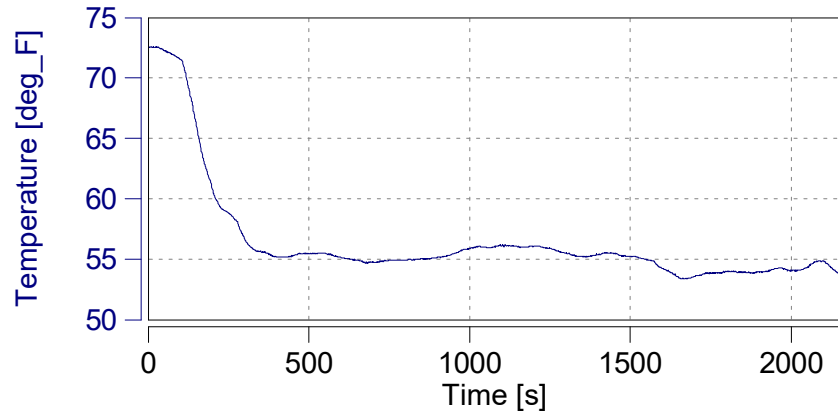


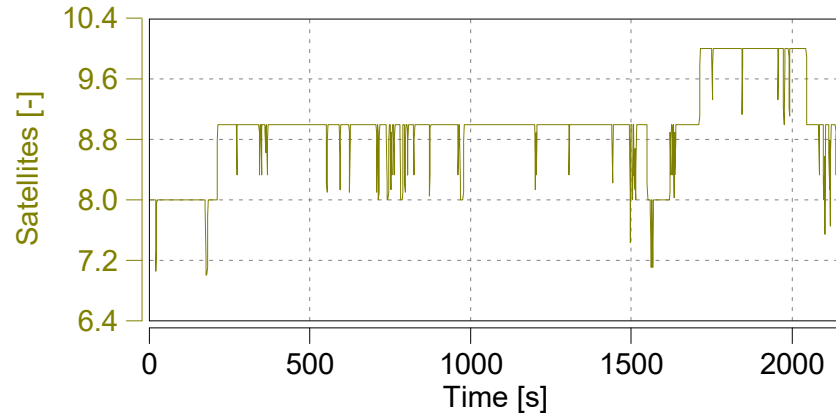
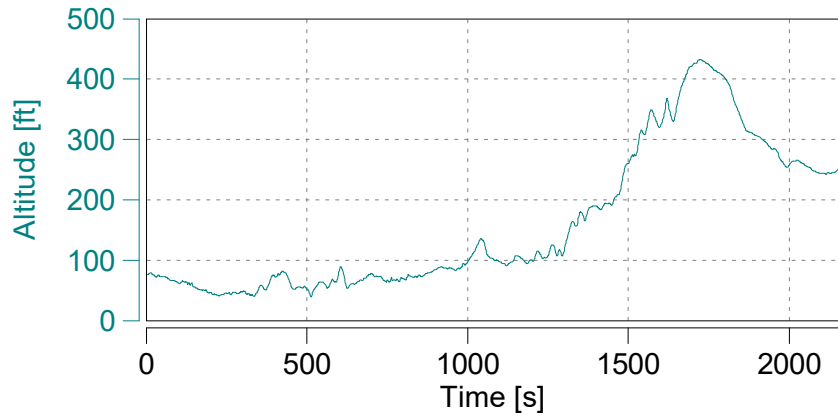
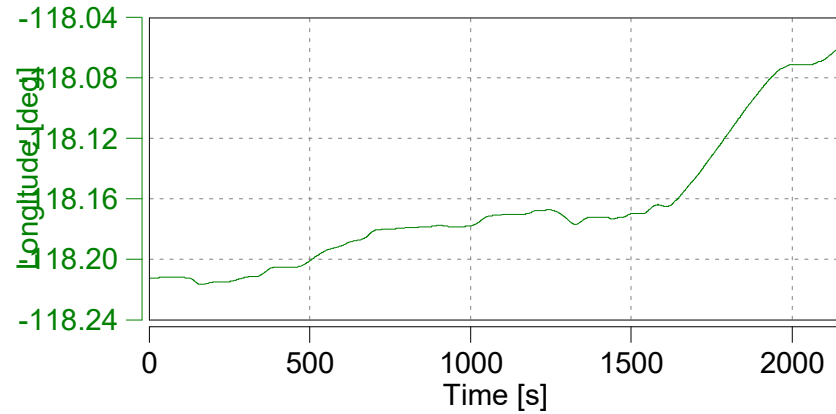
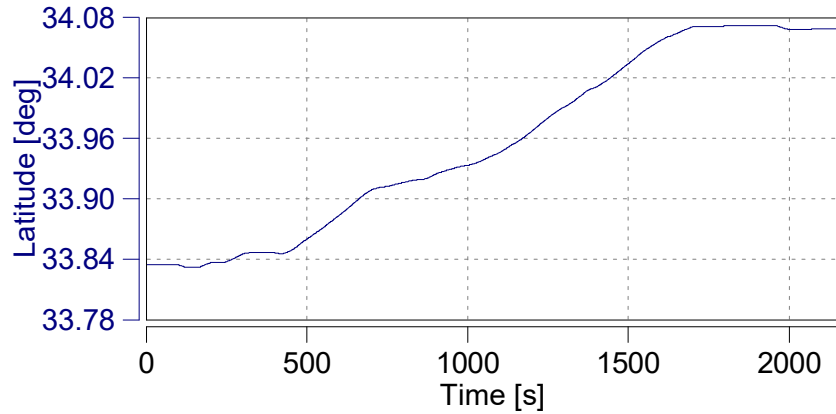
Absolute Time Shifts

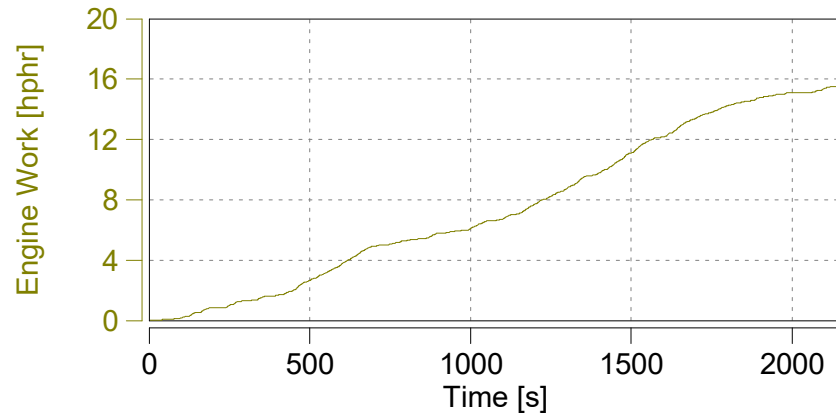
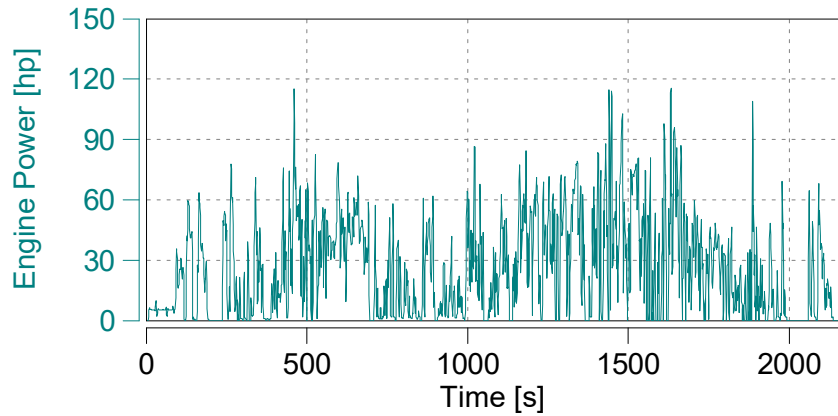
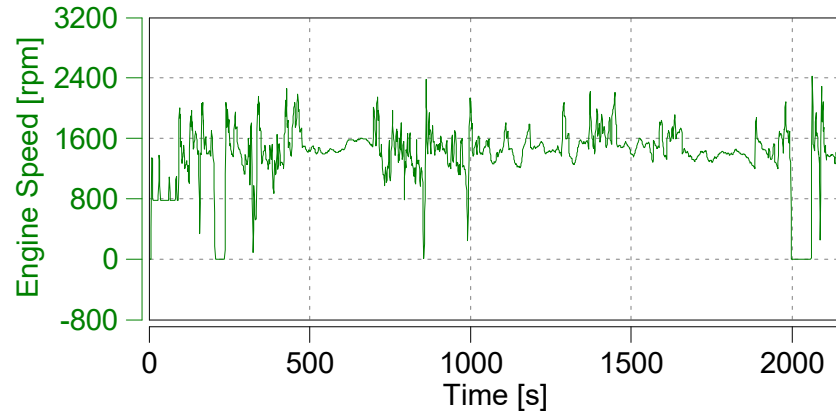
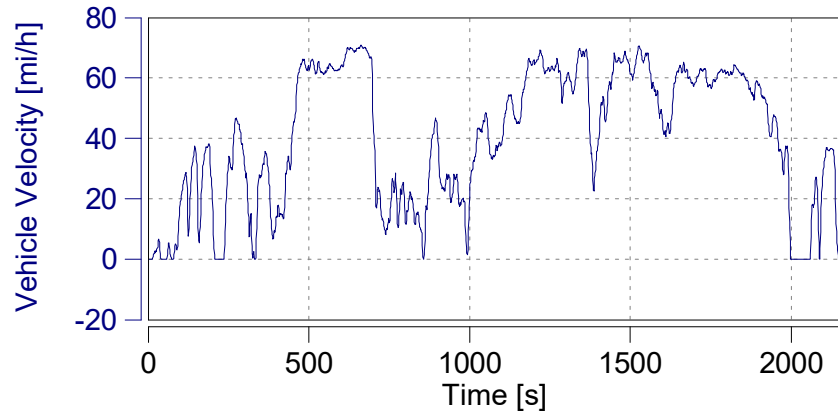
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y_CH4	s	0.0

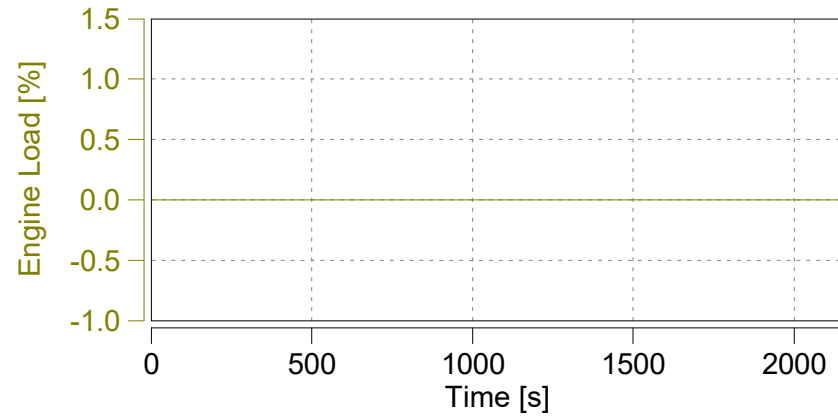
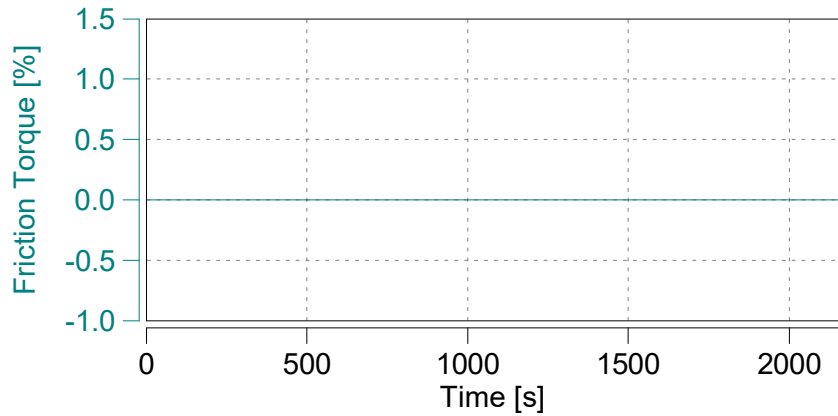
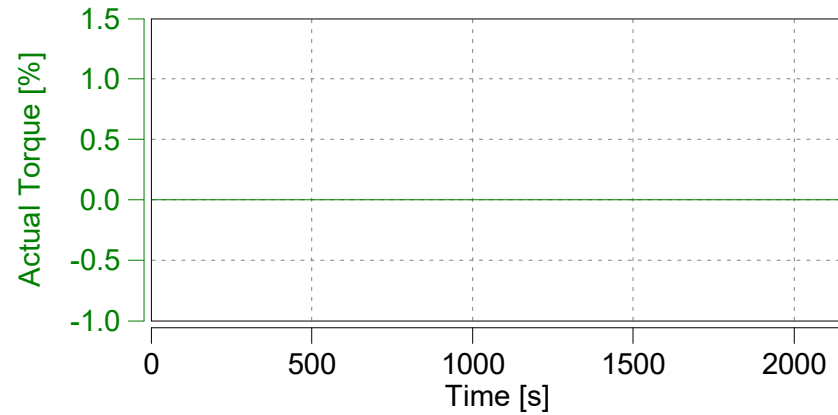
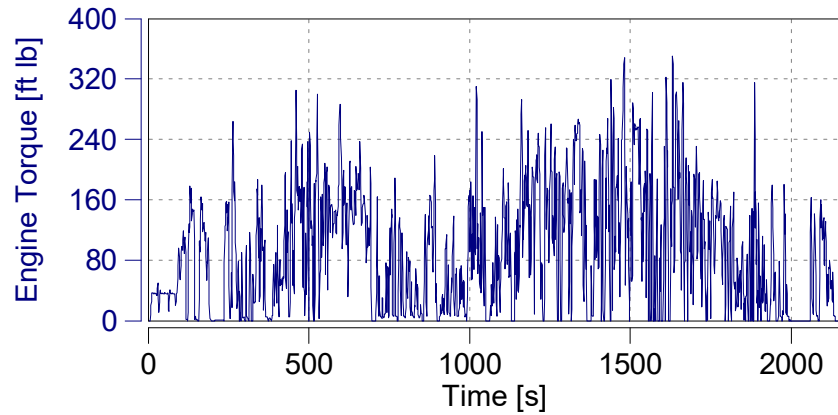
Reset Time Shifts in Plot

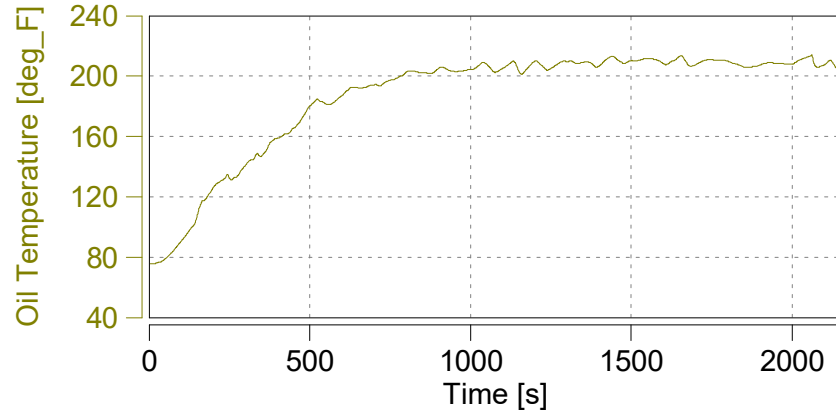
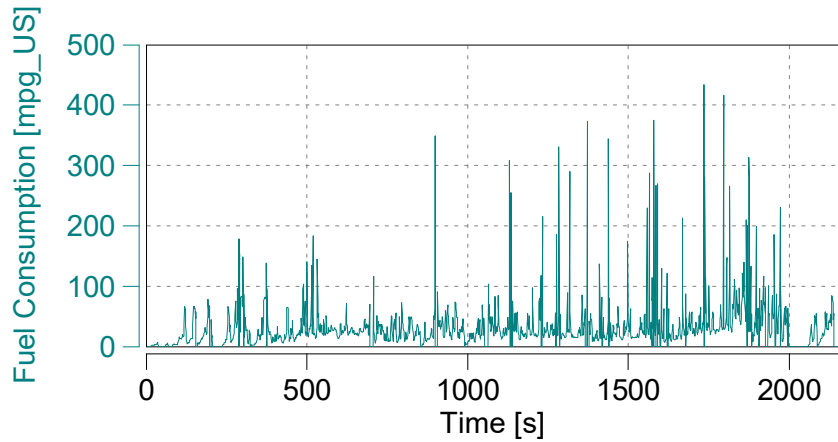
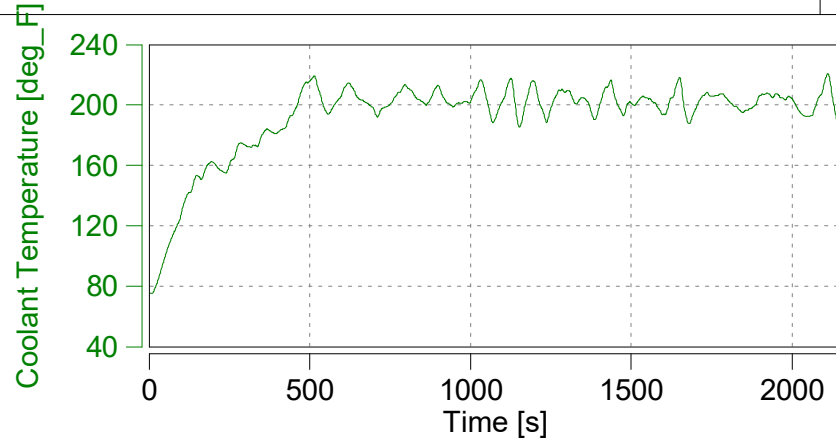
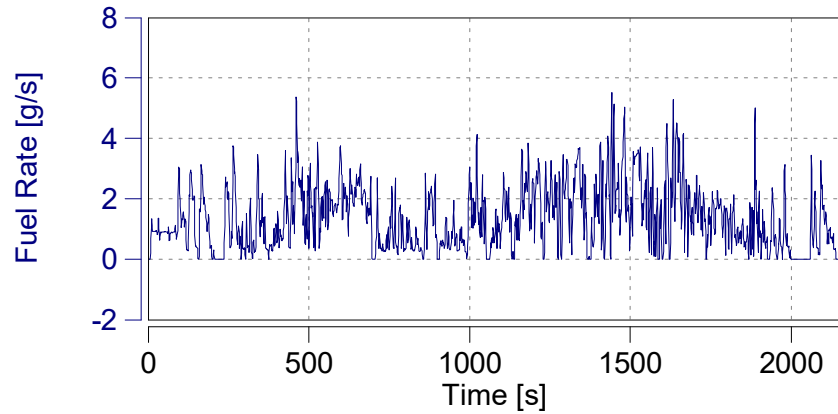
Apply Current Values

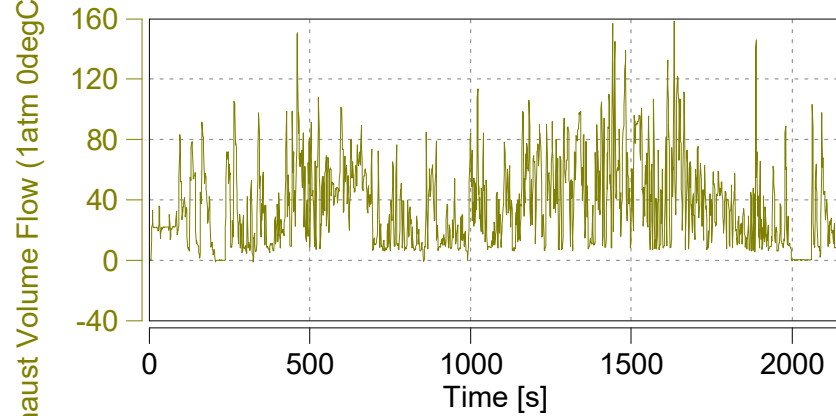
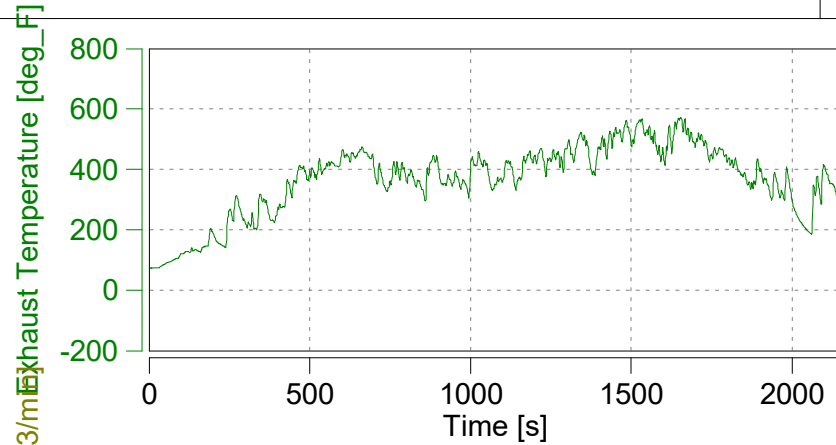
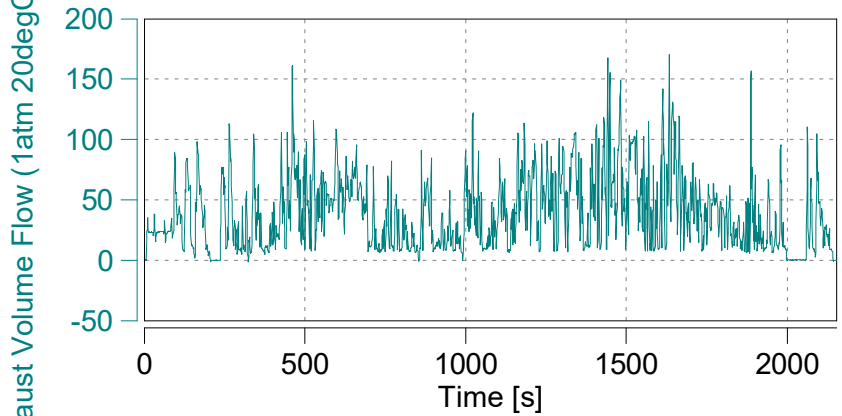
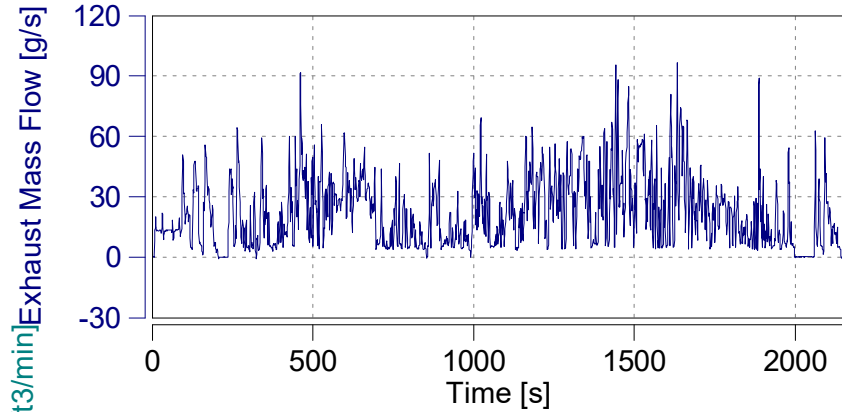




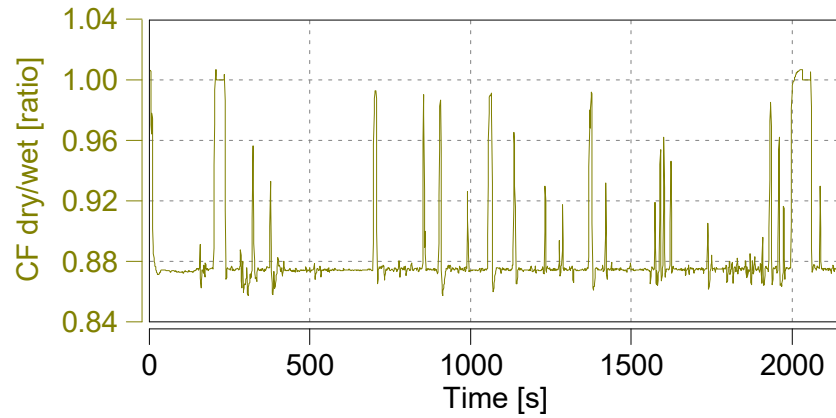
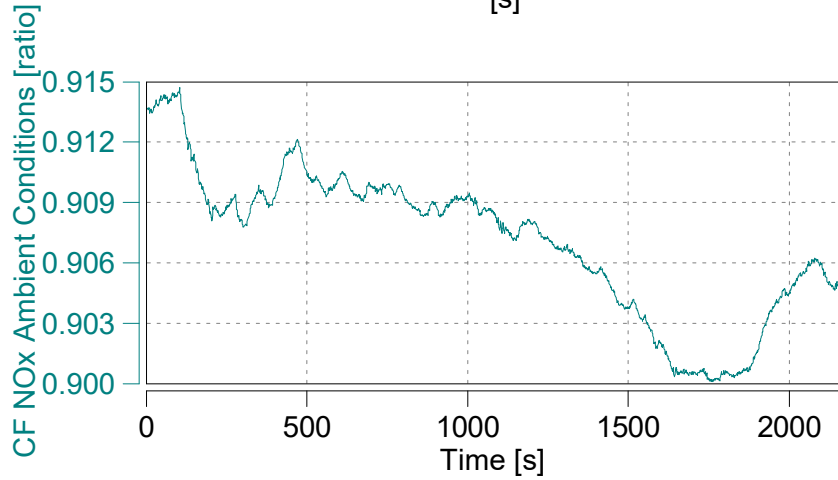
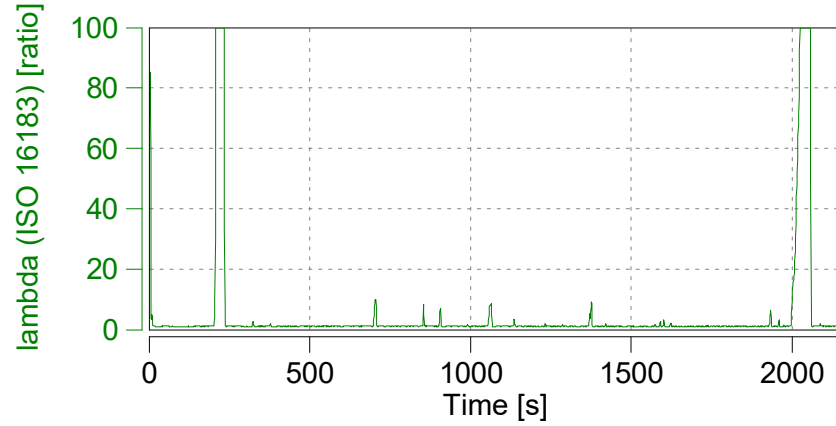
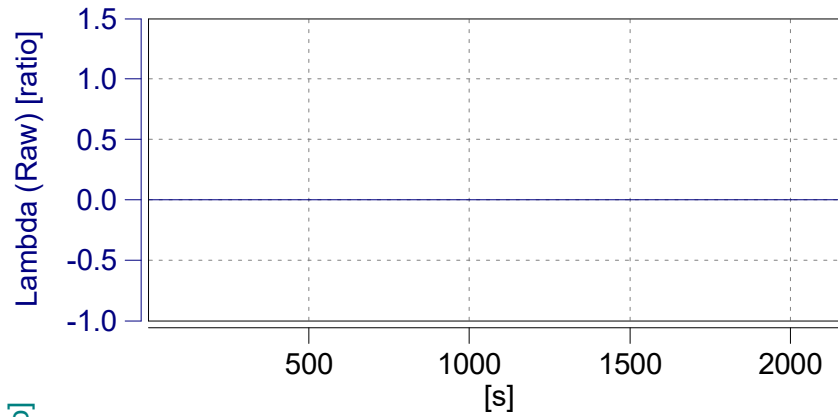


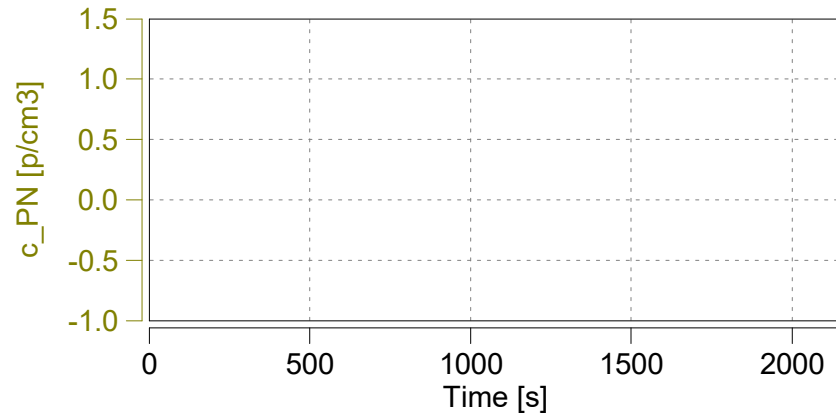
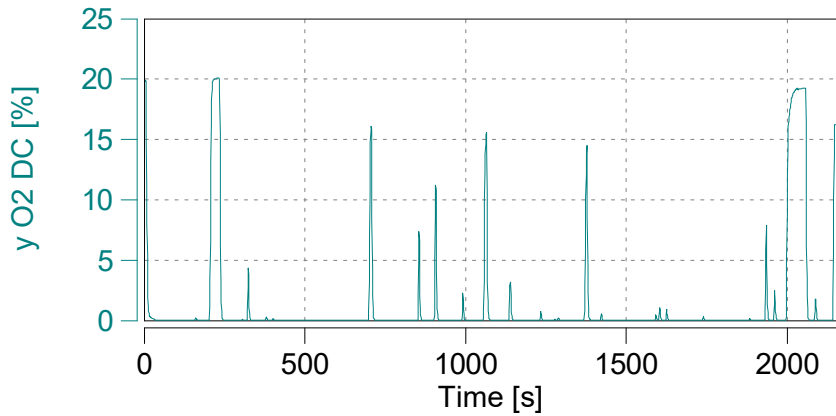
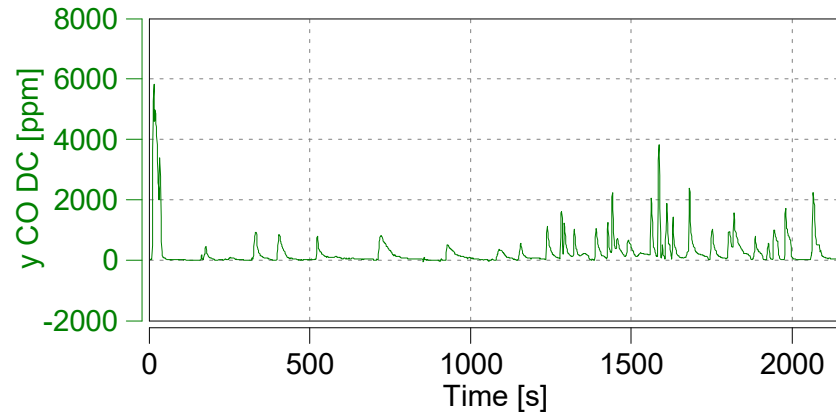
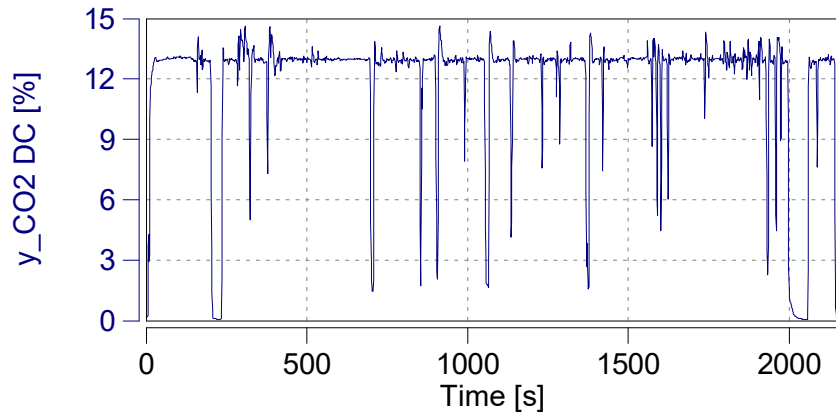


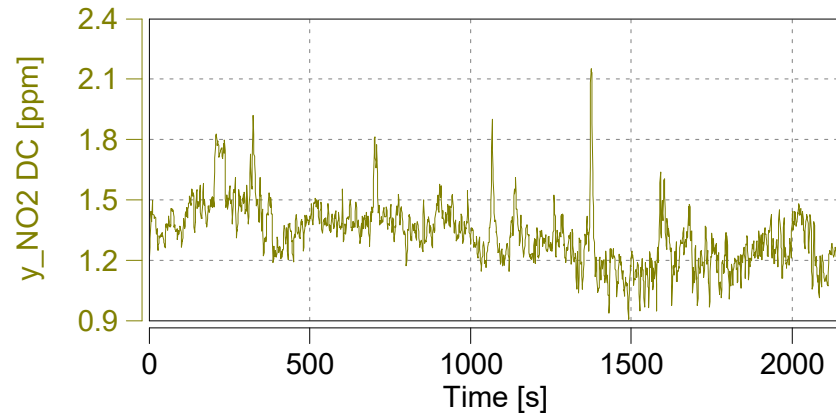
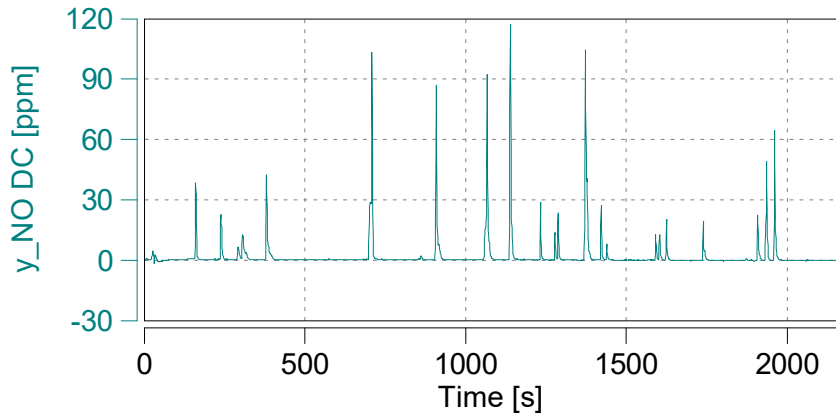
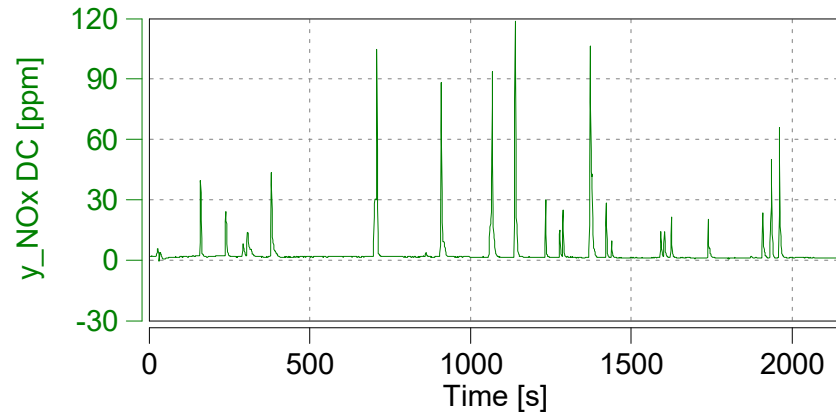
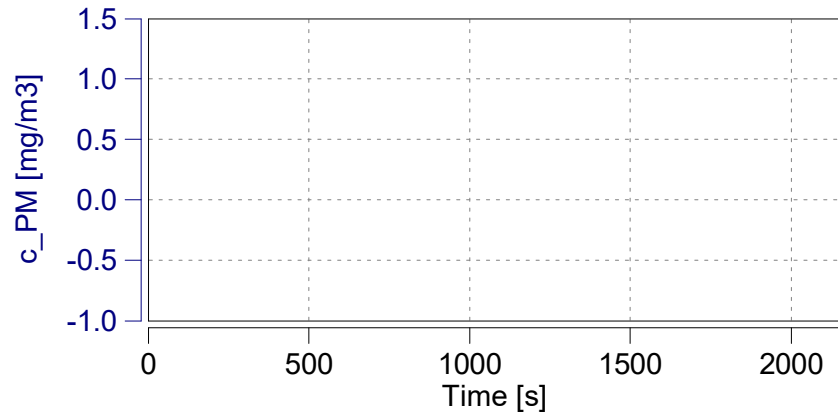


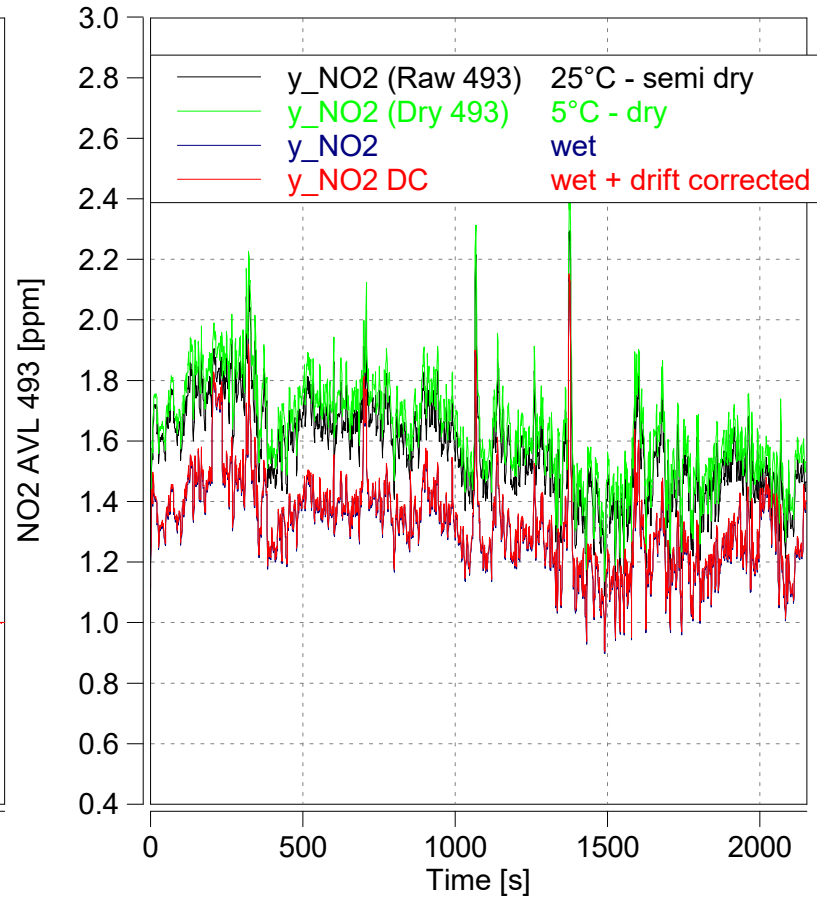
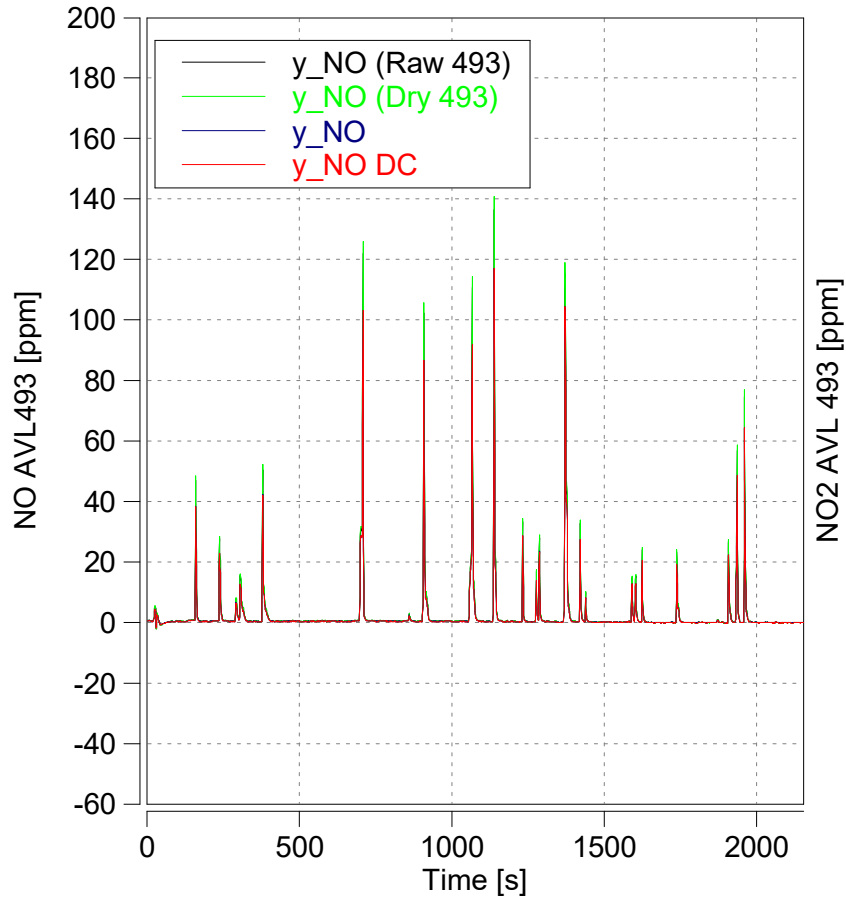






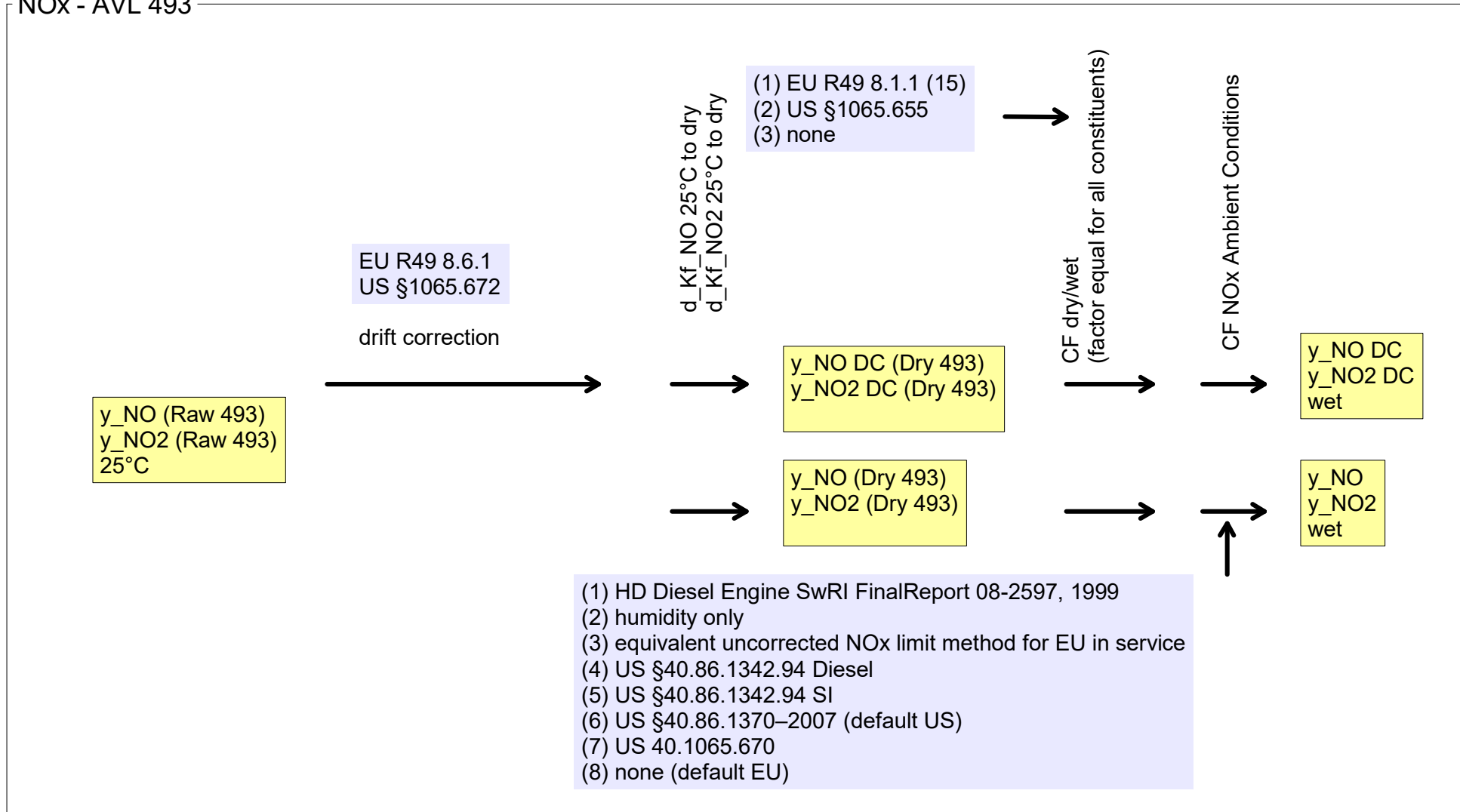


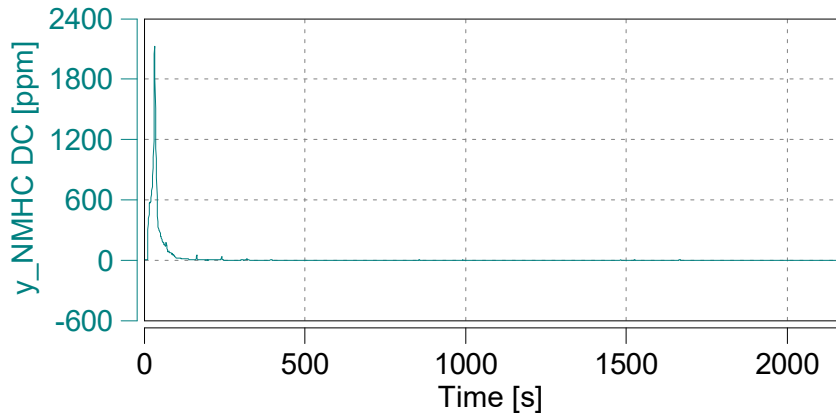
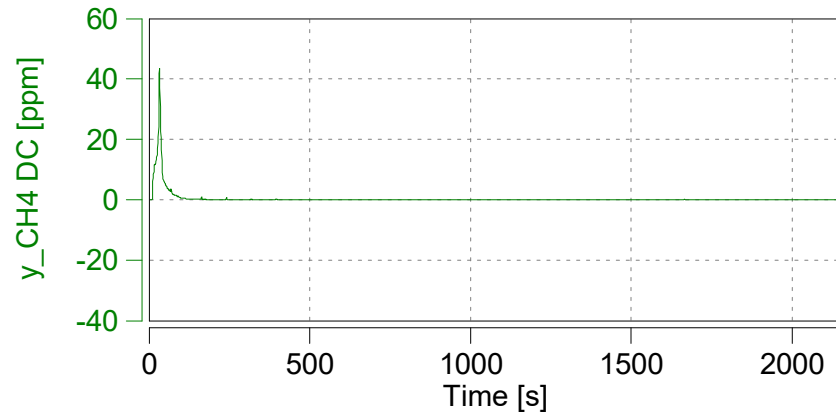
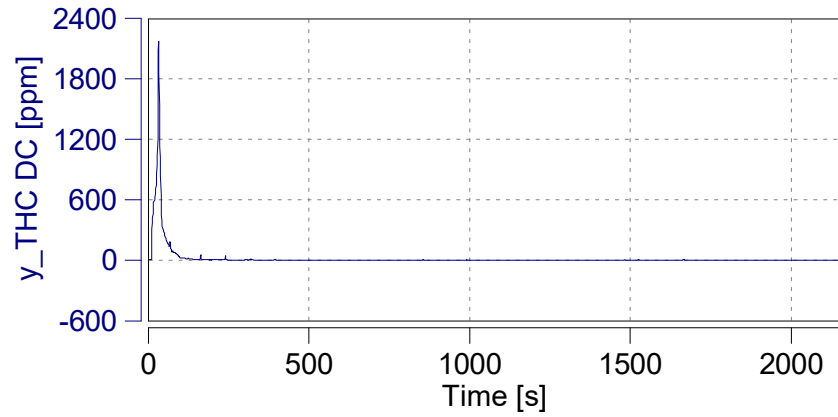


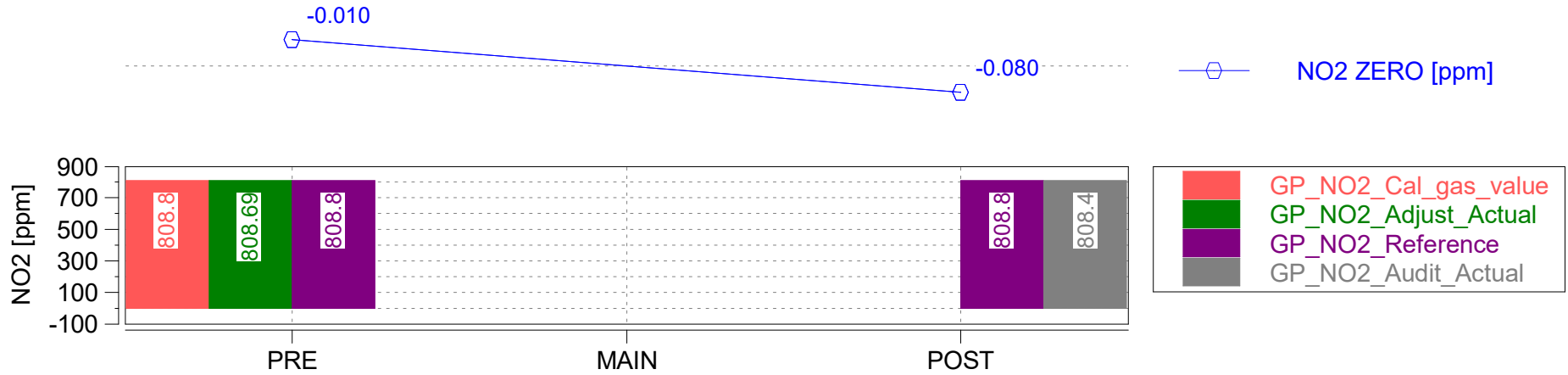
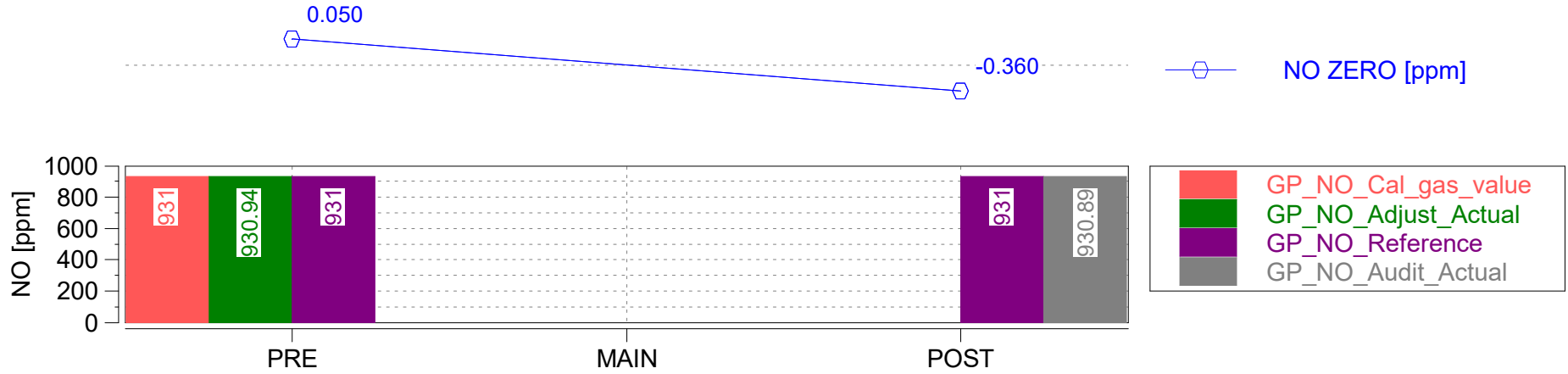


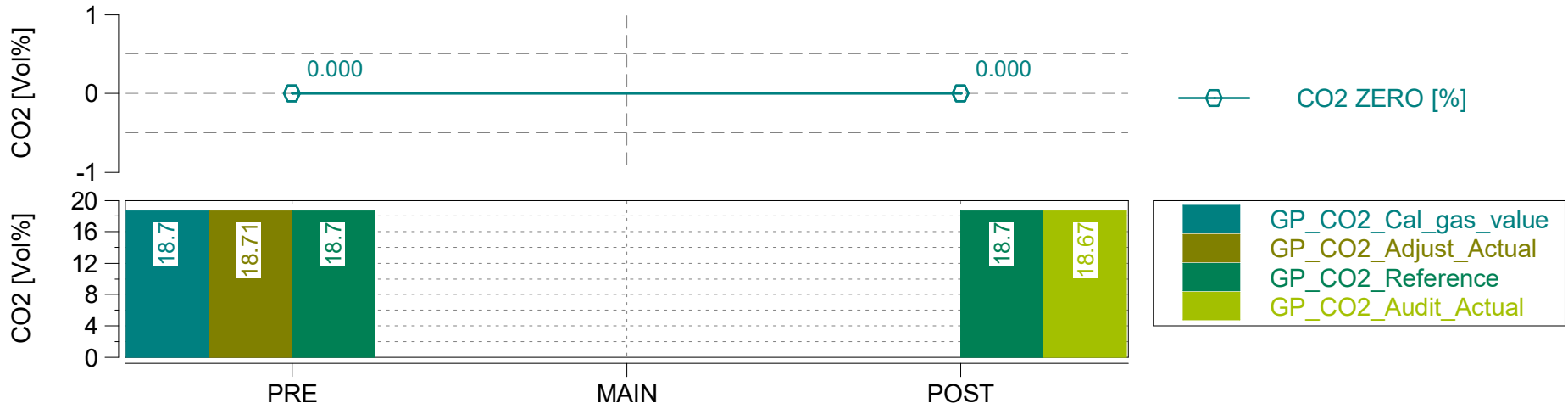
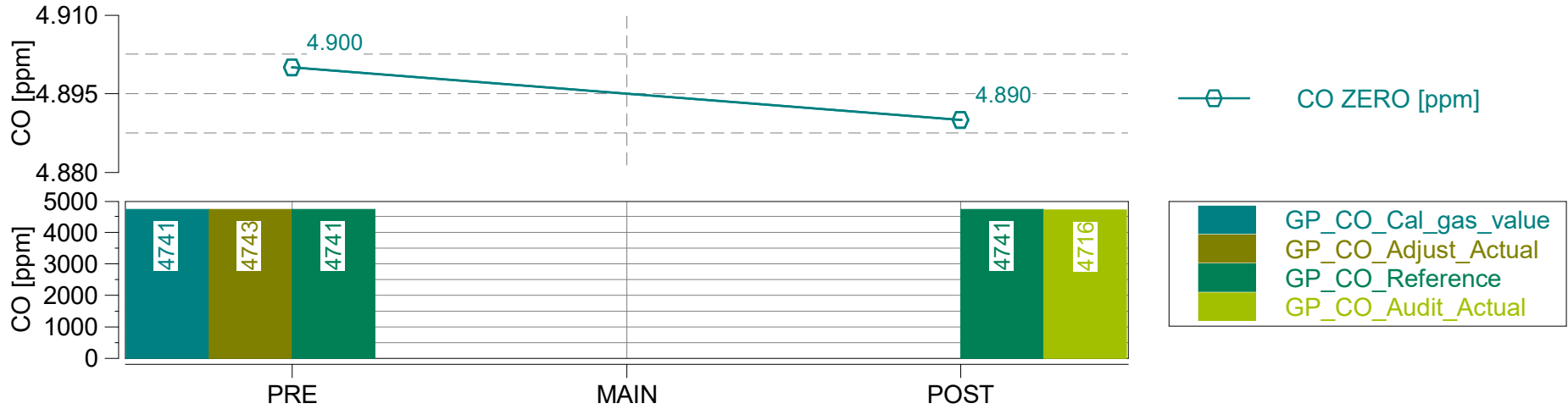


NOx - AVL 493

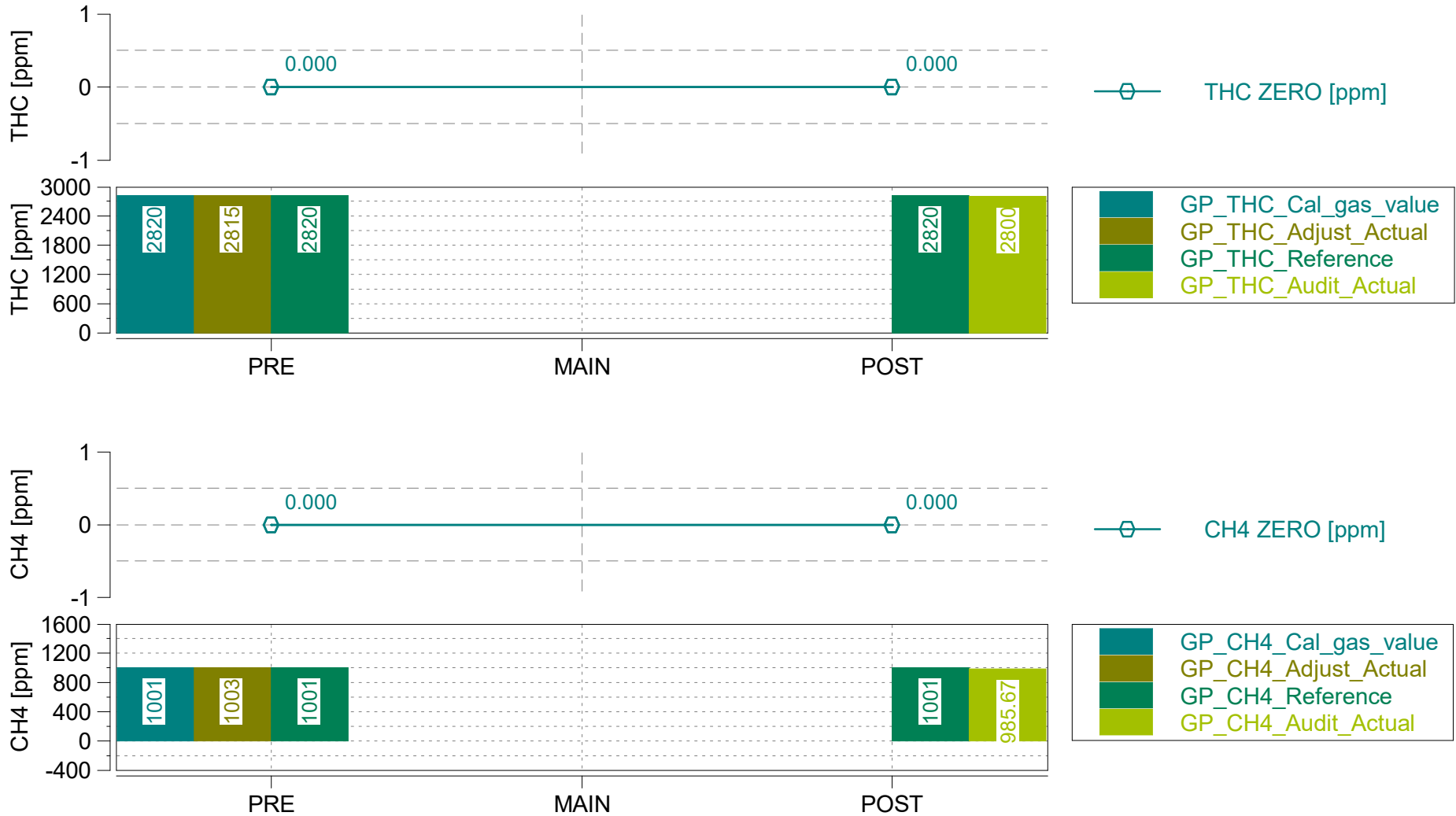














§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	<b>0.22</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-14
Leak Check Age [days]	0

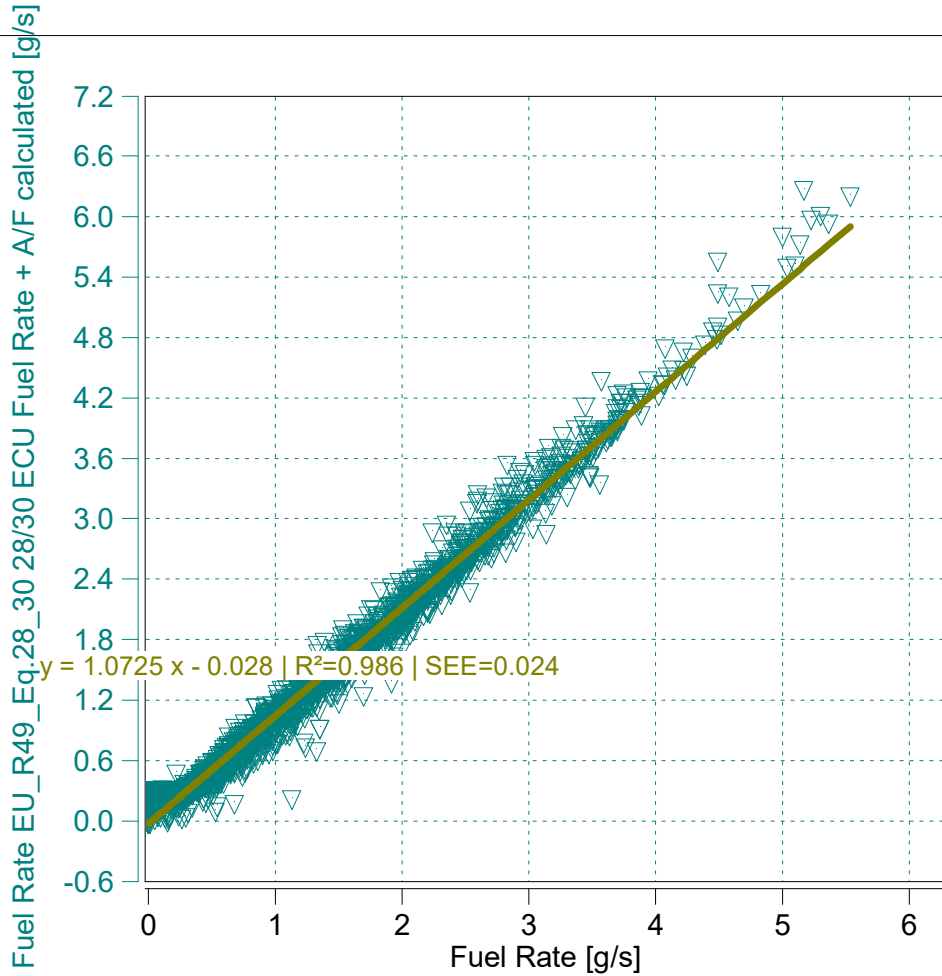
Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151



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

$y = 1.0725 x - 0.028 \mid R^2=0.986 \mid SEE=0.024$   
 $m = 1.07$  (0.9 - 1.1 recommended)  
 $R^2 = 0.99$  (min 0.9 mandatory)

Data from - to [% of Maximum]

0

100



Trip Duration	3105.00	s
Trip Duration (a)	3105.00	s
Trip Distance	16.03	mi
Trip Distance (a)	16.03	mi
Trip Fuel Cons. (b)	2.64	kg
Trip Fuel Cons. (ab)	2.64	kg
Trip Fuel Cons. EU (ac)	2.80	kg
Trip Fuel Cons. US (ac)	2.79	kg
Trip Fuel Economy (b)	17.20	mpg_US
Trip Fuel Economy (ab)	17.20	mpg_US
Trip Fuel Economy EU (ac)	16.20	mpg_US
Trip Fuel Economy US (ac)	16.23	mpg_US
Trip Fuel Economy GGE (b)	17.20	mpg_US
Trip Fuel Economy GGE (ab)	17.20	mpg_US
Trip Fuel Economy EU GGE (ac)	16.20	mpg_US
Trip Fuel Economy US GGE (ac)	16.23	mpg_US
Trip Av. Eng. Speed	1076.85	rpm
Trip Av. Torque	48.52	lbft
Trip Av. Power	15.68	hp
Trip Work		
Trip Work (a)	13.48	hphr
Trip Exhaust Mass	43.56	kg
Trip Exhaust Mass EU (ac)	41.13	kg
Trip Exhaust Mass US (ac)	41.29	kg
Trip Av. Amb. Temperature	63.74	deg_F
Trip Av. Humidity	40.02	%
Trip Av. GPS Altitude	71.79	m
Fuel Type	Petrol (E10)	

ave THC	-2.61604	ppm
ave NMHC	-2.56371	ppm
ave CH4	-0.05232	ppm
ave CO	138.00420	ppm
ave CO2	9.51063	%
ave NOx	3.55488	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	0.00139	g
tot NMHC	0.00128	g
tot CH4	0.00003	g
tot CO	8.93828	g
tot CO2	8487.22308	g
tot NO (d)	0.12335	g
tot NO2	0.09981	g
tot NOx	0.21866	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	18.63799	mi/hr
Trip Distance Share Urban	60.29229	% distance
Trip Distance Share Rural	24.63538	% distance
Trip Distance Share Motorway	15.07234	% distance

BS CO2	629.42523	g/hphr
BS CO	0.66288	g/hphr
BS THC	0.00010	g/hphr
BS NMHC	0.00010	g/hphr
BS CH4	0.00000	g/hphr
BS NO (d)	0.00915	g/hphr
BS NO2	0.00740	g/hphr
BS NOx	0.01622	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	529.50267	g/mi
DS CO	0.55764	g/mi
DS THC	0.00009	g/mi
DS NMHC	0.00008	g/mi
DS CH4	0.00000	g/mi
DS NO (d)	0.00770	g/mi
DS NO2	0.00623	g/mi
DS NOx	0.01364	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	3217.86676	g/kg
FS CO	3.38888	g/kg
FS THC	0.00053	g/kg
FS NMHC	0.00049	g/kg
FS CH4	0.00001	g/kg
FS NO (d)	0.04677	g/kg
FS NO2	0.03784	g/kg
FS NOx	0.08290	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

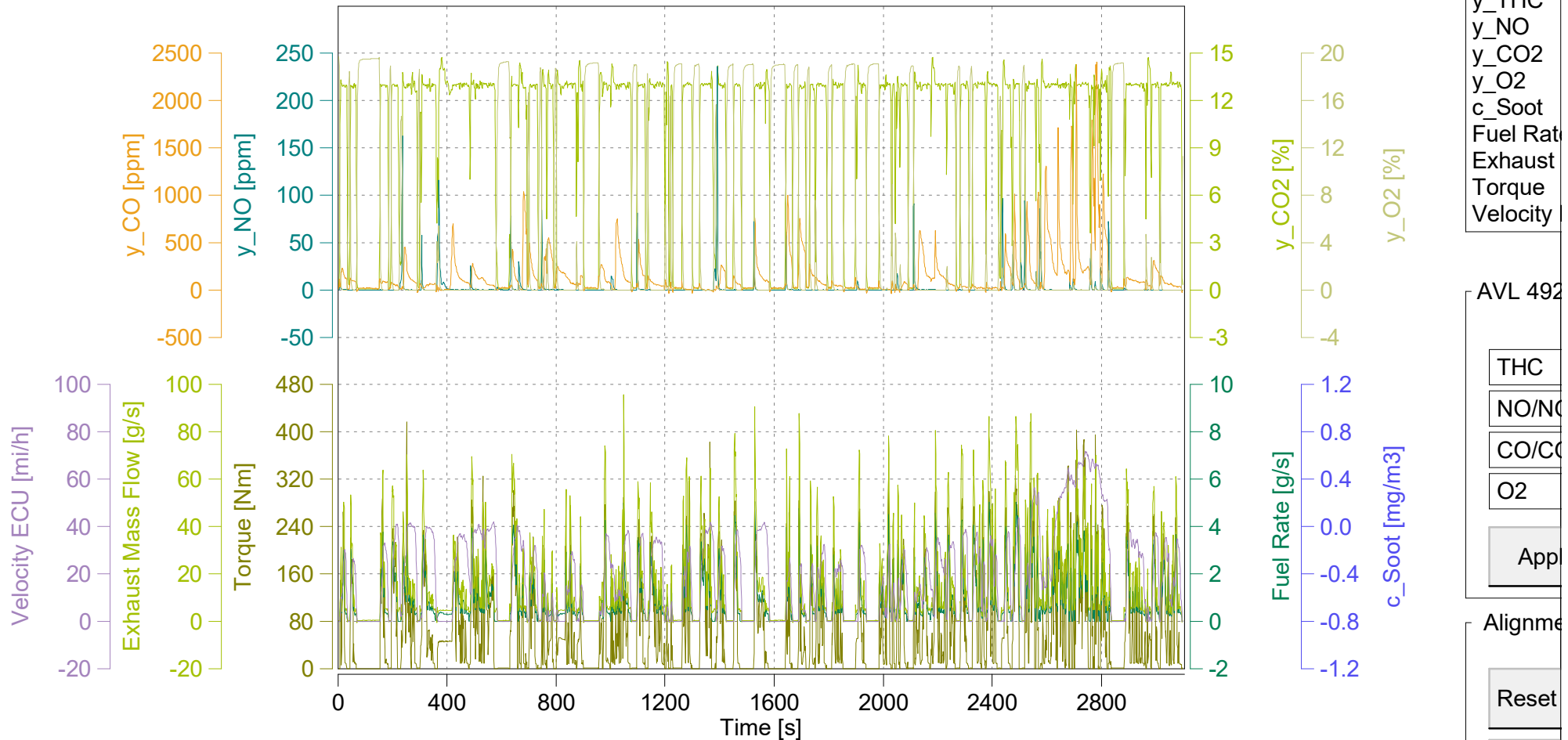


Trip Duration	3105.00	s
Trip Duration (a)	3105.00	s
Trip Distance	16.03	mi
Trip Distance (a)	16.03	mi
Trip Fuel Cons. (b)	2.64	kg
Trip Fuel Cons. (ab)	2.64	kg
Trip Fuel Cons. EU (ac)	2.80	kg
Trip Fuel Cons. US (ac)	2.79	kg
Trip Fuel Economy (b)	17.20	mpg_US
Trip Fuel Economy (ab)	17.20	mpg_US
Trip Fuel Economy EU (ac)	16.20	mpg_US
Trip Fuel Economy US (ac)	16.23	mpg_US
Trip Fuel Economy GGE (b)	17.20	mpg_US
Trip Fuel Economy GGE (ab)	17.20	mpg_US
Trip Fuel Economy EU GGE (ac)	16.20	mpg_US
Trip Fuel Economy US GGE (ac)	16.23	mpg_US
Trip Av. Eng. Speed	1076.85	rpm
Trip Av. Torque	48.52	lbft
Trip Av. Power	15.68	hp
Trip Work		
Trip Work (a)	13.48	hphr
Trip Exhaust Mass	43.56	kg
Trip Exhaust Mass EU (ac)	41.13	kg
Trip Exhaust Mass US (ac)	41.29	kg
Trip Av. Amb. Temperature	63.74	deg_F
Trip Av. Humidity	40.02	%
Trip Av. GPS Altitude	71.79	m
Fuel Type	Petrol (E10)	

ave THC DC	-2.62752	ppm
ave NMHC DC	-2.57497	ppm
ave CH4 DC	-0.05255	ppm
ave CO DC	139.57261	ppm
ave CO2 DC	9.51317	%
ave NOx DC	3.57900	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	0.00139	g
tot NMHC DC	0.00129	g
tot CH4 DC	0.00003	g
tot CO DC	9.01239	g
tot CO2 DC	8489.49300	g
tot NO DC (d)	0.12438	g
tot NO2 DC	0.09923	g
tot NOx DC	0.22027	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	18.63799	mi/hr
Trip Distance Share Urban	60.29229	% distance
Trip Distance Share Rural	24.63538	% distance
Trip Distance Share Motorway	15.07234	% distance

BS CO2 DC	629.59357	g/hphr
BS CO DC	0.66837	g/hphr
BS THC DC	0.00010	g/hphr
BS NMHC DC	0.00010	g/hphr
BS CH4 DC	0.00000	g/hphr
BS NO DC (d)	0.00922	g/hphr
BS NO2 DC	0.00736	g/hphr
BS NOx DC	0.01634	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	529.64429	g/mi
DS CO DC	0.56227	g/mi
DS THC DC	0.00009	g/mi
DS NMHC DC	0.00008	g/mi
DS CH4 DC	0.00000	g/mi
DS NO DC (d)	0.00776	g/mi
DS NO2 DC	0.00619	g/mi
DS NOx DC	0.01374	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	3218.72738	g/kg
FS CO DC	3.41698	g/kg
FS THC DC	0.00053	g/kg
FS NMHC DC	0.00049	g/kg
FS CH4 DC	0.00001	g/kg
FS NO DC (d)	0.04716	g/kg
FS NO2 DC	0.03762	g/kg
FS NOx DC	0.08351	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



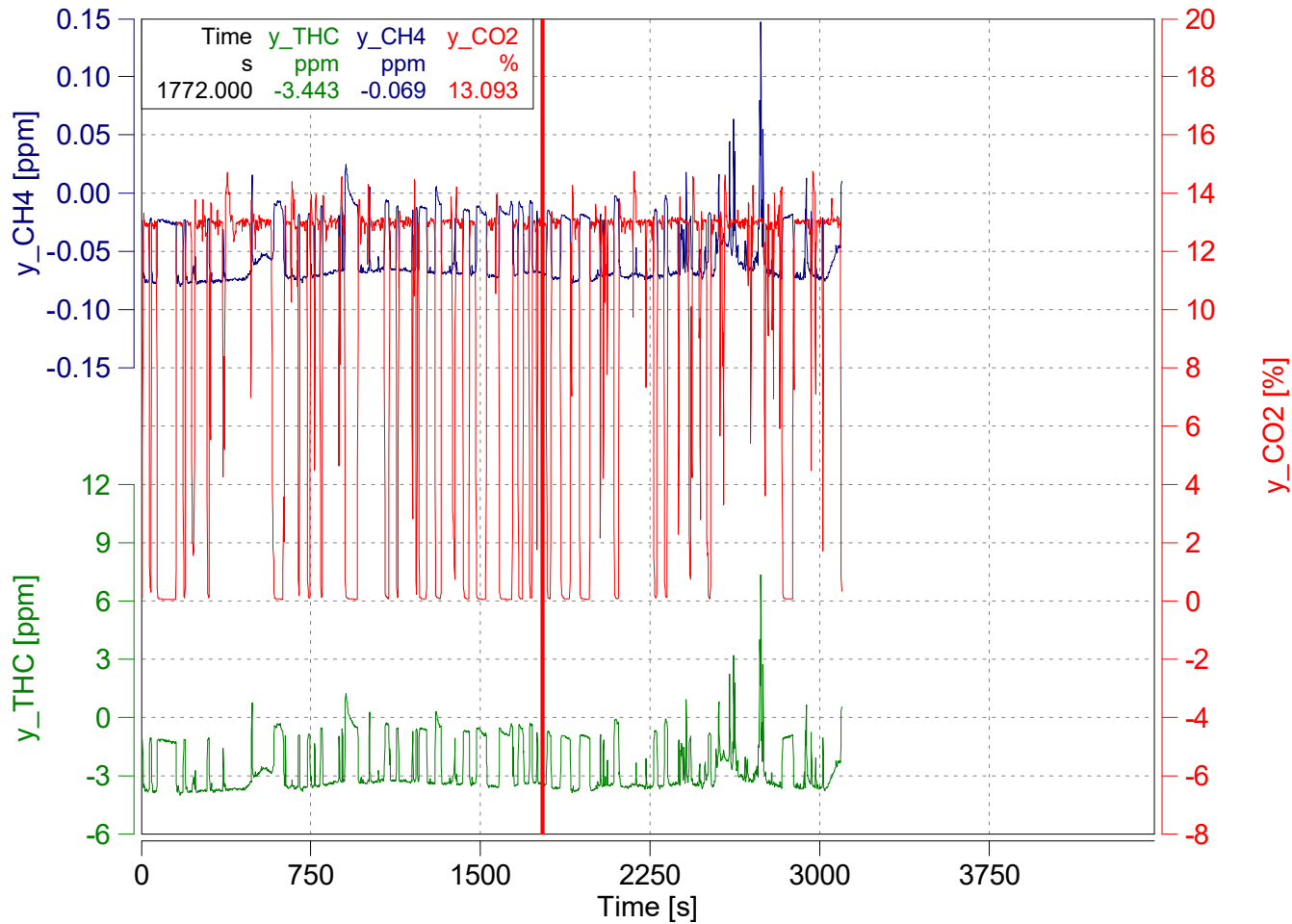
- y\_THC
- y\_NO
- y\_CO2
- y\_O2
- c\_Soot
- Fuel Rate
- Exhaust
- Torque
- Velocity

AVL 492

- THC
- NO/NO2
- CO/CO2
- O2
- App

Alignme

- Reset
- Re
- App

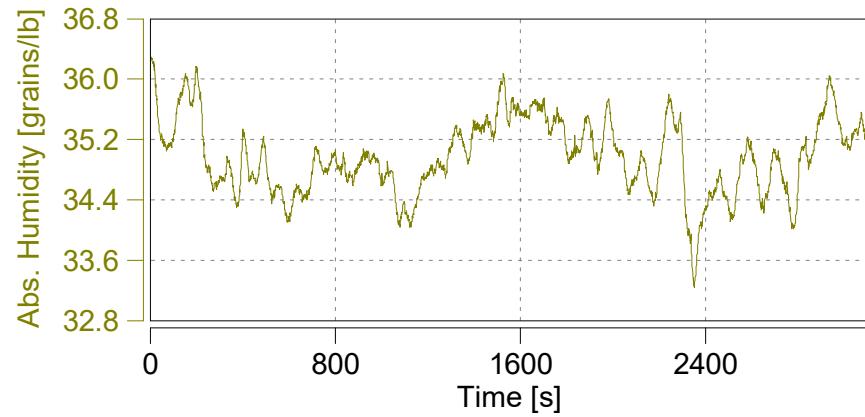
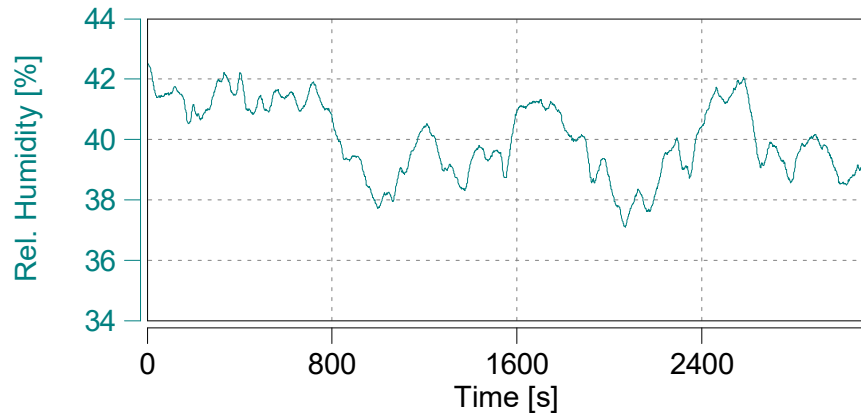
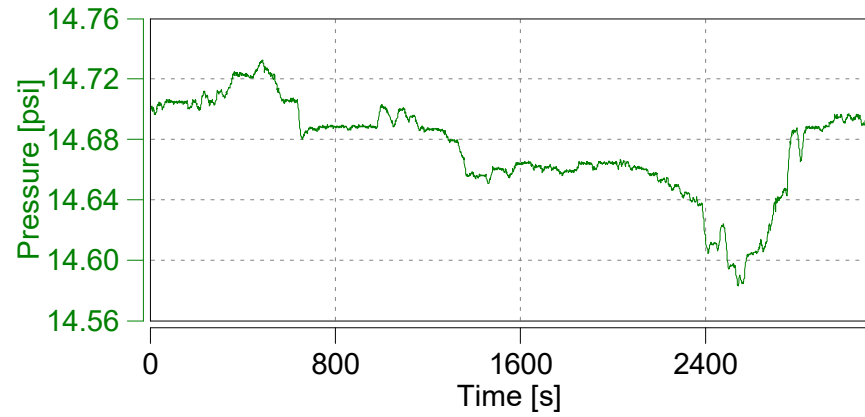
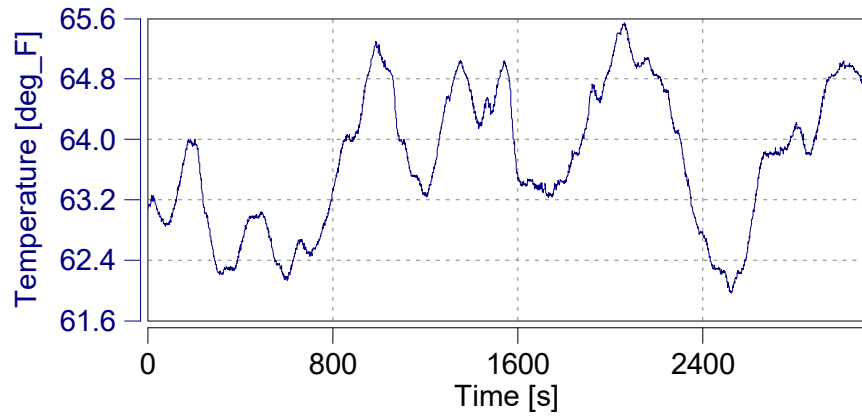


Absolute Time Shifts

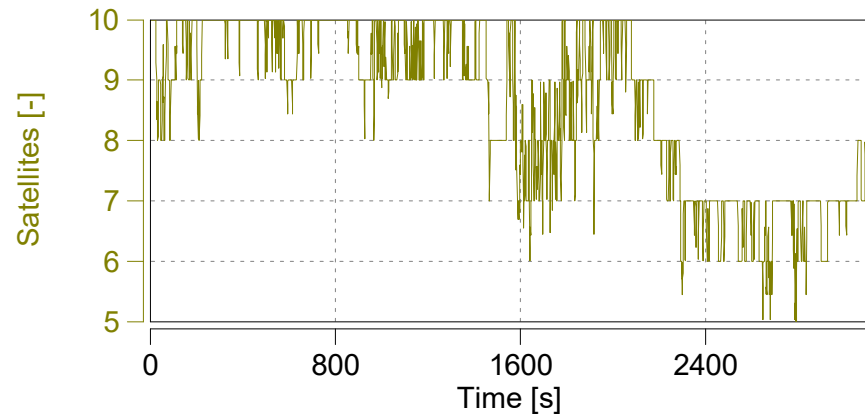
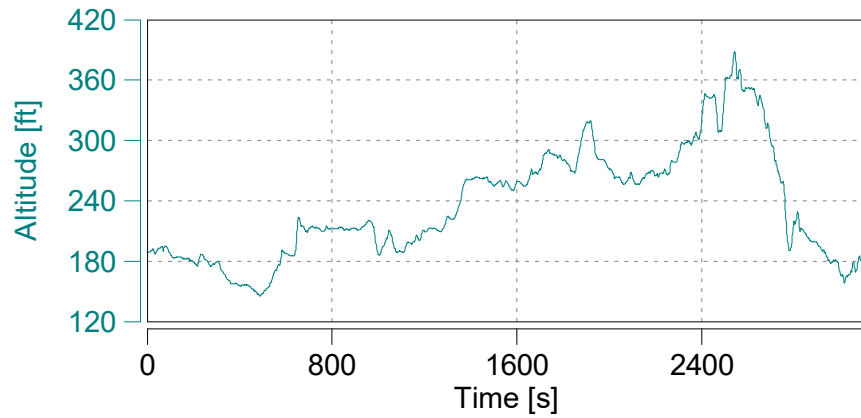
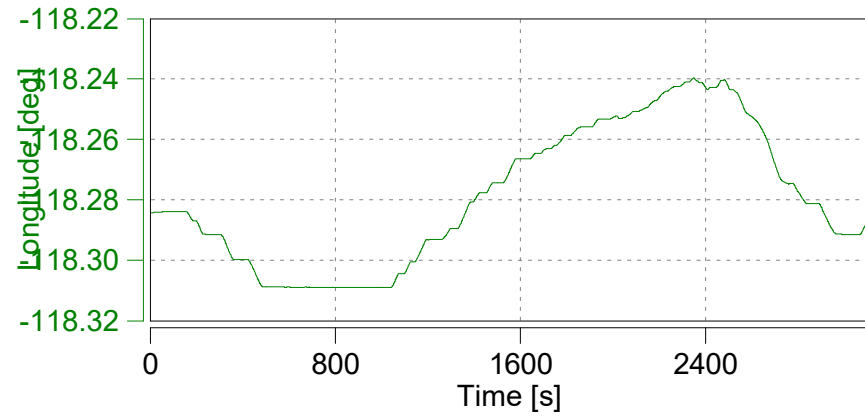
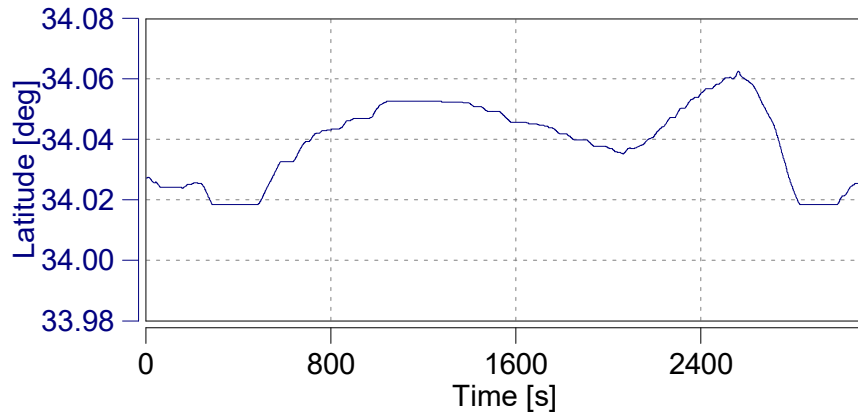
y_THC	s	0.0
y_CH4	s	0.0

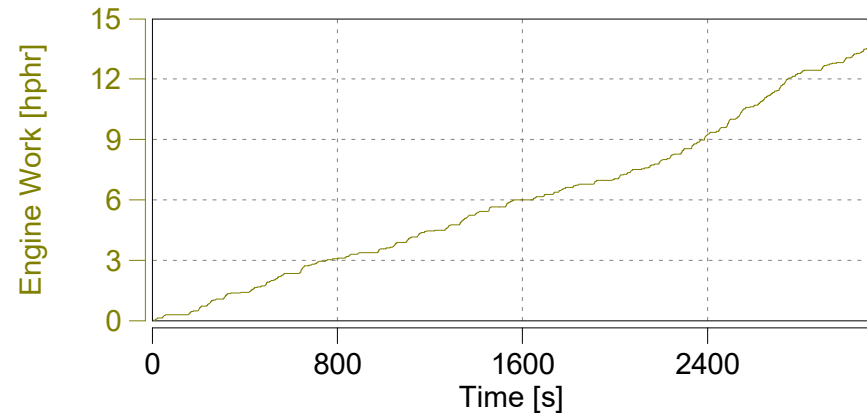
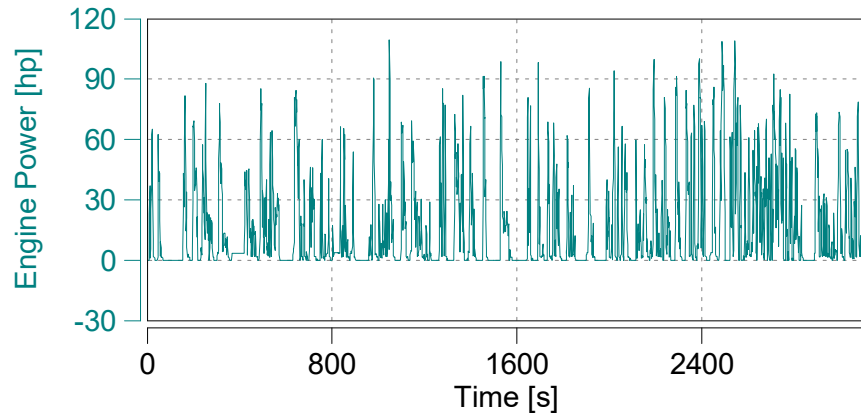
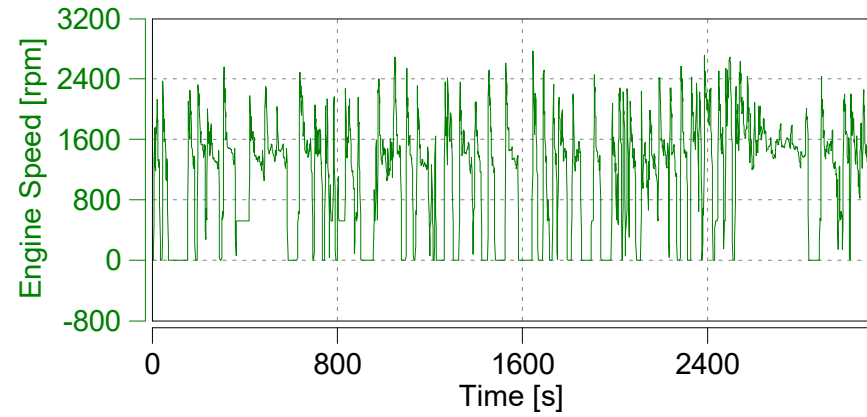
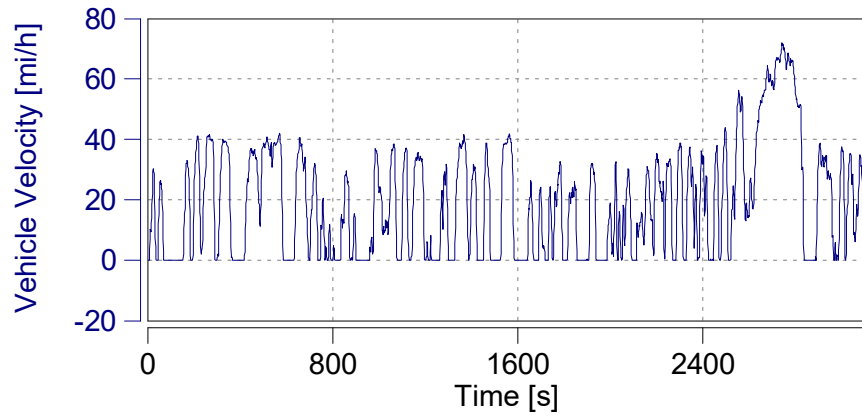
Reset Time Shifts in Plot

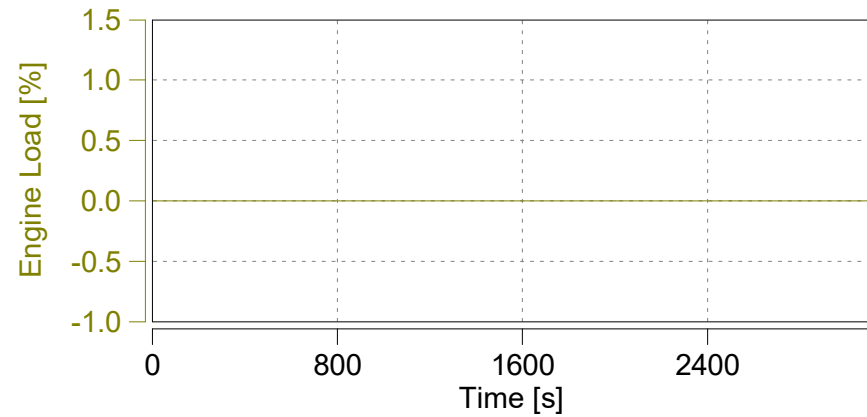
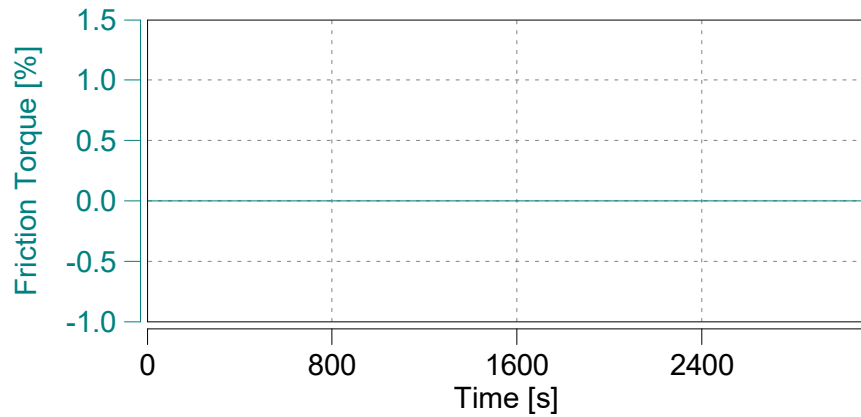
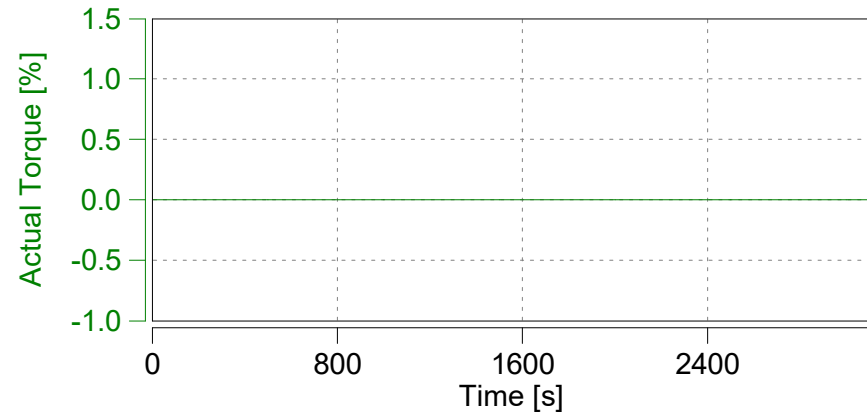
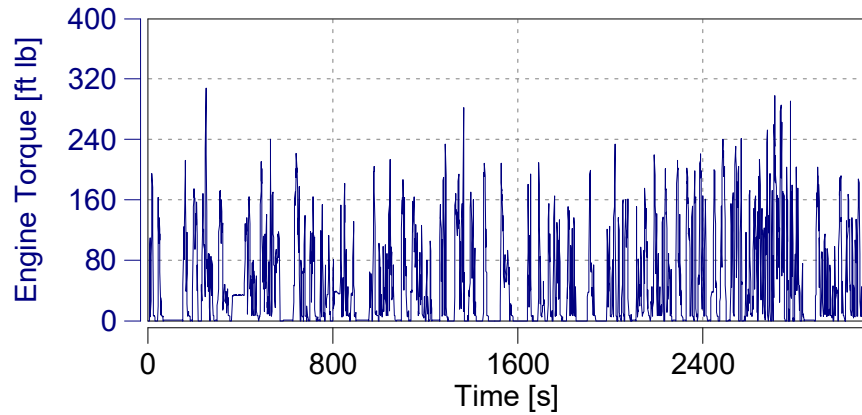
Apply Current Values

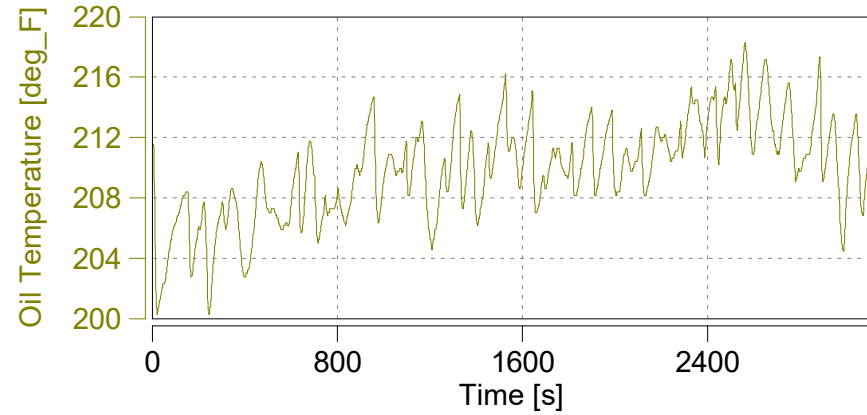
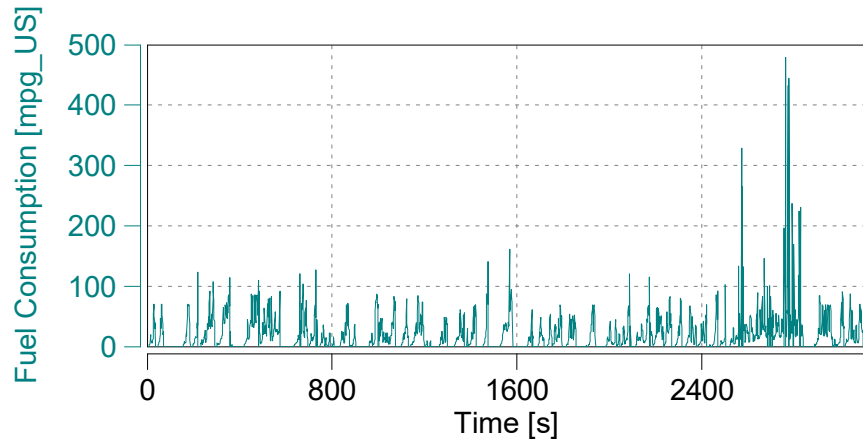
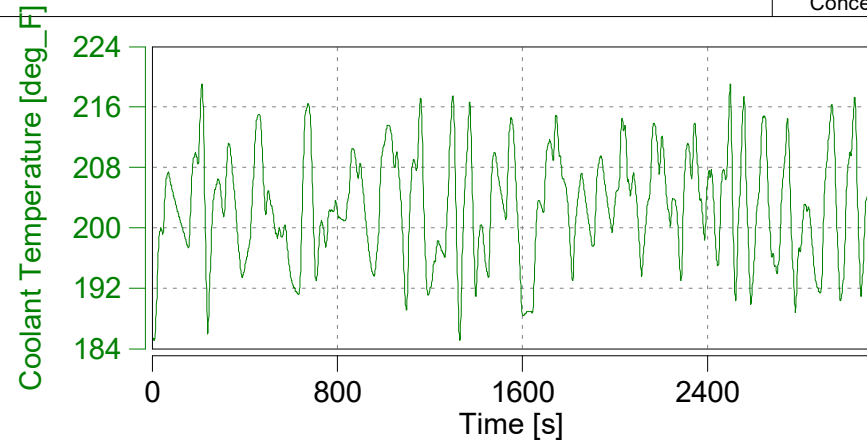
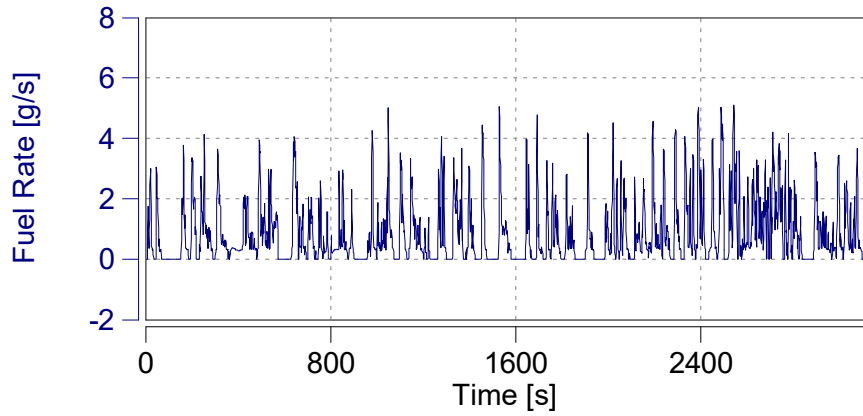


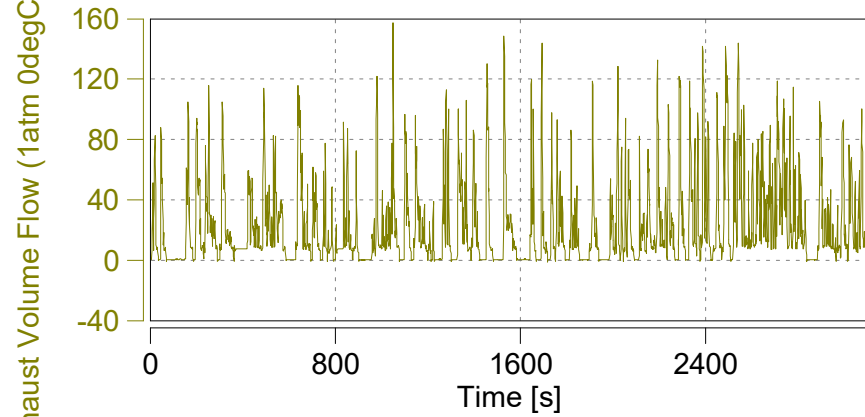
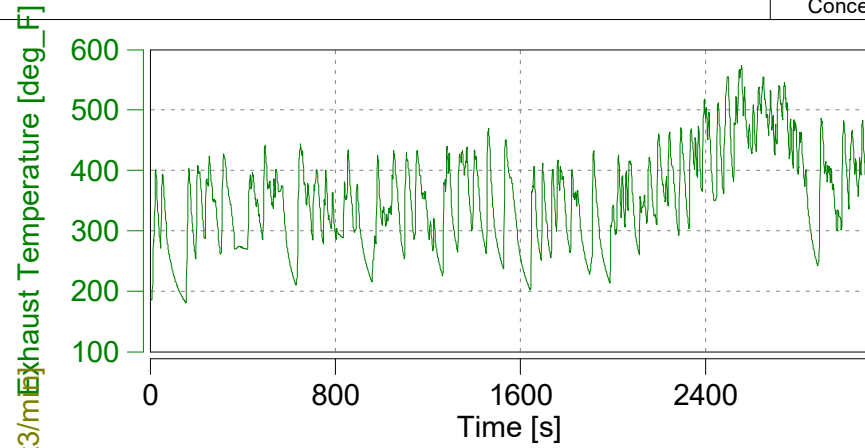
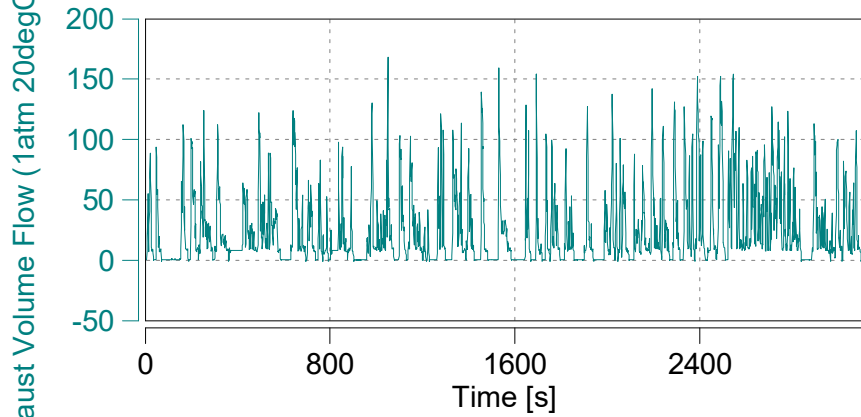
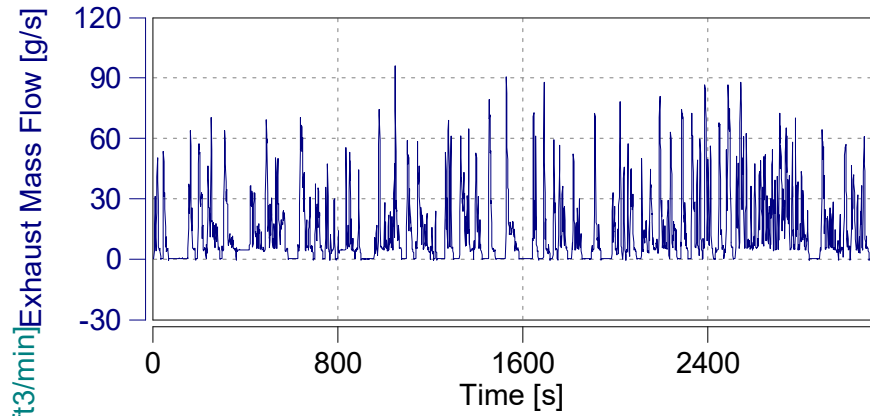


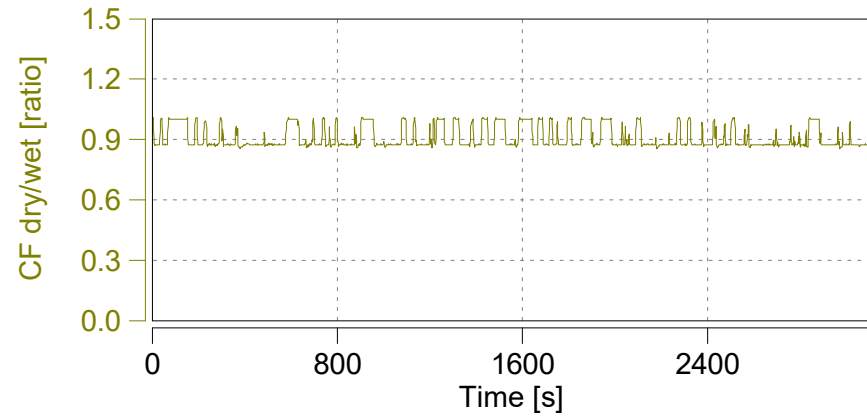
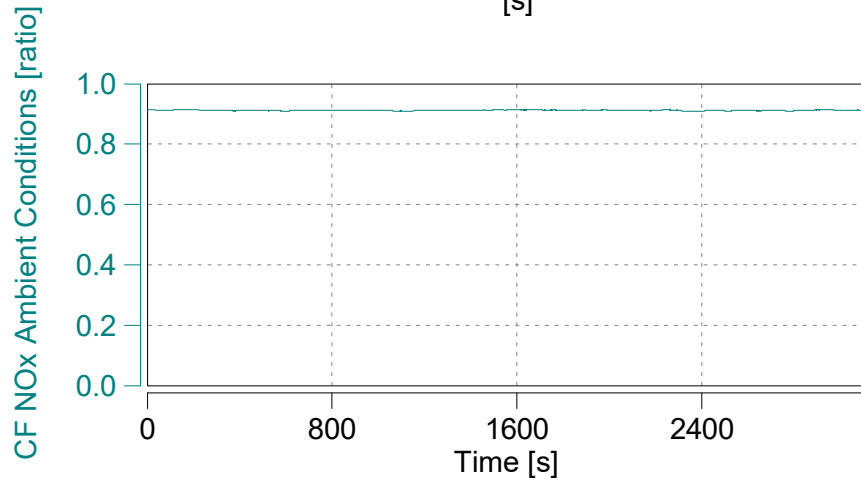
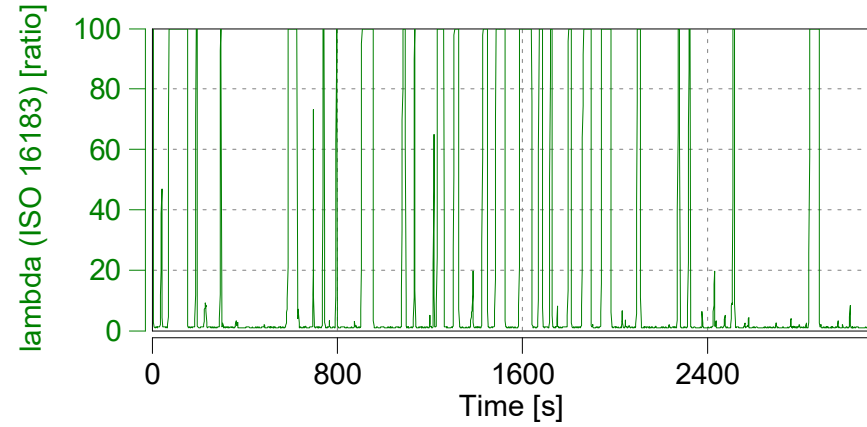
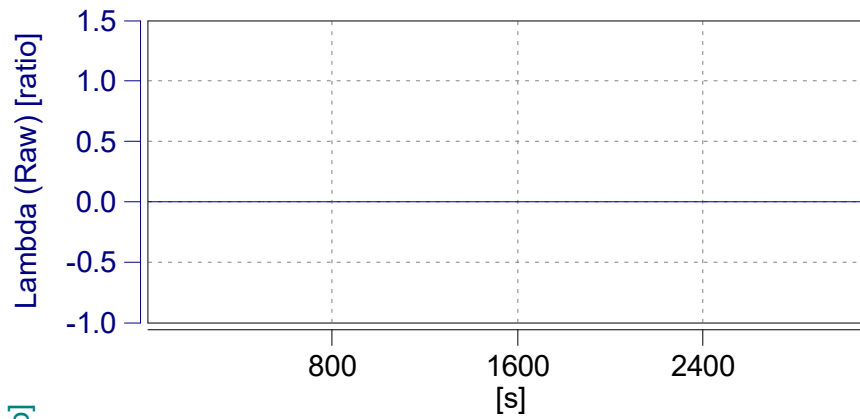


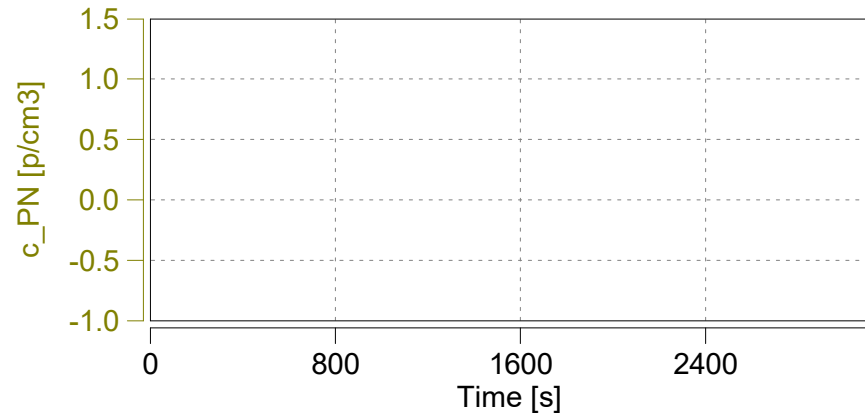
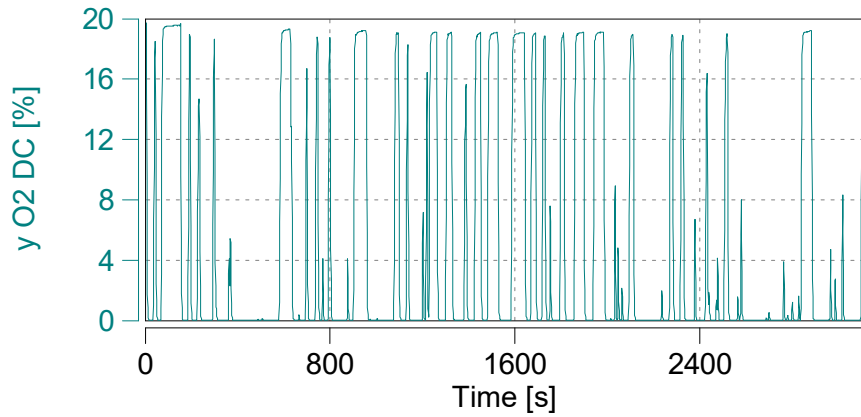
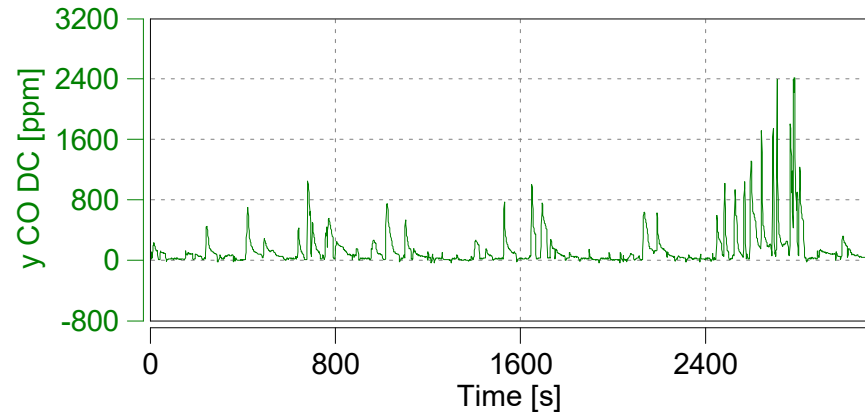
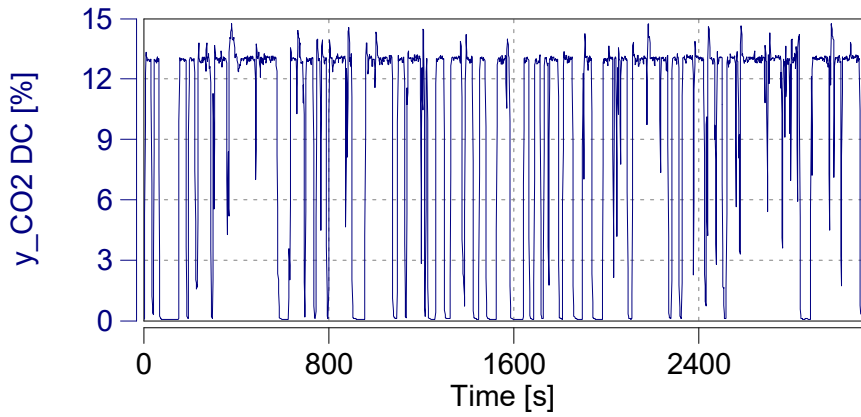


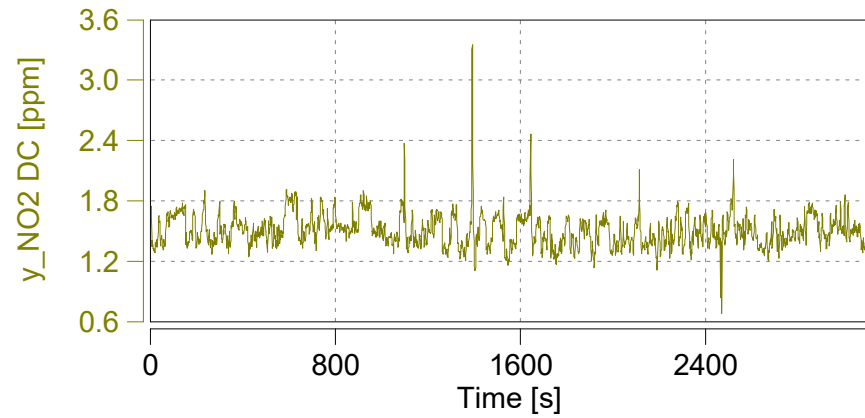
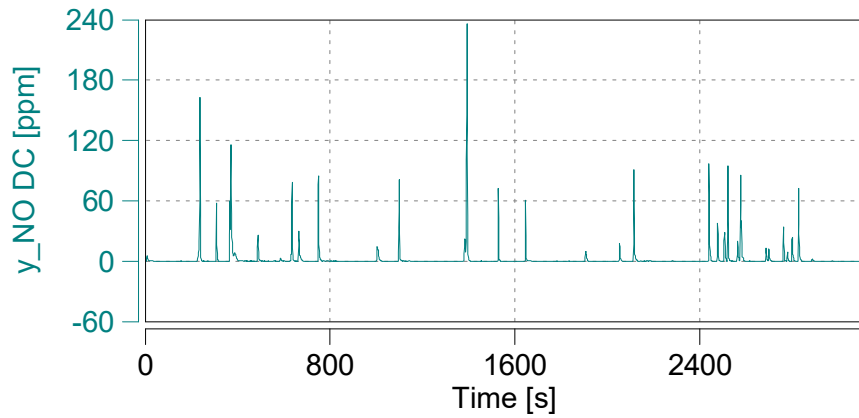
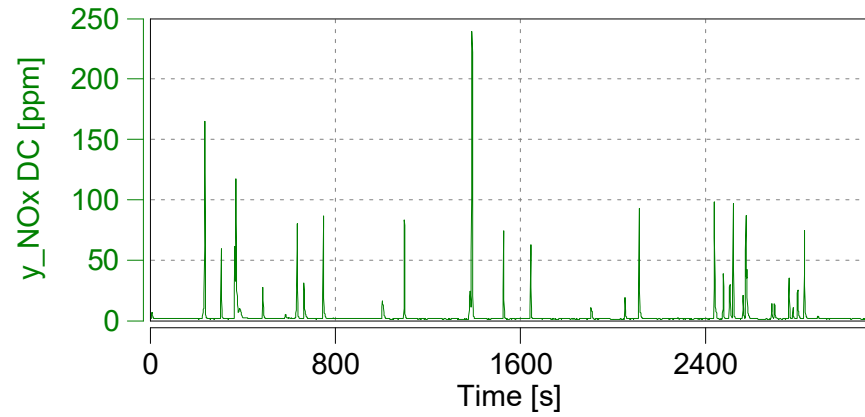
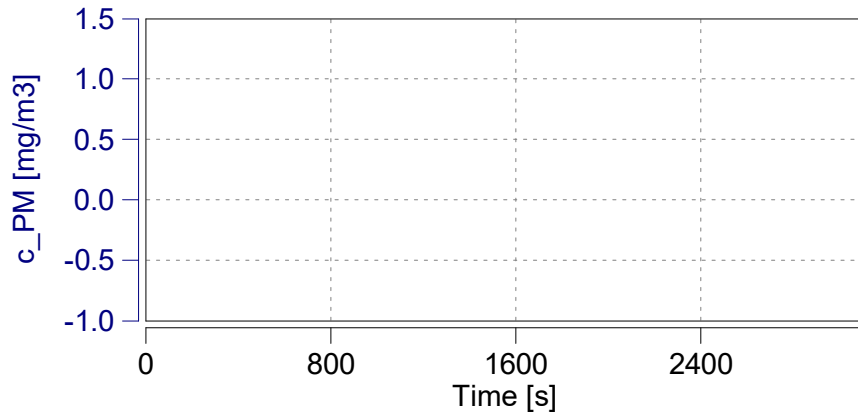




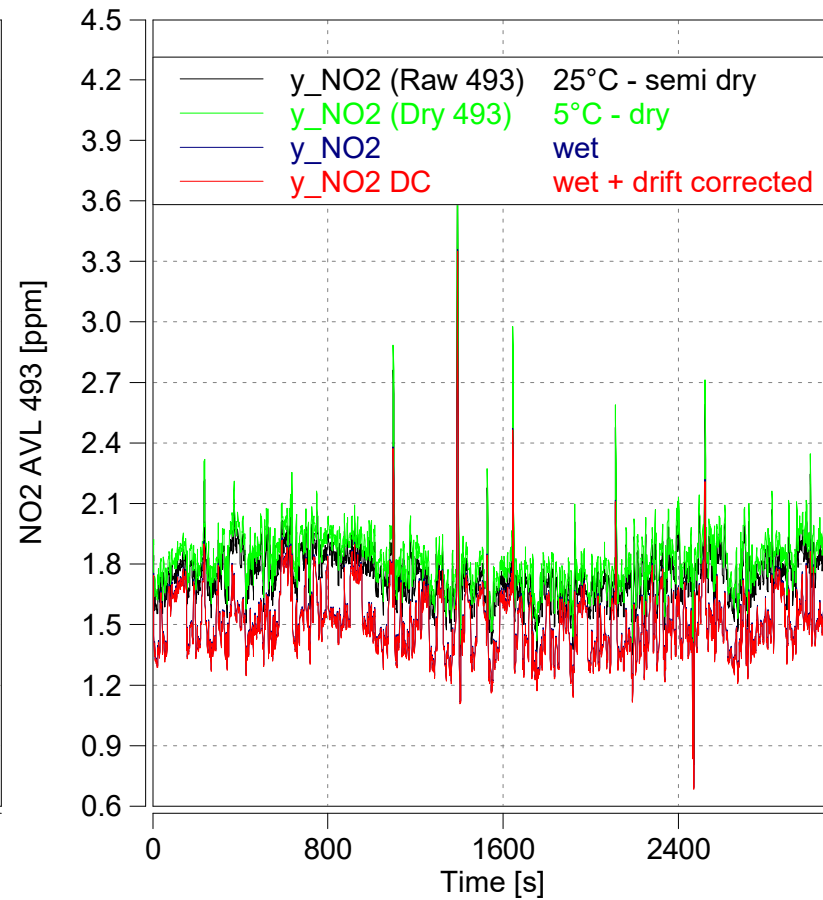
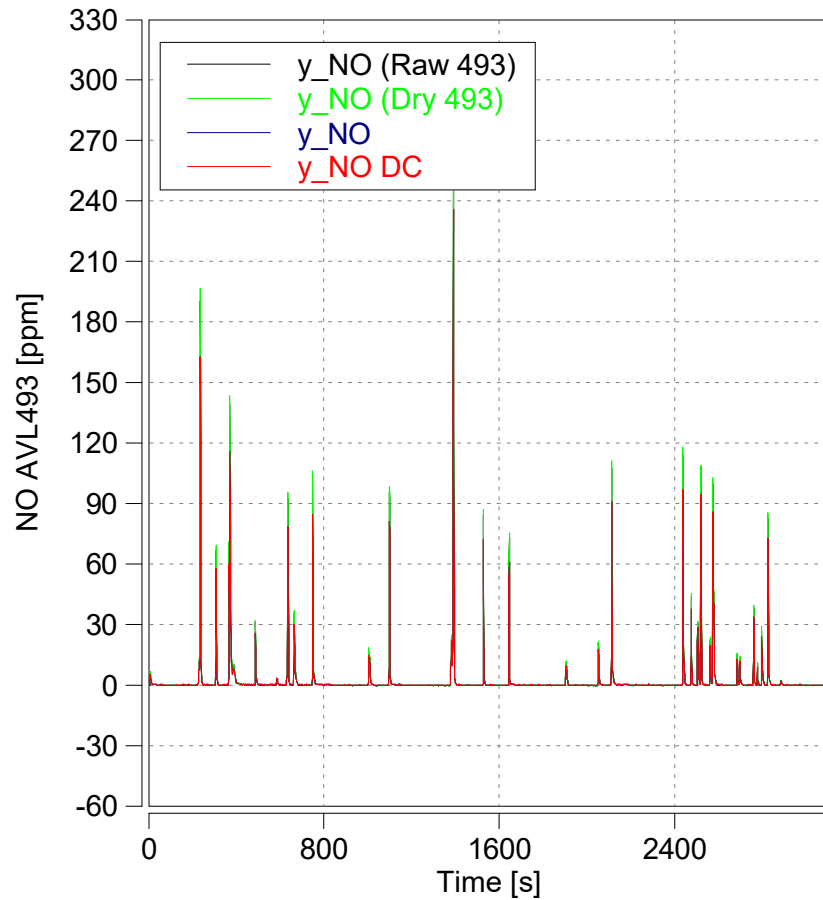


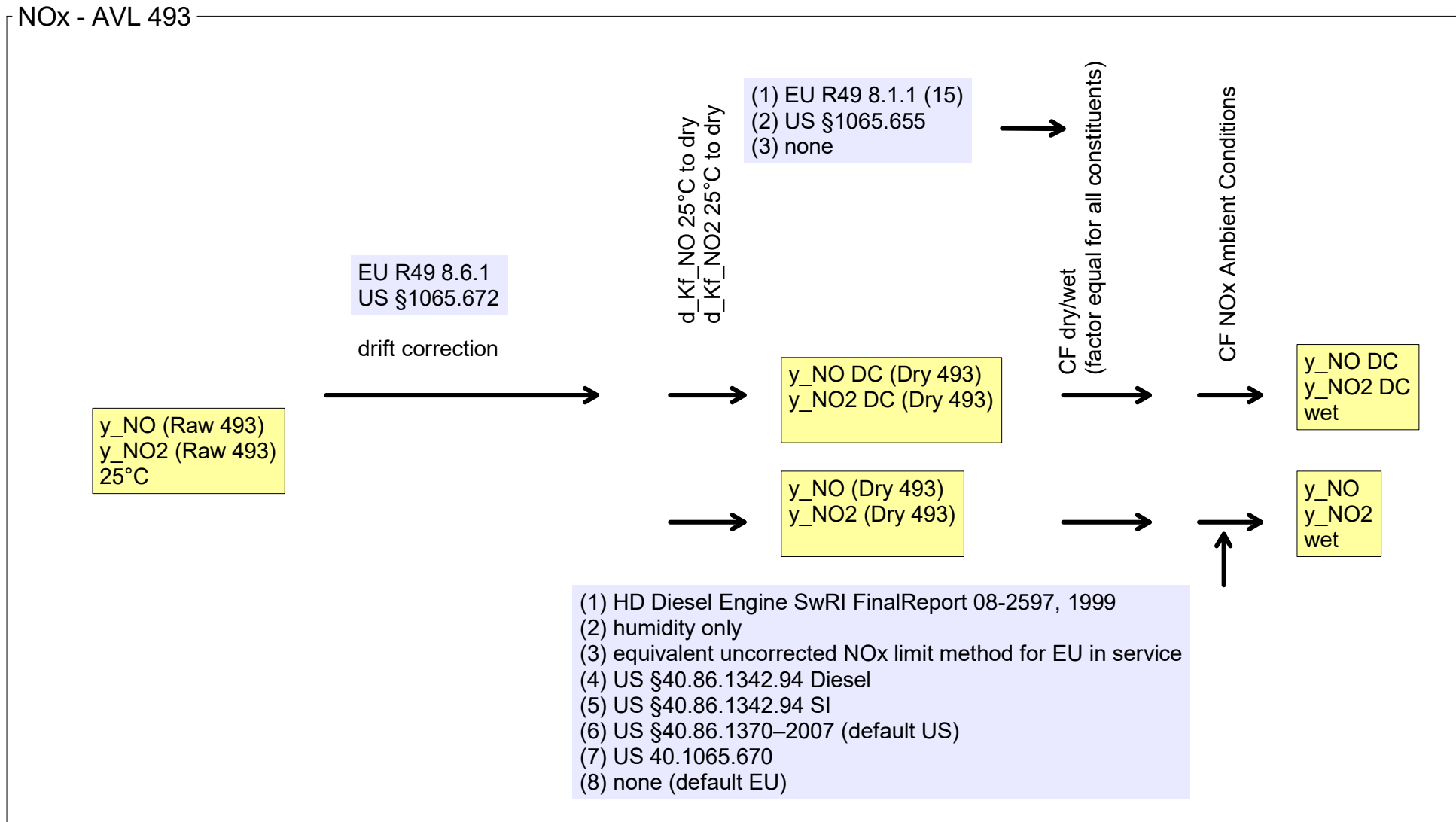


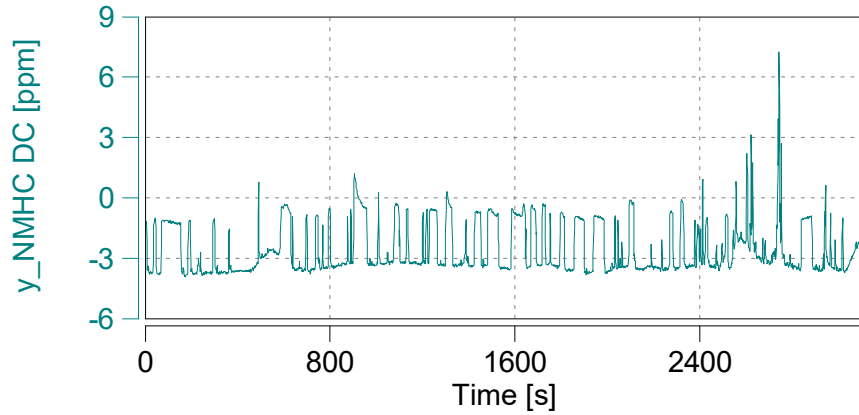
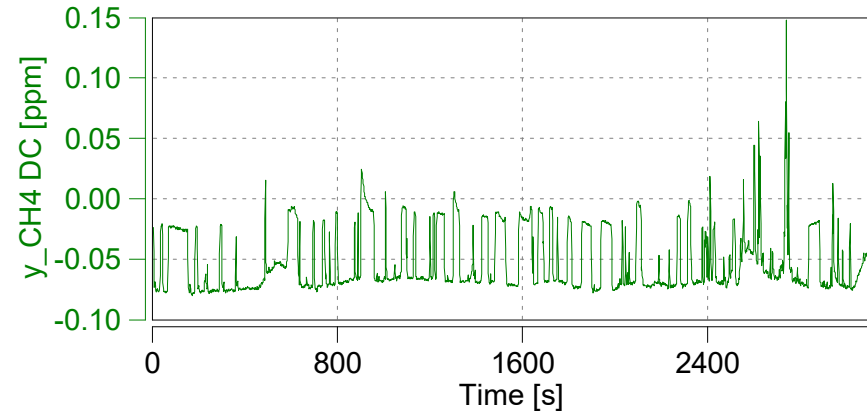
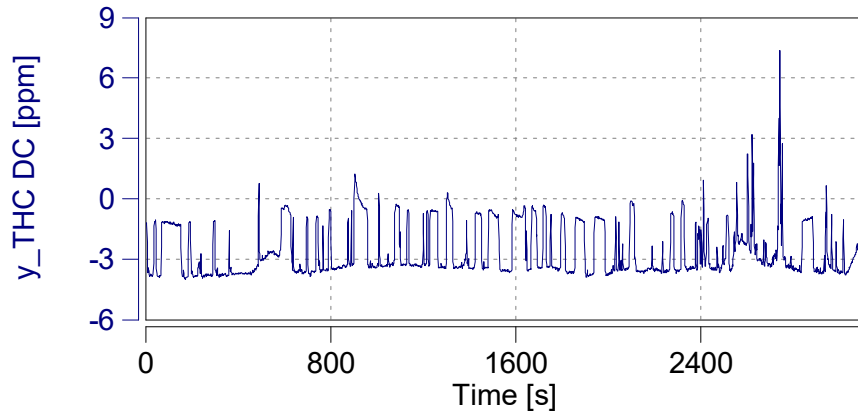


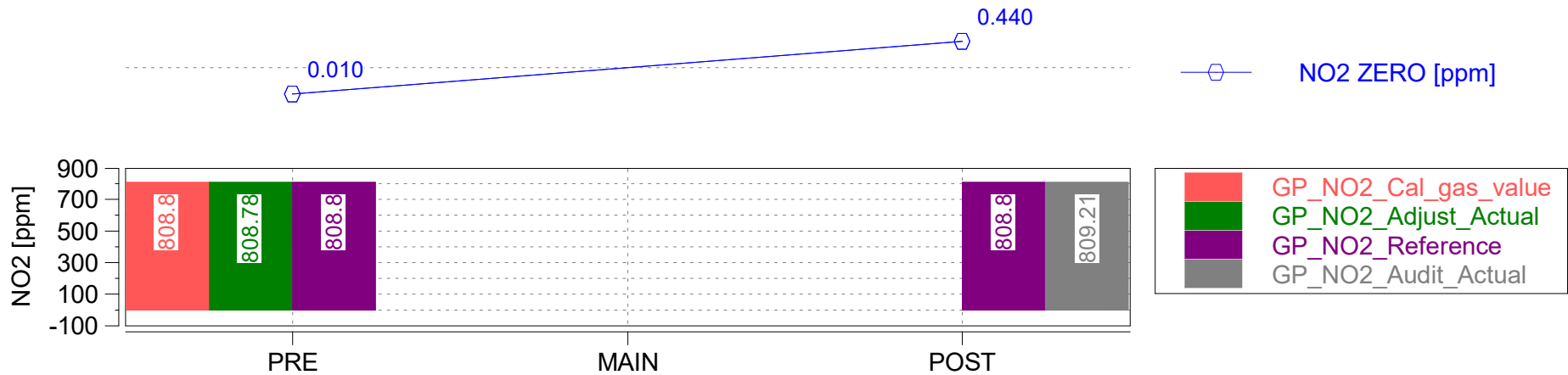
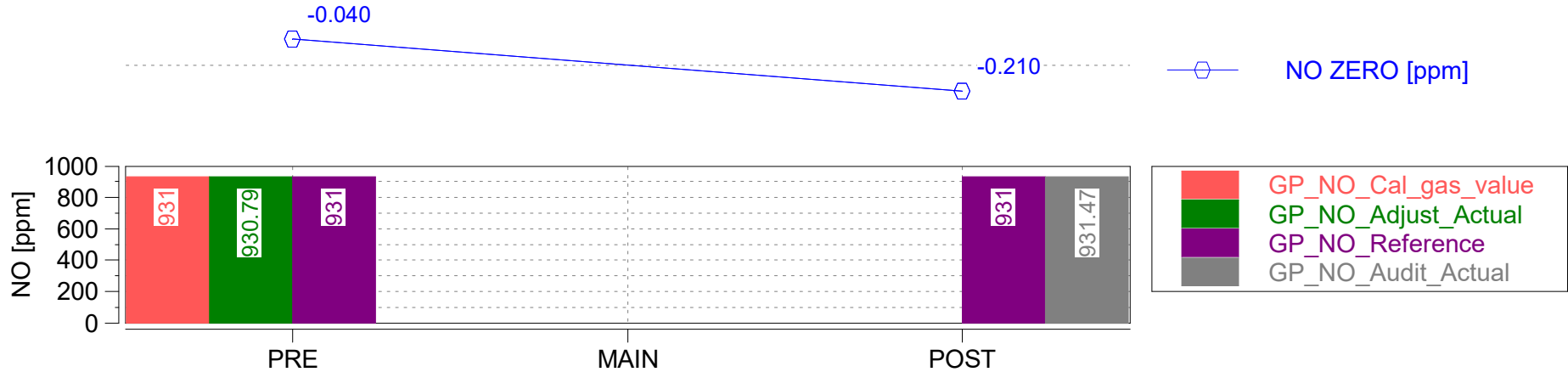


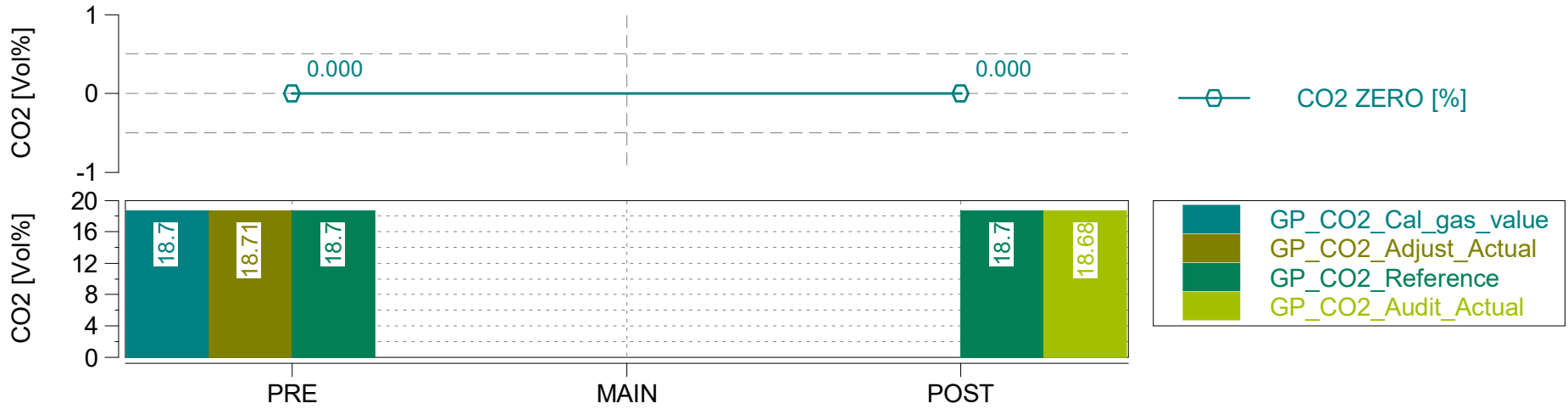
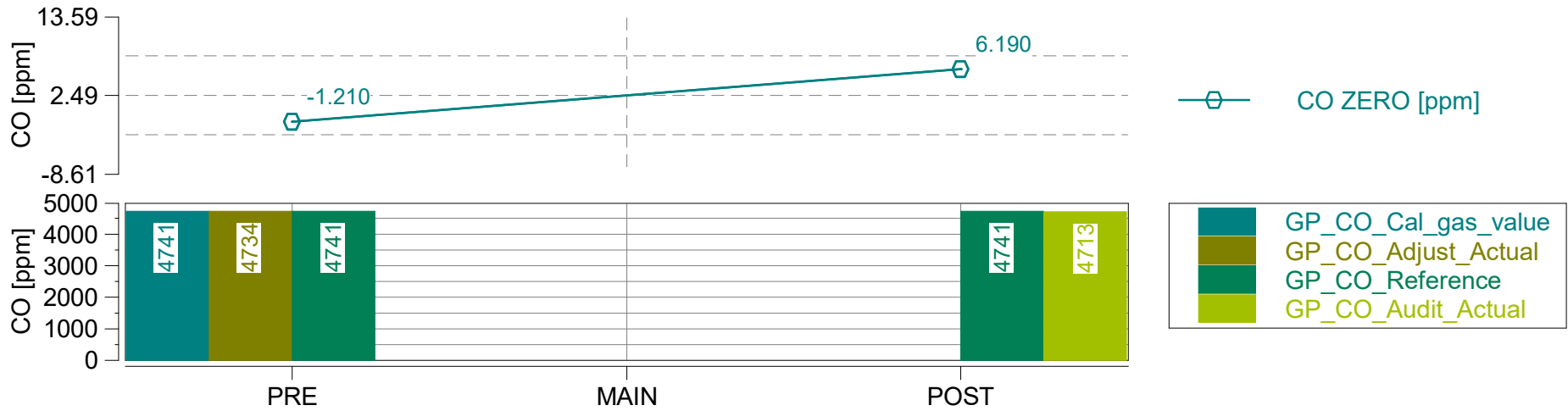


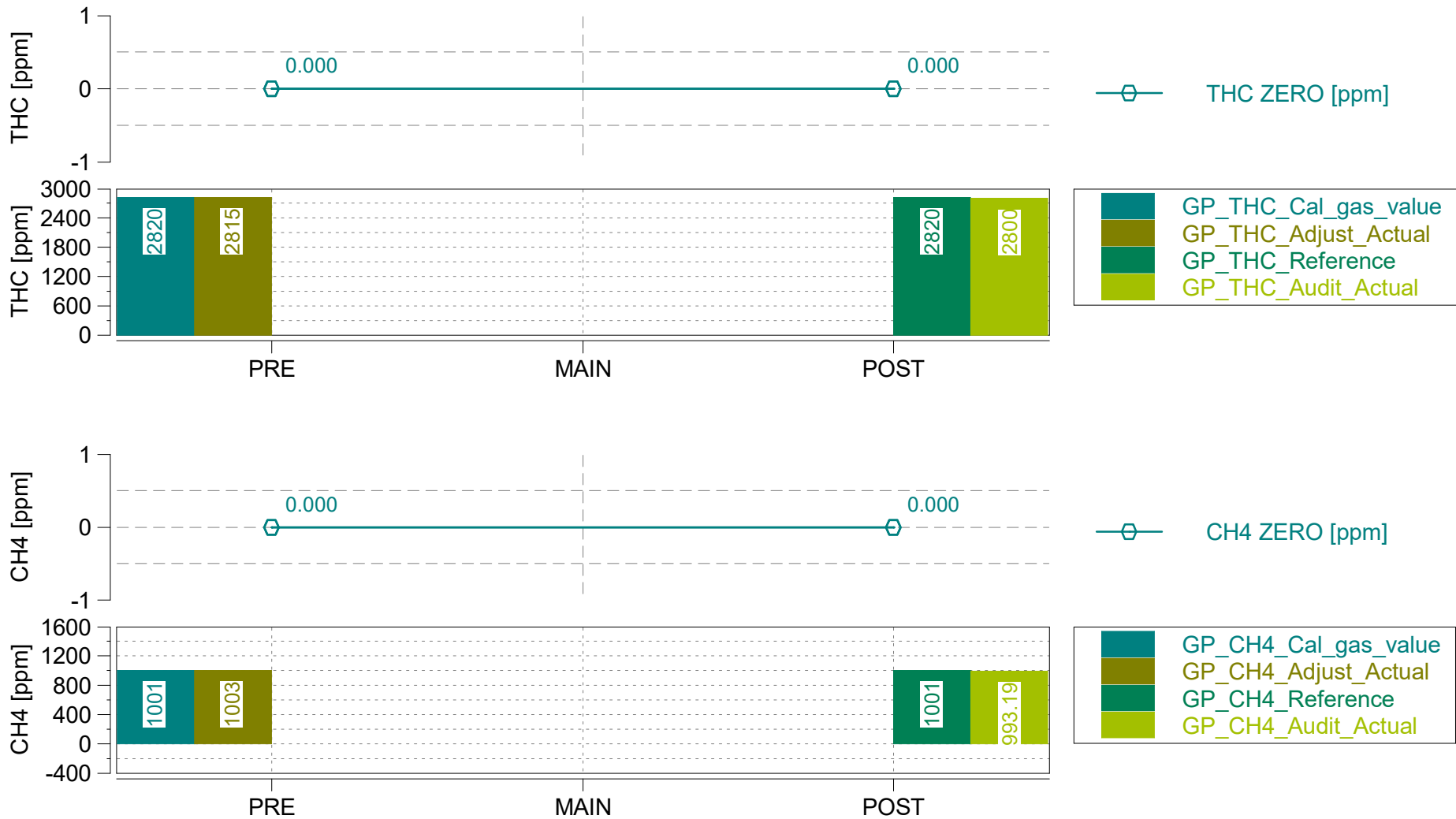














§	criterium	condition	value	unit	pass/fail
<b>GAS Leak Check</b>	The leakage rate on the vacuum side shall not exceed 0.5 per cent of the in-use flow rate for the portion of the system being checked.	The leakage rate <= 0.5%	<b>0.32</b>	<b>%</b>	<b>pass</b>
<b>PN Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a
<b>PM Leak Check</b>	n/a	n/a	<b>n/a</b>	<b>n/a</b>	n/a

GAS PEMS Devices

Device ID	AVL492
Serial Number	0597
Firmware Version	V1.18
Main Test Date	2022-12-09
Leak Check Age [days]	0

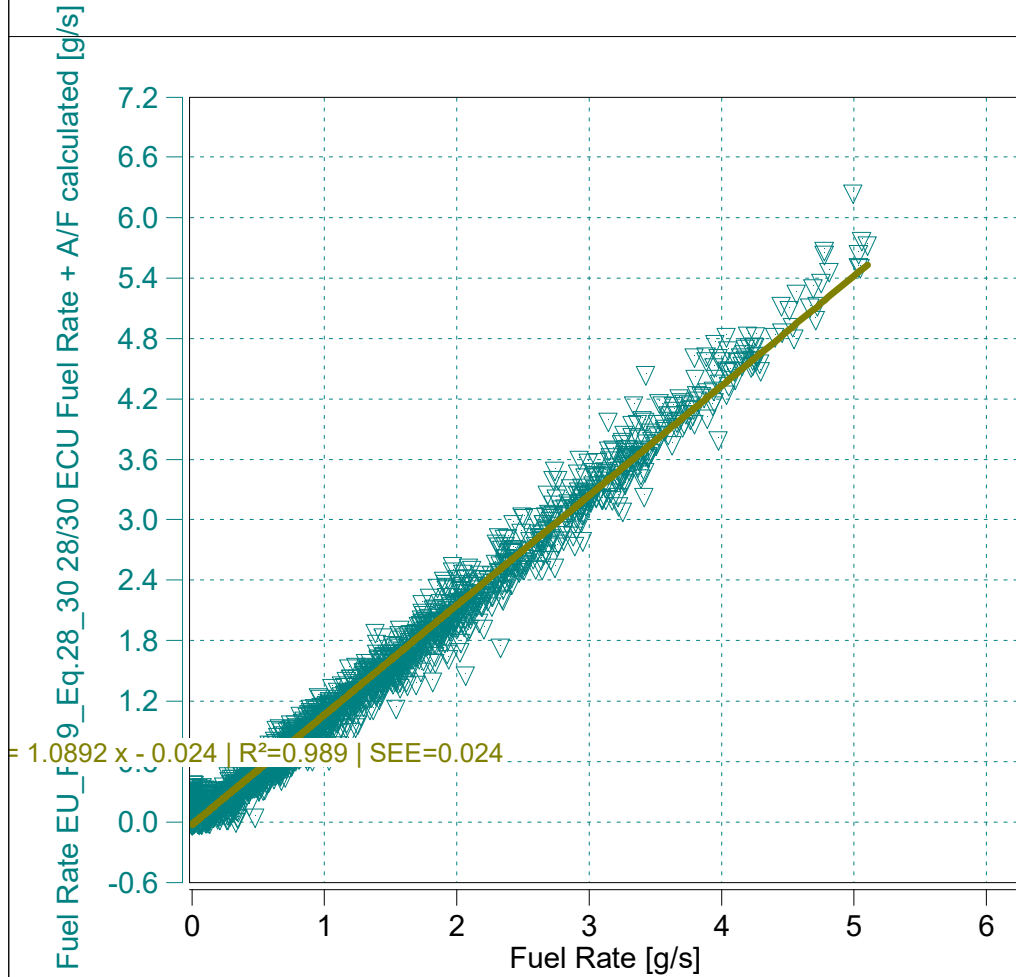
Device ID	AVL4925iS
Serial Number	145
Firmware Version	1.23.0.3

EFM

Device ID	AVL495
Serial Number	00826
Serial Number Tube	01080
Firmware Version	V1.18

System Control

SC Version	R18.0.2_b242
SC Serial Number	60301151



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

$y = 1.0892 x - 0.024 \mid R^2=0.989 \mid SEE=0.024$   
 $m = 1.09 \text{ (} 0.9 - 1.1 \text{ recommended)}$   
 $R^2 = 0.99 \text{ (min } 0.9 \text{ mandatory)}$

Data from - to [% of Maximum]