



# Mercedes-Benz MY2021 GLB250 4MATIC PEMS Report

## **1. Background**

Daimler AG, with headquarters in Stuttgart, Germany, is a large automotive company that sells vehicles and services in nearly every country in the world. Daimler 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, Daimler conducts off-cycle testing, encompassing Portable Emissions Measurement System (PEMS) testing, to demonstrate off-cycle tailpipe emissions and to screen for undisclosed auxiliary emission control devices (AECDs) and defeat devices in U.S. light- and medium-duty vehicles. The testing was conducted as described in Section VII of the Consent Decree. Pursuant to the Consent Decree, Daimler 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 MY2021 GLB250 4MATIC from Test Group MMBXJ02.0U3B, which is the third highest volume Test Group applicable for MY2021 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 Daimler AG’s and Mercedes-Benz AG’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

MY2021 vehicle with the specifications listed in Table 1 was tested in December 2019. 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
GLB250 4Matic	ULEV70	AWD	221	258	8-Automatic	TWC	Gasoline	599

**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
GLB250 4Matic	306.55	0.48872	0.00812	0.02052	0.00774	275.62	0.45970	0.00498	0.01712	0.00475

**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
GLB250 4Matic	525.80	0.84230	0.01282	0.02485	0.01221	151.17	0.21016	0.00748	0.01272	0.00713

**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
GLB250 4Matic	329.25	0.54121	0.02536	0.02626	0.02581	389.79	0.52344	0.00315	0.02289	0.00299

### 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)
0.28.58	27.21	18.35	56.36	3.6	1.2	50.1	45.1	413.8	66.57

**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)
0.28.07	28.09	20.62	59.94	2.4	1.4	51.0	45.2	200.9	68.66

**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)
0.35.00	17.71	18.17	30.36	14.8	0.6	42.6	42	1020.6	65.86

**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)
0.27.04	17.31	15.76	38.37	7.5	1.4	46.7	44.5	65.8	62.54

**Table 9: Long Beach to CARB (A0)**

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)
0.35.28	23.91	17.54	40.45	8.5	0.9	46.8	43.8	243.2	67.63

**Table 10: LA City**

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)
1.09.29	16.27	13.77	13.84	38.4	0.2	30.2	31.3	275.2	74.68

<sup>‡</sup>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.

**Table 11: Description of Test Routes and Key Trip Statistics**

Route	Distance (mi)	Segment Duration	Max – Min Elevation (m)	Average Speed	Fraction Hwy	Fraction Urban/Rural
A0	23.9	35 min	128	43	59	41
A1	27.2	29 min	283	60	71	29
A2	17.7	35 min	983	29	0	100
B1	17.3	27 min	989	36	10	90
B2	28.1	28 min	291	60	88	12
LA City	16.3	69 min	73	16	3	97

### 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 in Ontario and California Air Resource Board office at 9528 Telstar Ave, El Monte CA via Hwy 10. The average speed is 60mph and the net elevation change is approximately 950ft.

### A1 – Highway East

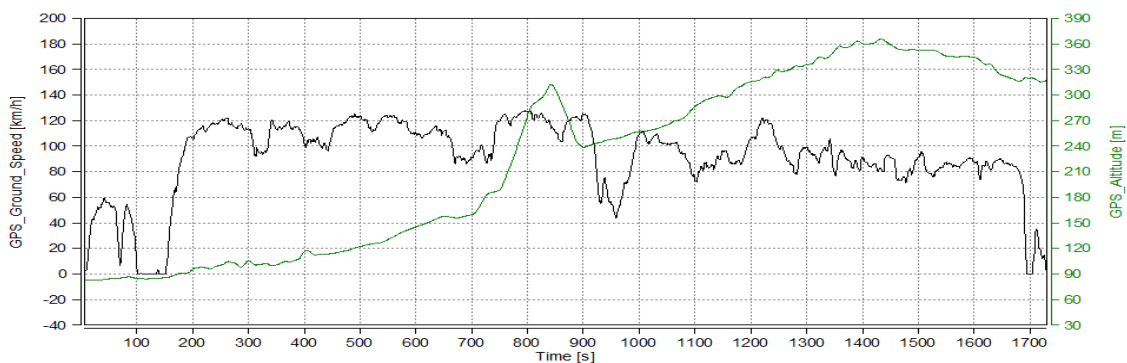
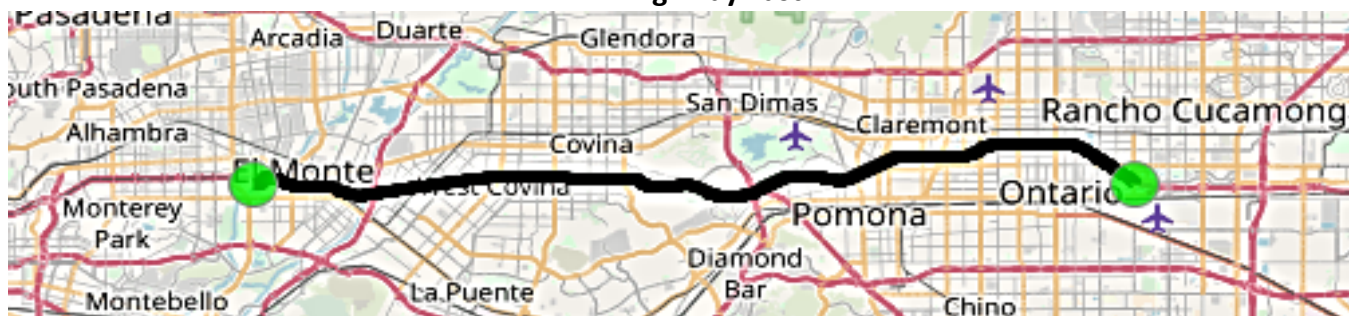


Figure 1. Map of Route A1 – Highway East. Including speed and elevation

### B2 – Highway West

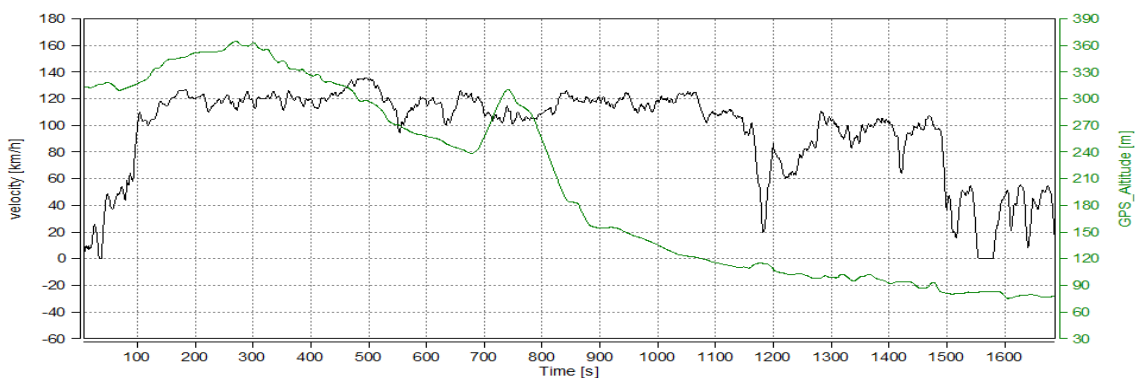
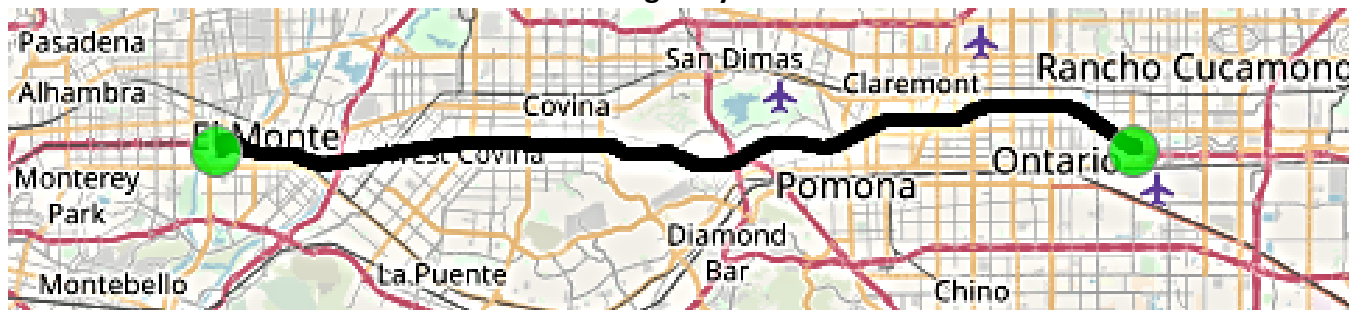


Figure 2. Map of Route B2 – Highway West. Including speed and elevation

## 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 33mph. The net elevation change is 3235ft (986m).

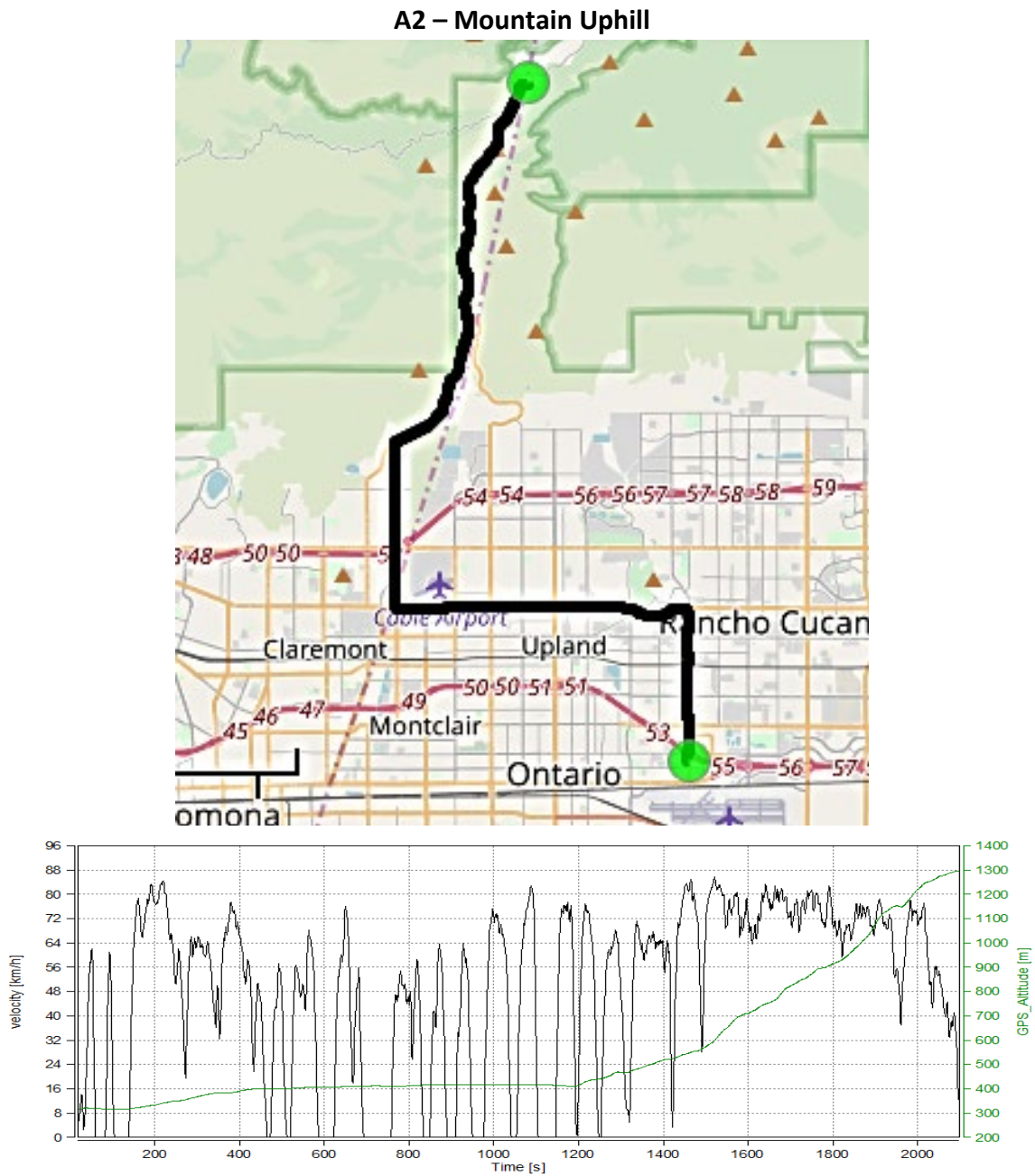


Figure 3. Map of Route A2 – Mountain Uphill. Including speed and elevation

**B1 – Mountain Downhill.**

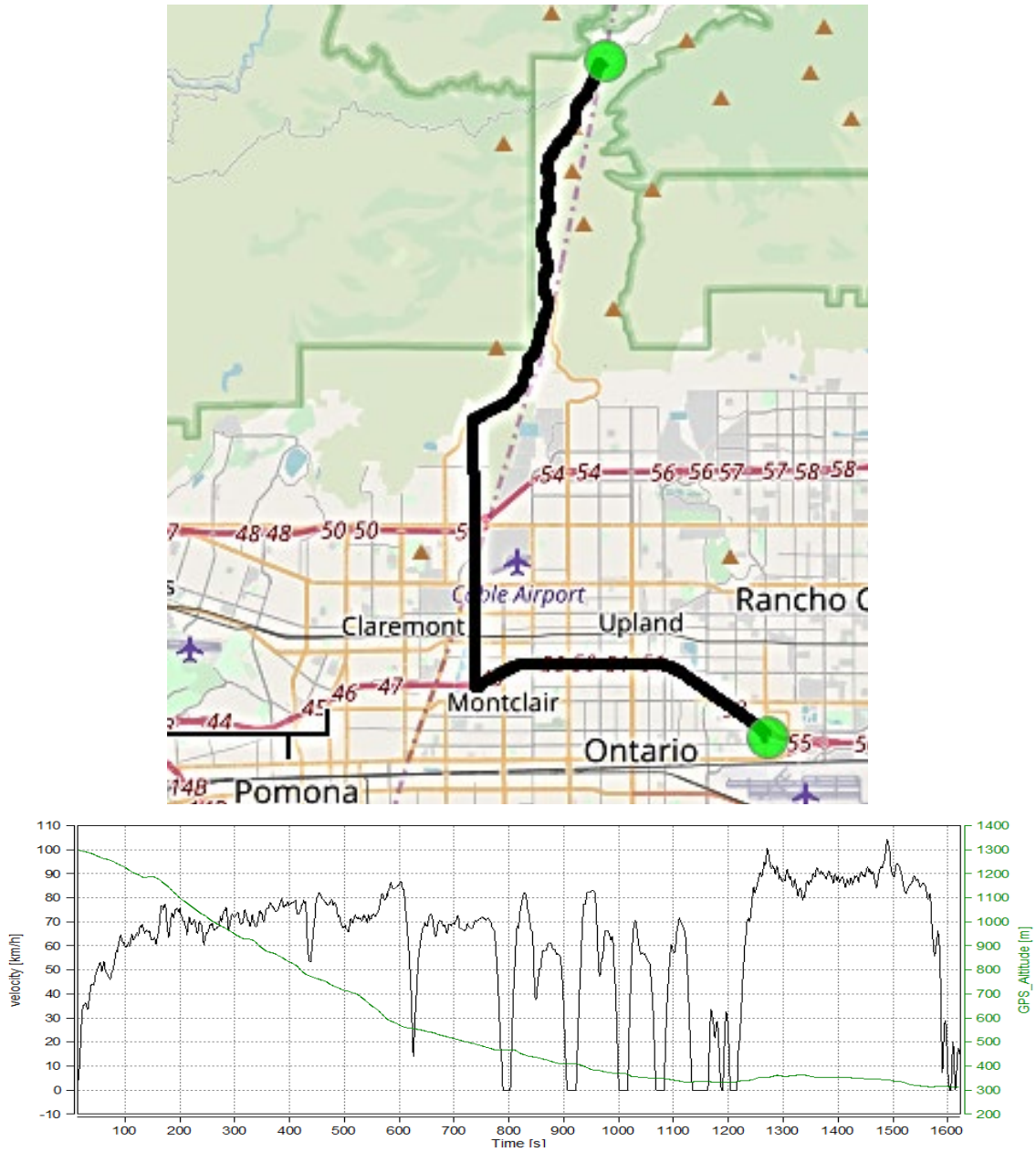


Figure 4. Map of Route B1 – Mountain Downhill. Including speed and elevation

### 5.3 Long Beach to CARB Section (A0)

This route travels between 4035 Via Oro Ave, Long Beach 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.

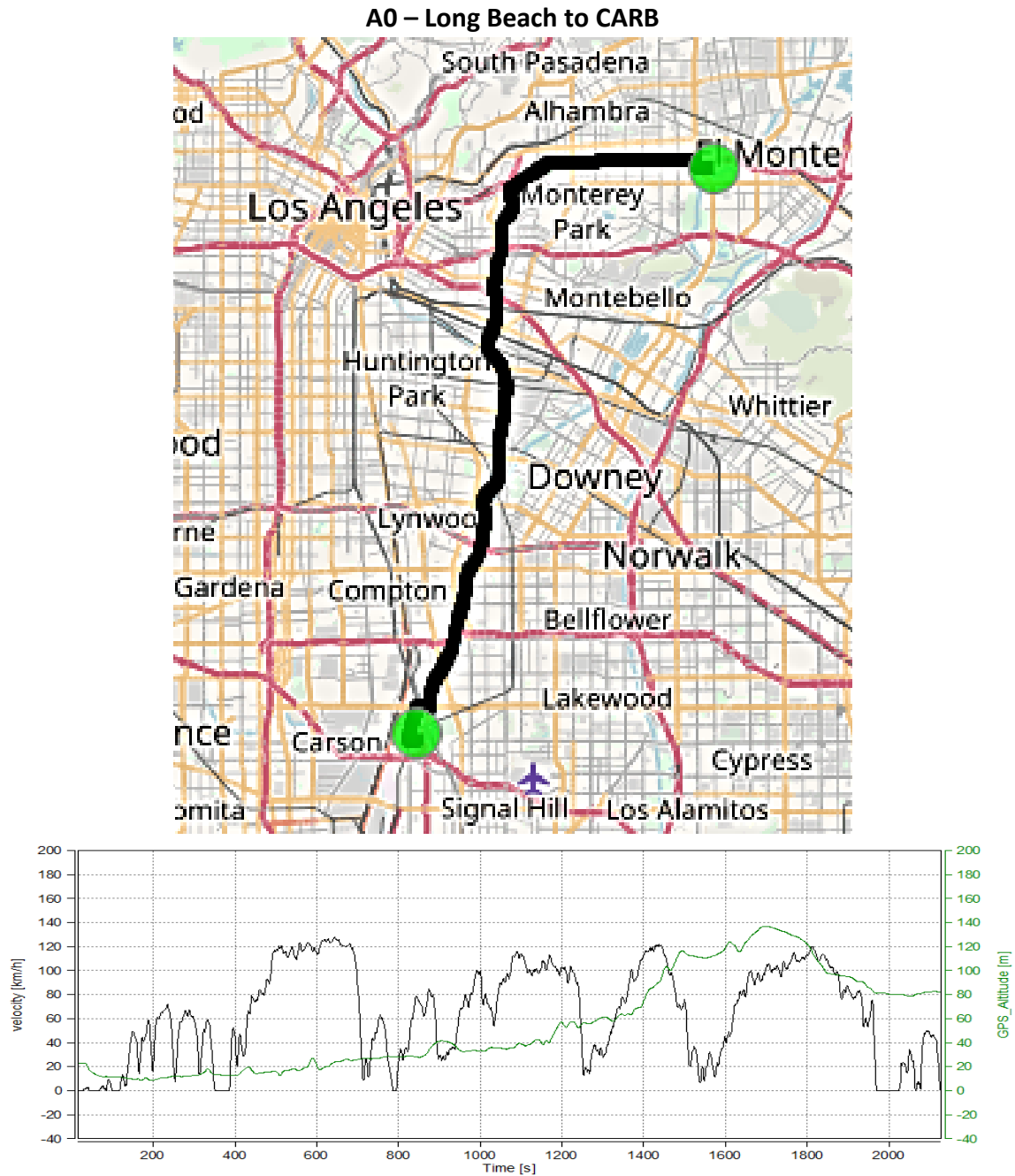


Figure 5. Map of Route A0 – Long Beach to CARB, El Monte. Including speed and elevation

### 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 14mph.

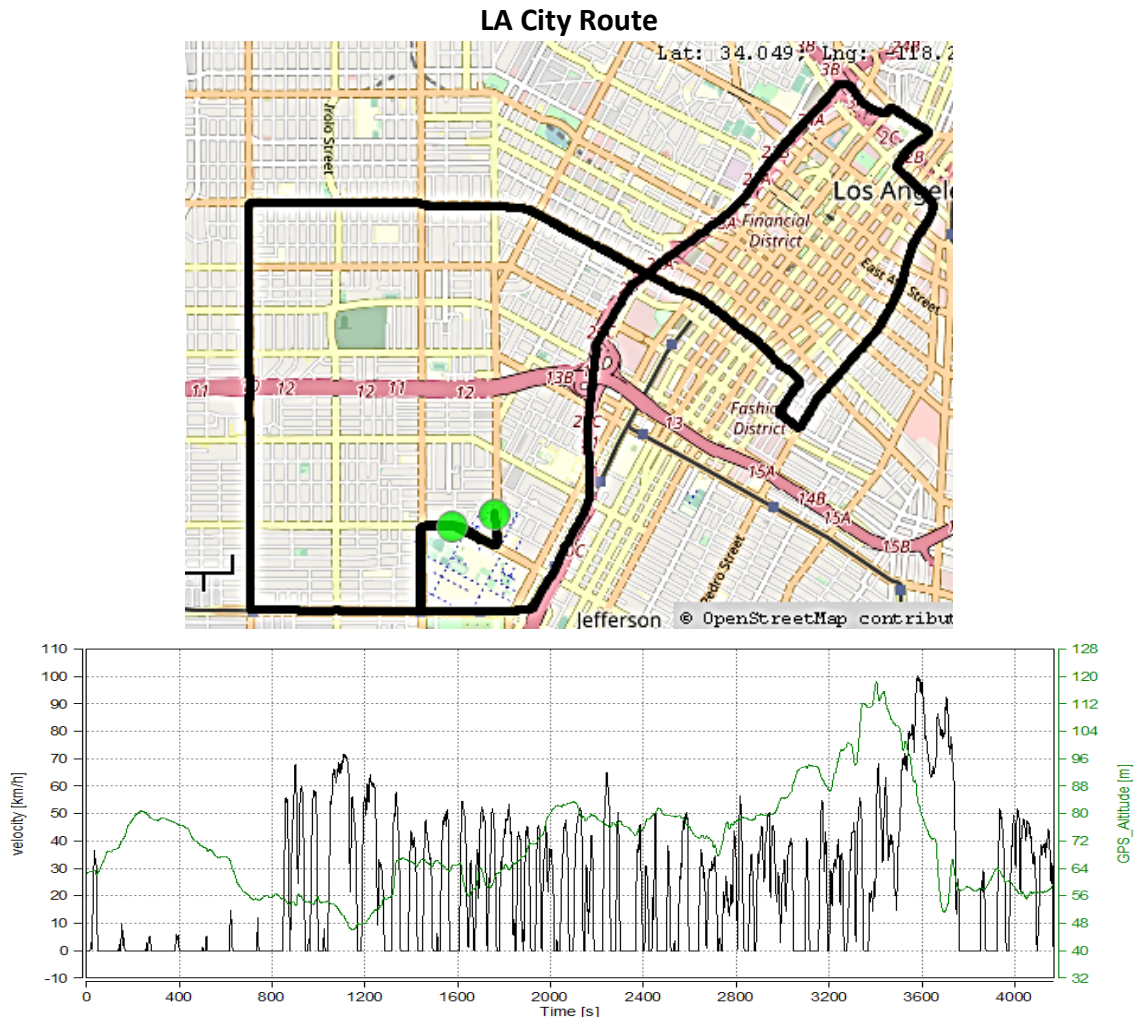


Figure 6. Map of LA City Route. Including speed and elevation



## **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\_GLB250 MY21 20191220.pdf

This file contains log sheet information on PEMS testing conducted with the MY 2021 Mercedes-Benz GLB250 4MATIC test vehicle X247-1267. The table also includes information and explanations on valid, aborted, and invalid tests.

## **7. Appendix**

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



Trip Duration	1738.00	s	ave THC	4.55715	ppm	BS CO2	526.75654	g/hphr
Trip Duration (a)	1738.00	s	ave NMHC	4.46600	ppm	BS CO	0.83787	g/hphr
Trip Distance	27.21	mi	ave CH4	0.09114	ppm	BS THC	0.01359	g/hphr
Trip Distance (a)	27.21	mi	ave CO	286.66882	ppm	BS NMHC	0.01257	g/hphr
Trip Fuel Cons. (b)	2.35	kg	ave CO2	11.53217	%	BS CH4	0.00030	g/hphr
Trip Fuel Cons. (ab)	2.35	kg	ave NOx	10.64617	ppm	BS NO (d)	0.03067	g/hphr
Trip Fuel Cons. EU (ac)	2.77	kg	ave PM	n/a	mg/m3	BS NO2	0.00461	g/hphr
Trip Fuel Cons. US (ac)	2.75	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.03528	g/hphr
Trip Fuel Economy (b)	32.83	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	32.83	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	27.83	mpg_US	tot THC	0.21500	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	28.02	mpg_US	tot NMHC	0.19888	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	32.83	mpg_US	tot CH4	0.00477	g	DS CO2	306.32406	g/mi
Trip Fuel Economy GGE (ab)	32.83	mpg_US	tot CO	13.25855	g	DS CO	0.48725	g/mi
Trip Fuel Economy EU GGE (ac)	27.83	mpg_US	tot CO2	8335.46031	g	DS THC	0.00790	g/mi
Trip Fuel Economy US GGE (ac)	28.02	mpg_US	tot NO (d)	0.48526	g	DS NMHC	0.00731	g/mi
Trip Av. Eng. Speed	1803.45	rpm	tot NO2	0.07297	g	DS CH4	0.00018	g/mi
Trip Av. Torque	87.82	lbft	tot NOx	0.55822	g	DS NO (d)	0.01783	g/mi
Trip Av. Power	32.78	hp	tot Soot	n/a	g	DS NO2	0.00268	g/mi
Trip Work	15.82	hphr	tot Soot meas	n/a	g	DS NOx	0.02051	g/mi
Trip Work (a)	15.82	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	43.90	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	36.52	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	36.80	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	66.57	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3554.28841	g/kg
Trip Av. Humidity	57.66	%	Trip Av. Veh. Speed	56.36392	mi/hr	FS CO	5.65352	g/kg
Trip Av. GPS Altitude	225.04	m	Trip Distance Share Urban	4.08403	% distance	FS THC	0.09168	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	24.53685	% distance	FS NMHC	0.08480	g/kg
			Trip Distance Share Motorway	71.37912	% distance	FS CH4	0.00203	g/kg
						FS NO (d)	0.20692	g/kg
						FS NO2	0.03111	g/kg
						FS NOx	0.23803	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

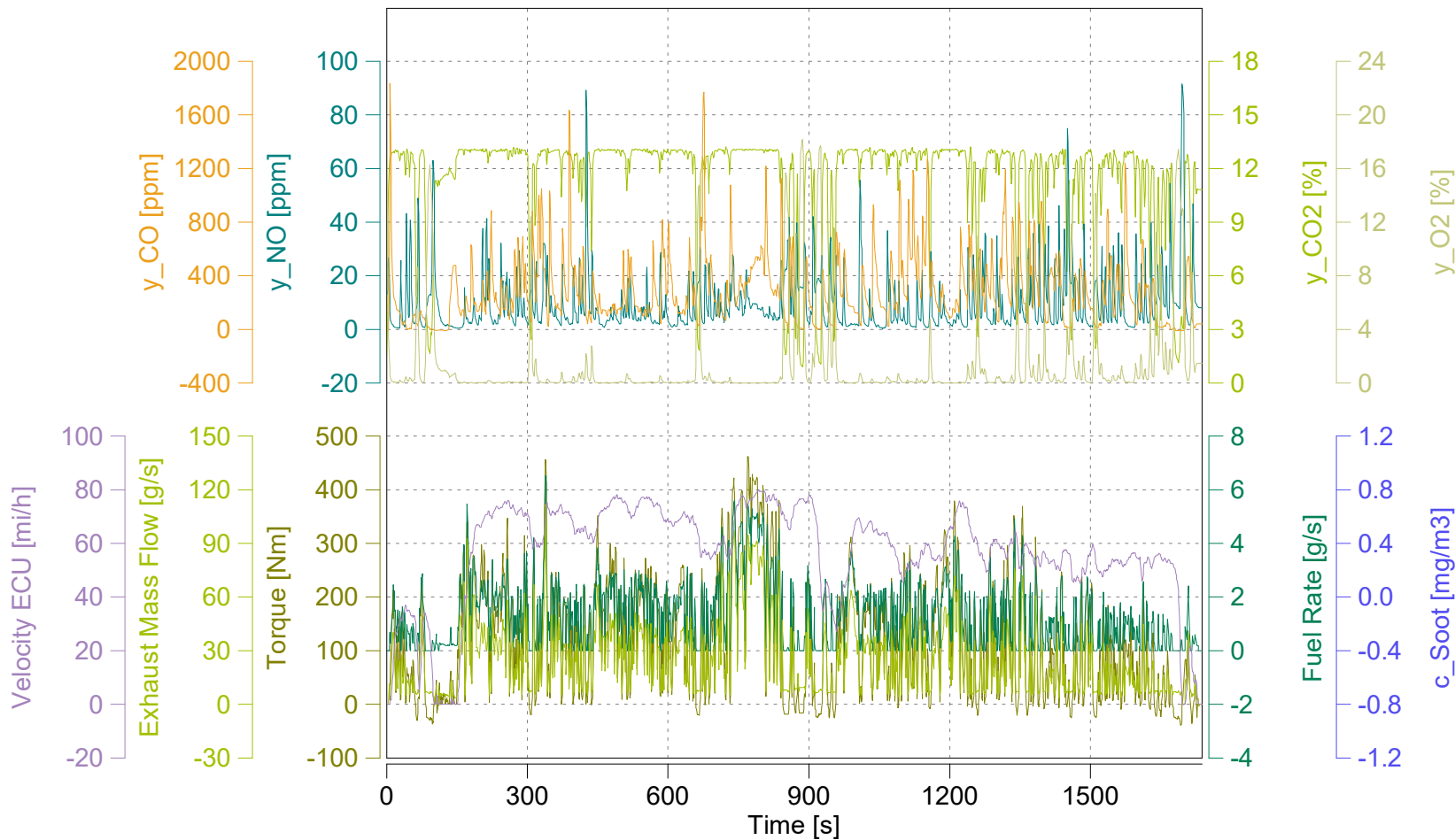


Trip Duration	1738.00	s	ave THC DC	4.82799	ppm	BS CO2 DC	527.15200	g/hphr
Trip Duration (a)	1738.00	s	ave NMHC DC	4.73143	ppm	BS CO DC	0.84041	g/hphr
Trip Distance	27.21	mi	ave CH4 DC	0.09656	ppm	BS THC DC	0.01397	g/hphr
Trip Distance (a)	27.21	mi	ave CO DC	287.53799	ppm	BS NMHC DC	0.01292	g/hphr
Trip Fuel Cons. (b)	2.35	kg	ave CO2 DC	11.54083	%	BS CH4 DC	0.00031	g/hphr
Trip Fuel Cons. (ab)	2.35	kg	ave NOx DC	10.64863	ppm	BS NO DC (d)	0.03067	g/hphr
Trip Fuel Cons. EU (ac)	2.77	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00461	g/hphr
Trip Fuel Cons. US (ac)	2.75	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.03529	g/hphr
Trip Fuel Economy (b)	32.83	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	32.83	mpg_US	ave PN DC	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	27.83	mpg_US	tot THC DC	0.22103	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	28.02	mpg_US	tot NMHC DC	0.20445	g	BS PN DC	n/a	#/hpr
Trip Fuel Economy GGE (b)	32.83	mpg_US	tot CH4 DC	0.00490	g	DS CO2 DC	306.55403	g/mi
Trip Fuel Economy GGE (ab)	32.83	mpg_US	tot CO DC	13.29875	g	DS CO DC	0.48872	g/mi
Trip Fuel Economy EU GGE (ac)	27.83	mpg_US	tot CO2 DC	8341.71817	g	DS THC DC	0.00812	g/mi
Trip Fuel Economy US GGE (ac)	28.02	mpg_US	tot NO DC (d)	0.48536	g	DS NMHC DC	0.00751	g/mi
Trip Av. Eng. Speed	1803.45	rpm	tot NO2 DC	0.07300	g	DS CH4 DC	0.00018	g/mi
Trip Av. Torque	87.82	lbft	tot NOx DC	0.55836	g	DS NO DC (d)	0.01784	g/mi
Trip Av. Power	32.78	hp	tot Soot	n/a	g	DS NO2 DC	0.00268	g/mi
Trip Work	15.82	hphr	tot Soot meas	n/a	g	DS NOx DC	0.02052	g/mi
Trip Work (a)	15.82	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	43.90	kg	tot PN DC	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	36.52	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	36.80	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN DC	n/a	#/mi
Trip Av. Amb. Temperature	66.57	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2 DC	3556.95680	g/kg
Trip Av. Humidity	57.66	%	Trip Av. Veh. Speed	56.36392	mi/hr	FS CO DC	5.67066	g/kg
Trip Av. GPS Altitude	225.04	m	Trip Distance Share Urban	4.08403	% distance	FS THC DC	0.09425	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	24.53685	% distance	FS NMHC DC	0.08718	g/kg
			Trip Distance Share Motorway	71.37912	% distance	FS CH4 DC	0.00209	g/kg
						FS NO DC (d)	0.20696	g/kg
						FS NO2 DC	0.03113	g/kg
						FS NOx DC	0.23809	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	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

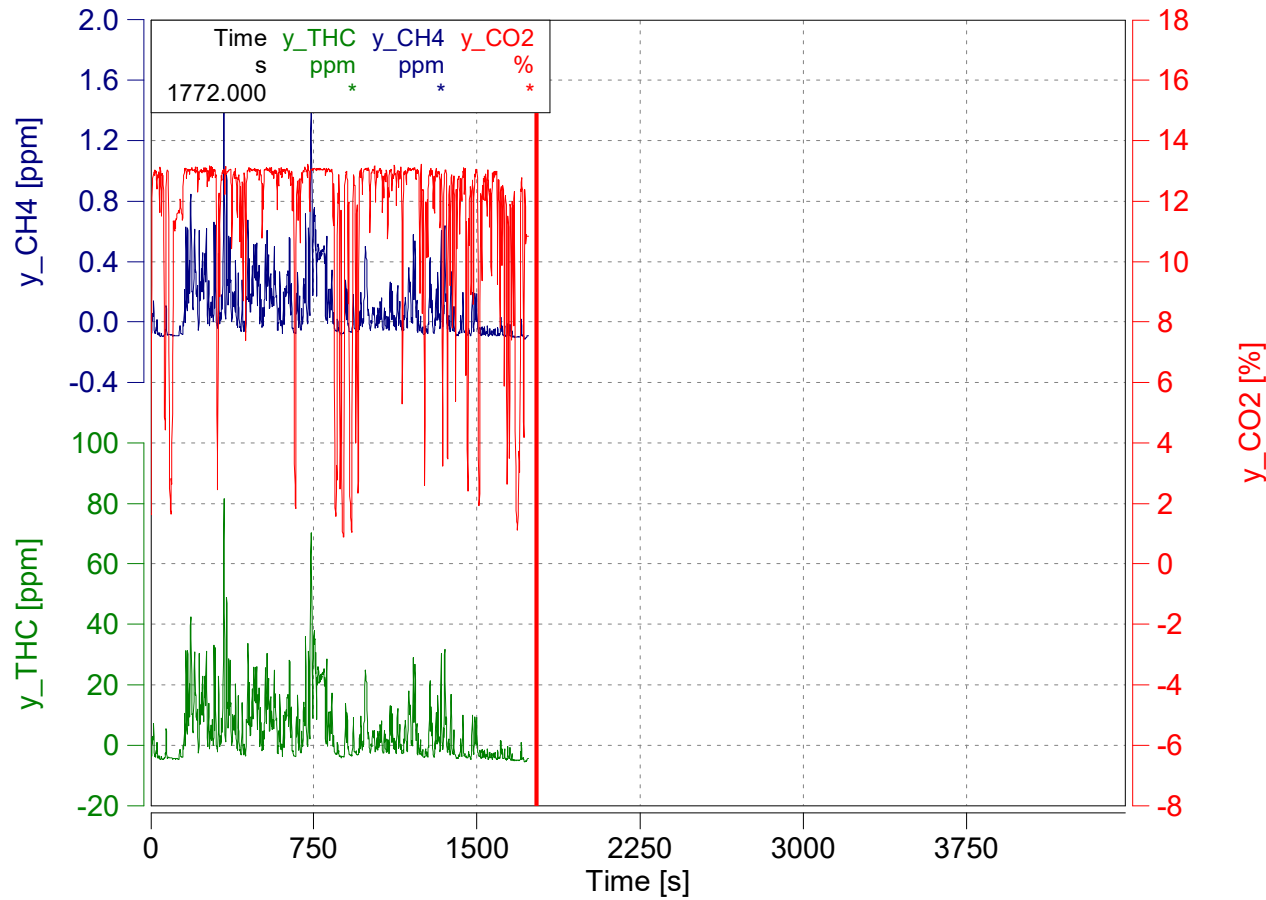
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 Engine: /  
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 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



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Absolute Time Shifts

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y_CH4	s	-7.2

Reset Time Shifts in Plot

Apply Current Values

Case: X247-1267

Page: Ambient Conditions

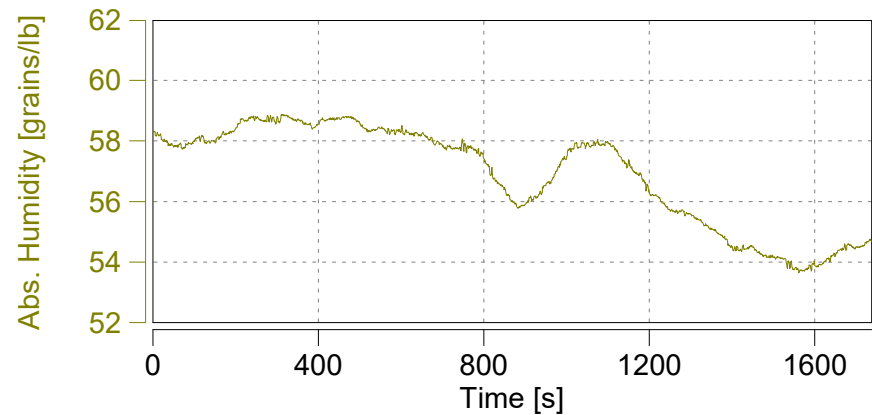
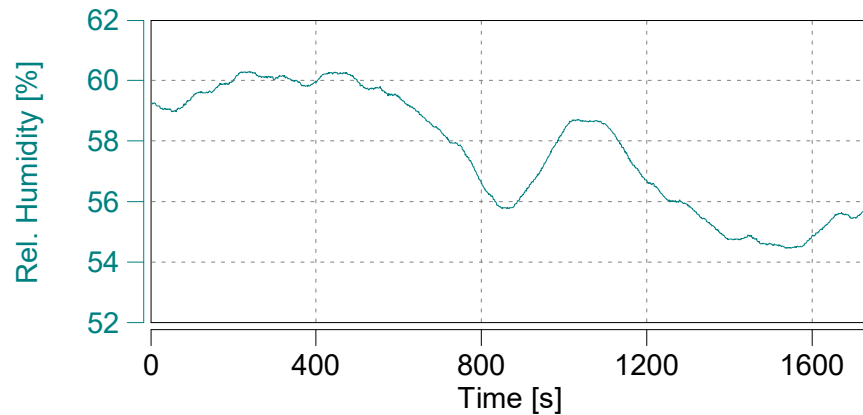
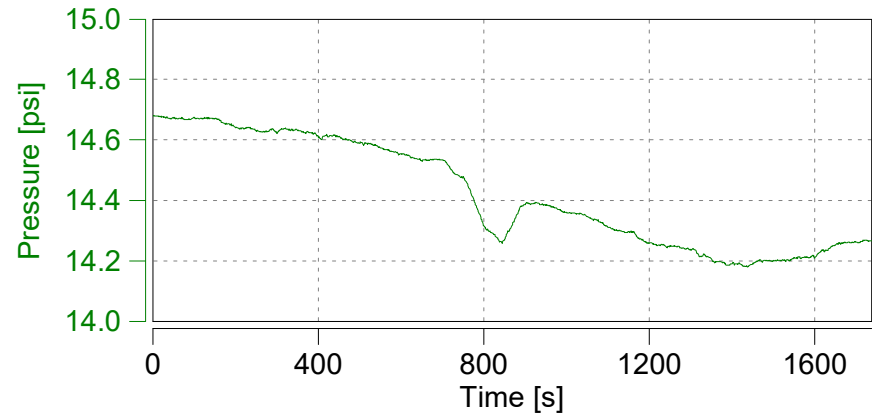
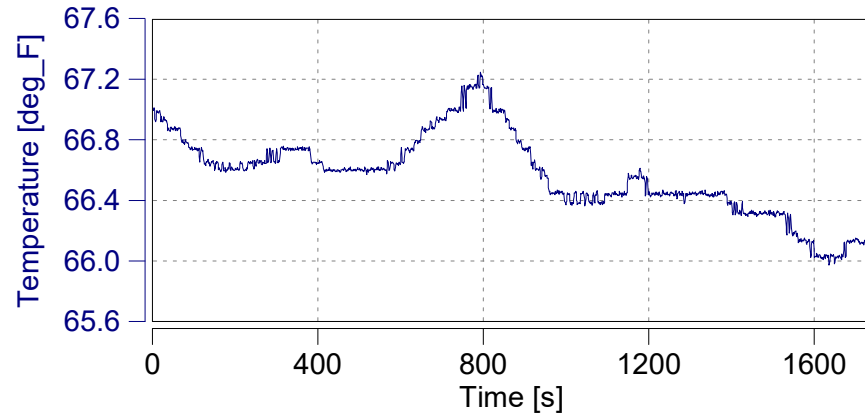
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Concerto M.O.V.E., 2019



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Case: X247-1267

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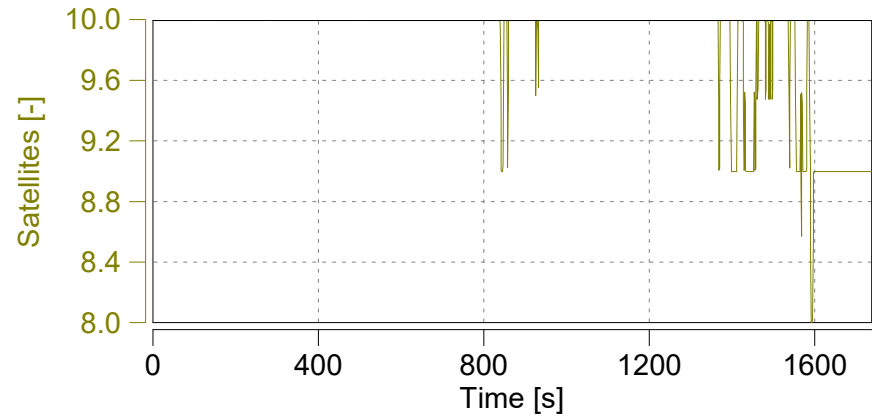
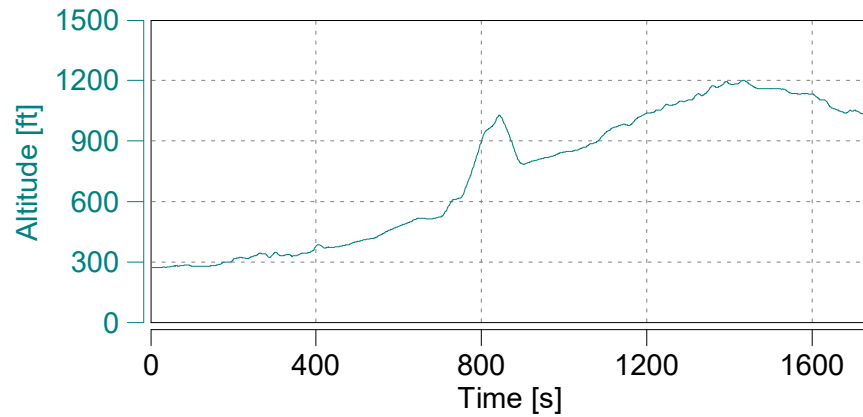
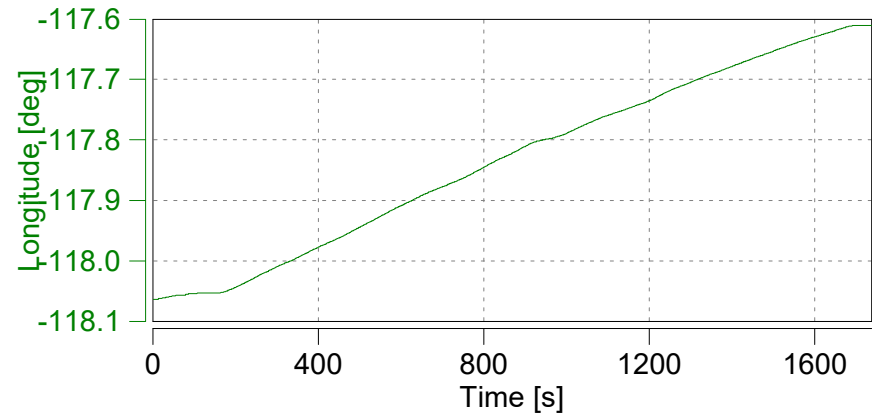
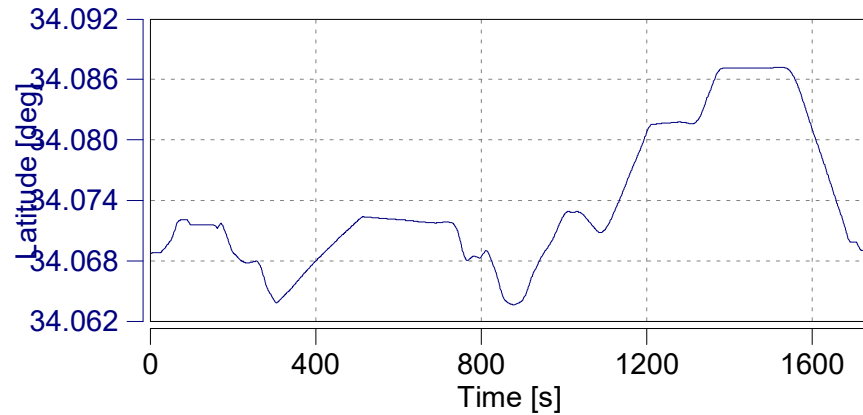
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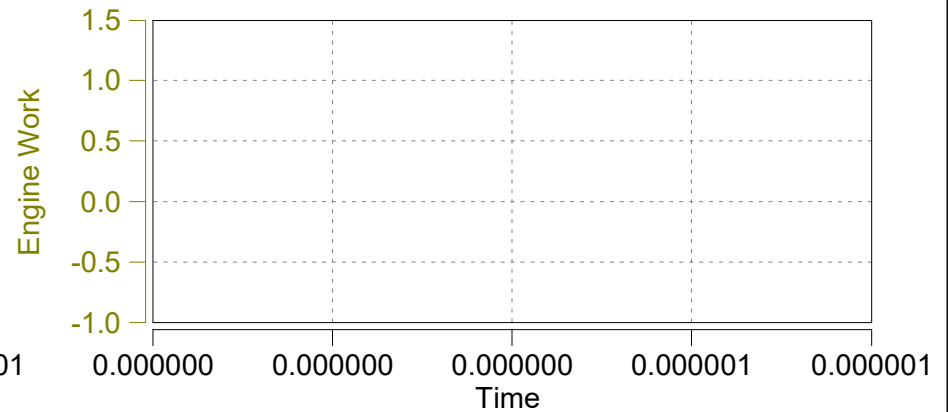
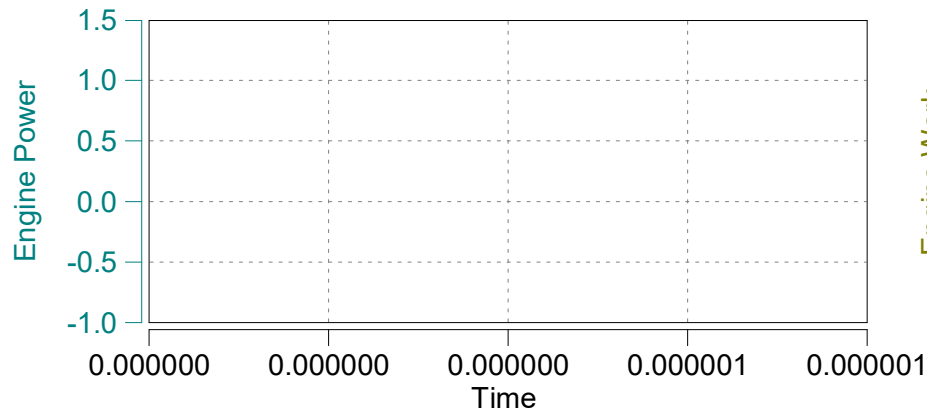
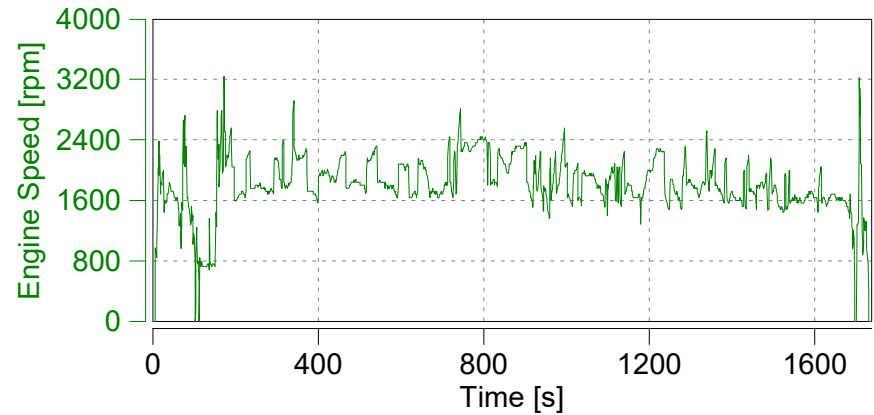
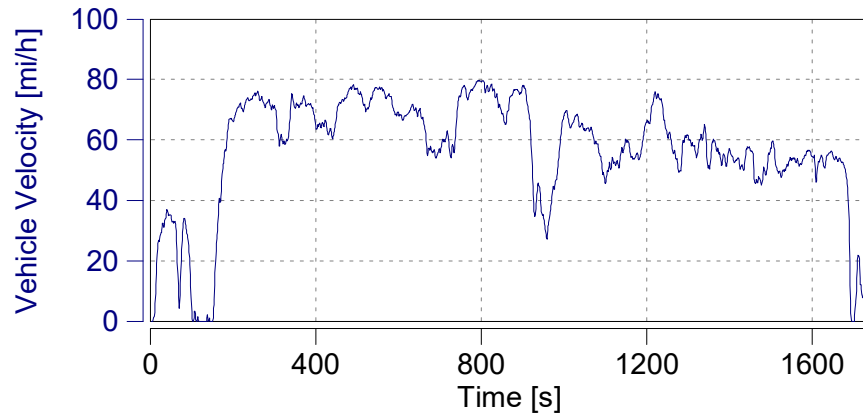


Concerto M.O.V.E, 2019

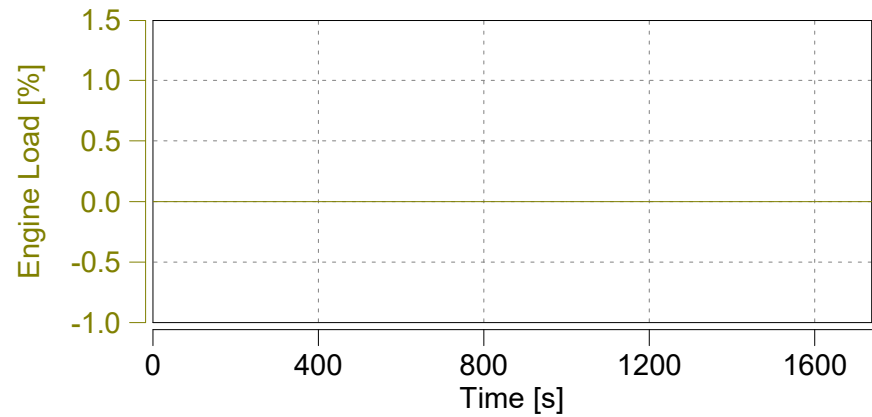
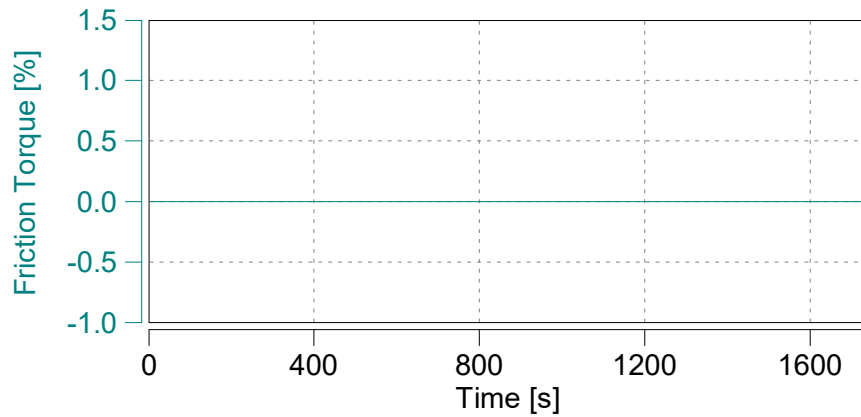
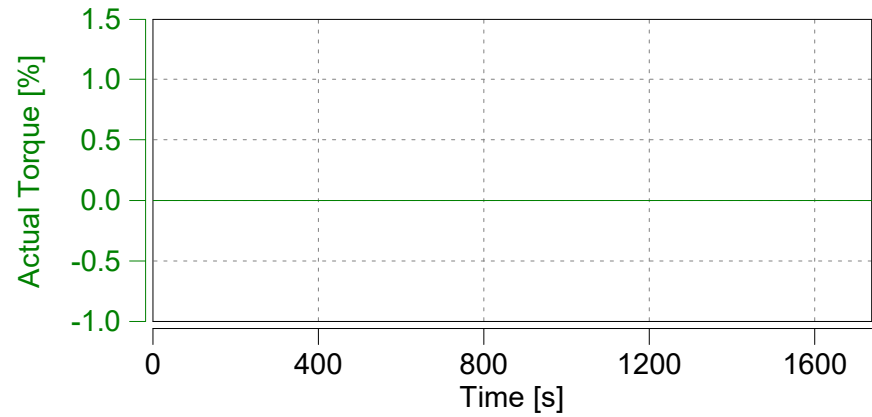
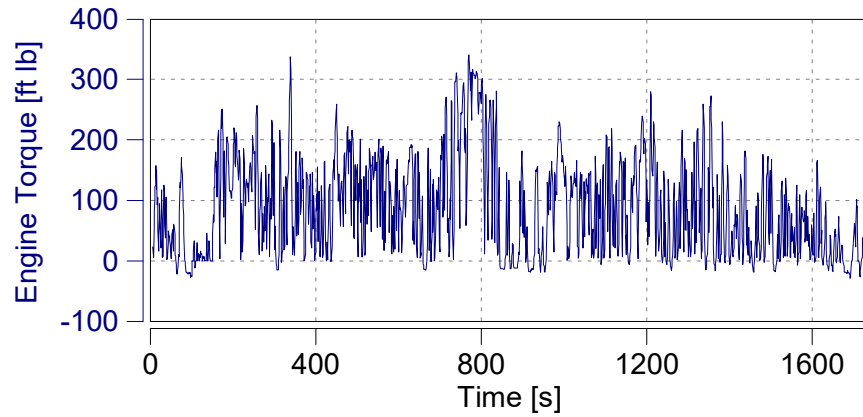


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90







Case: X247-1267

Page: Engine (3)

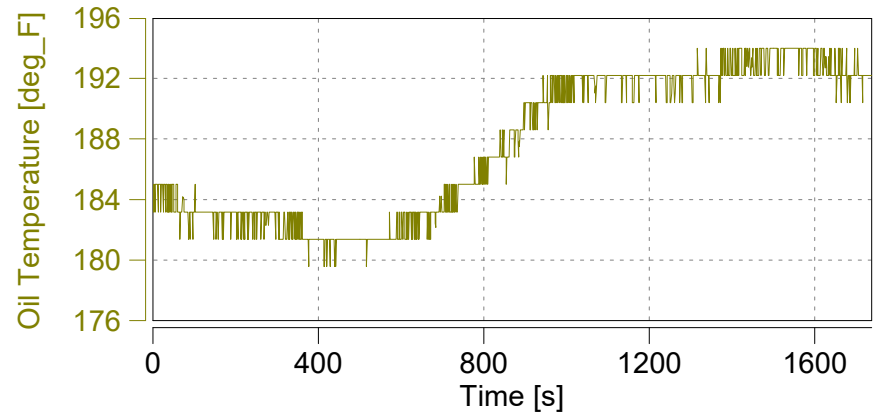
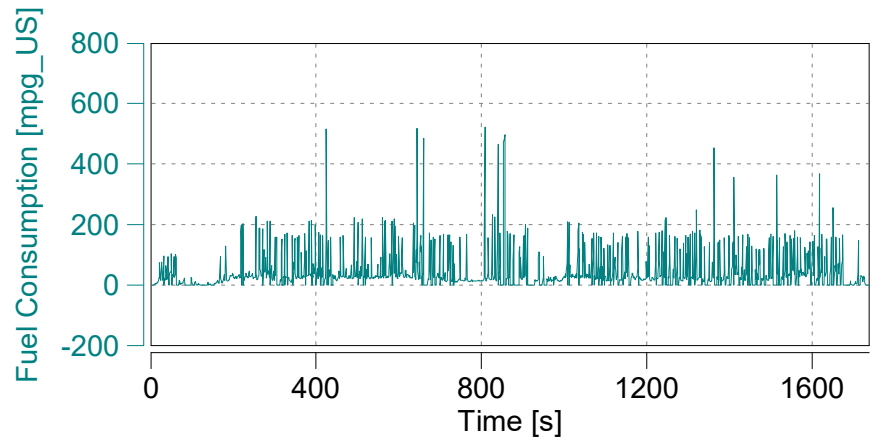
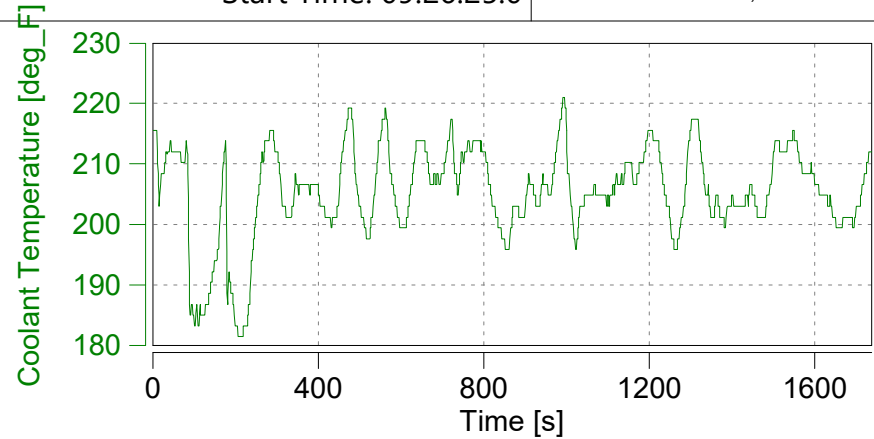
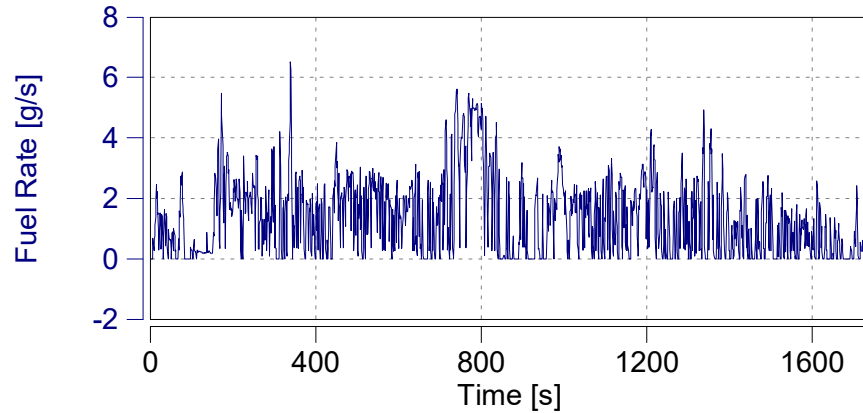
'X247-1267 A1 HWY EAST'

Start Date: 12/05/2019

Start Time: 09:26:25.0

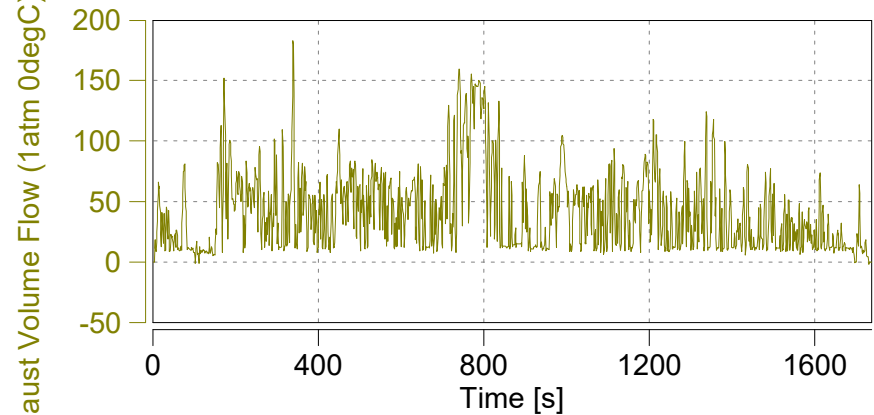
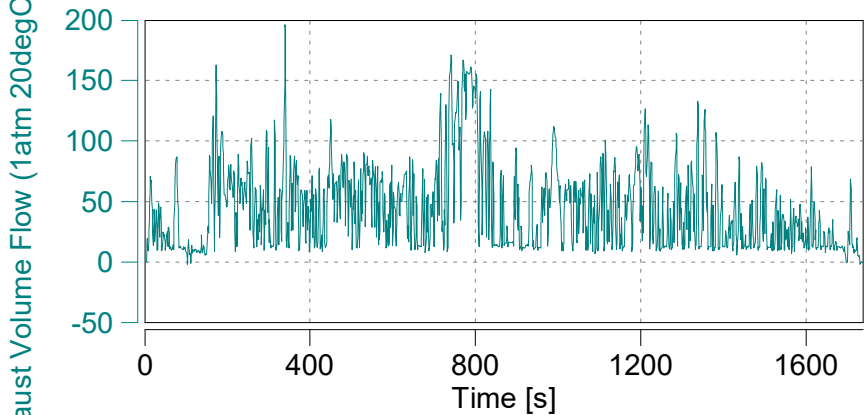
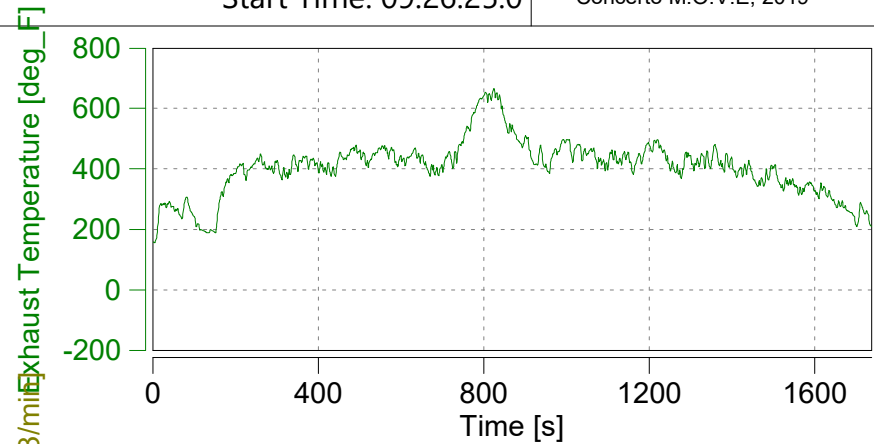
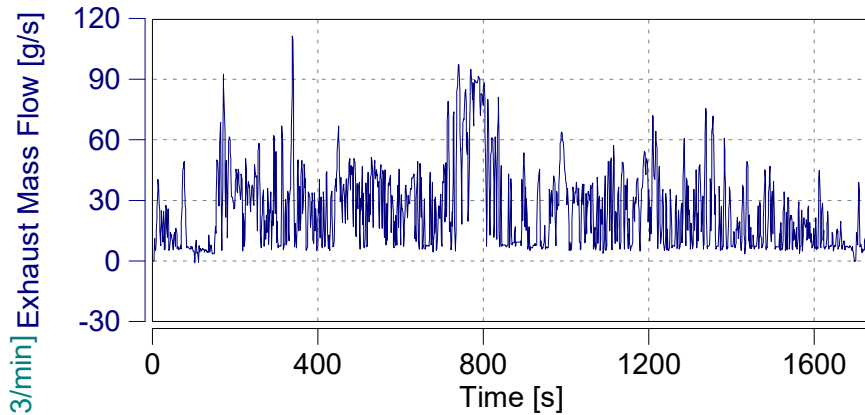


Concerto M.O.V.E, 2019



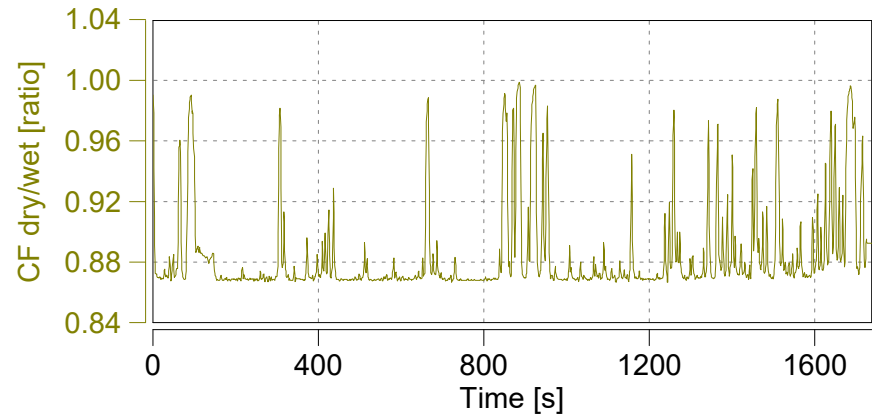
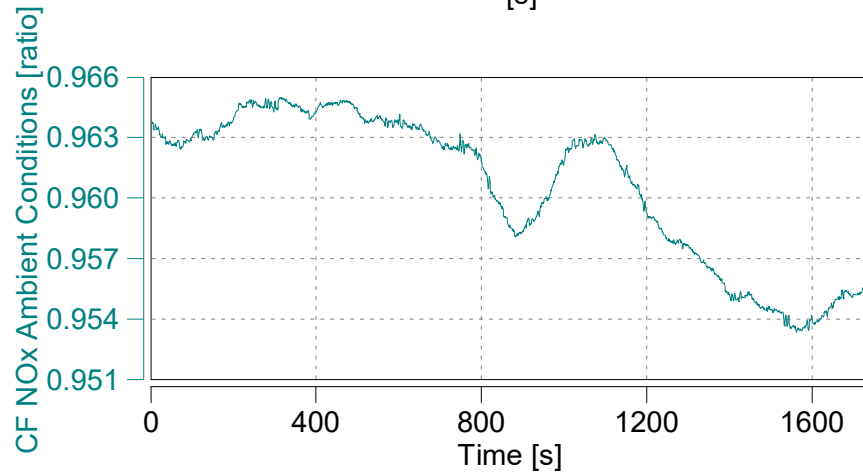
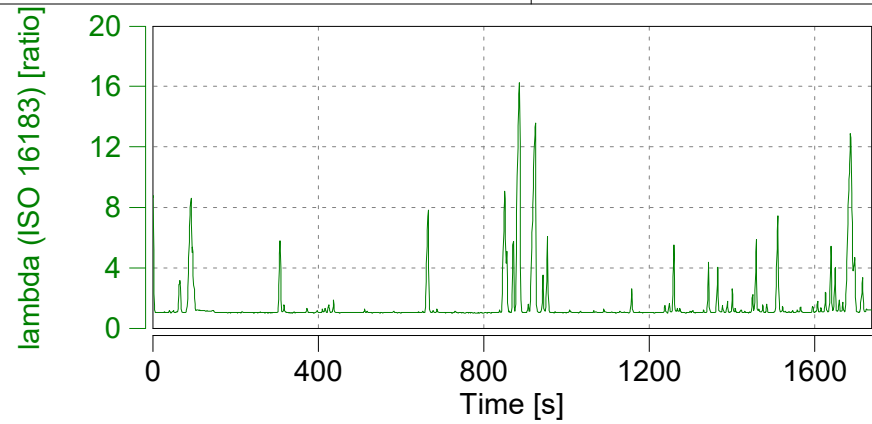
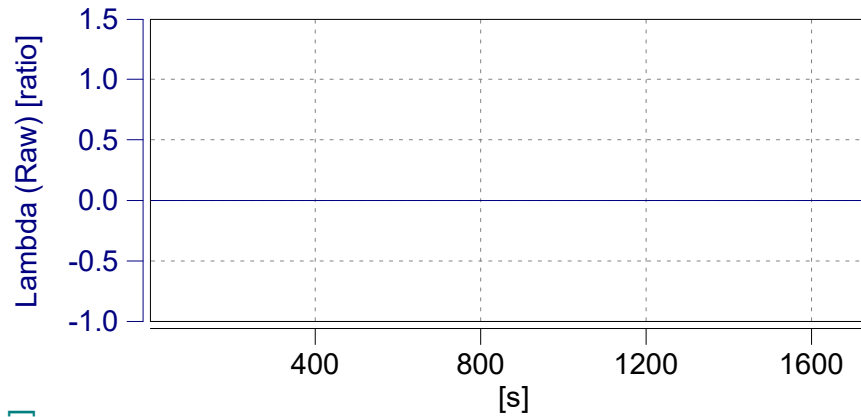
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Corrected Emissions (1)

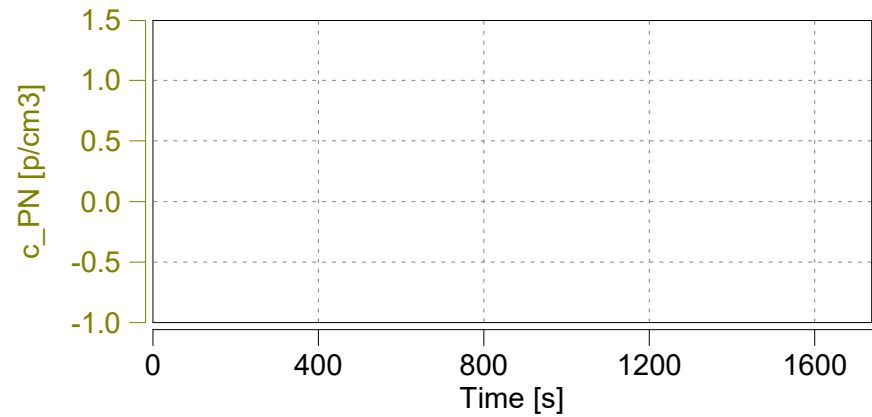
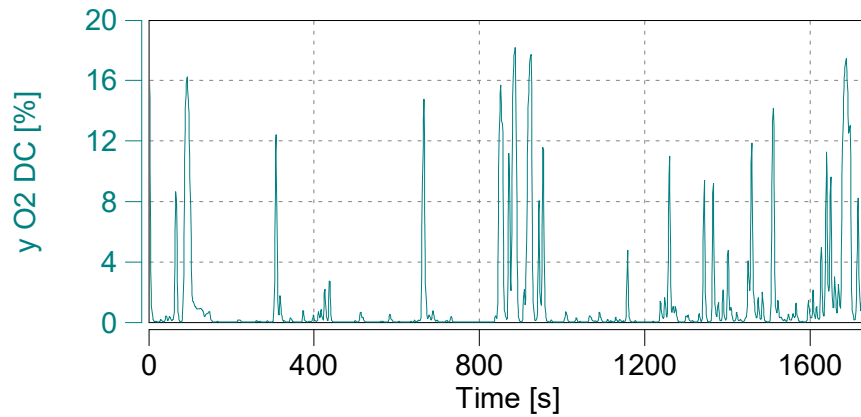
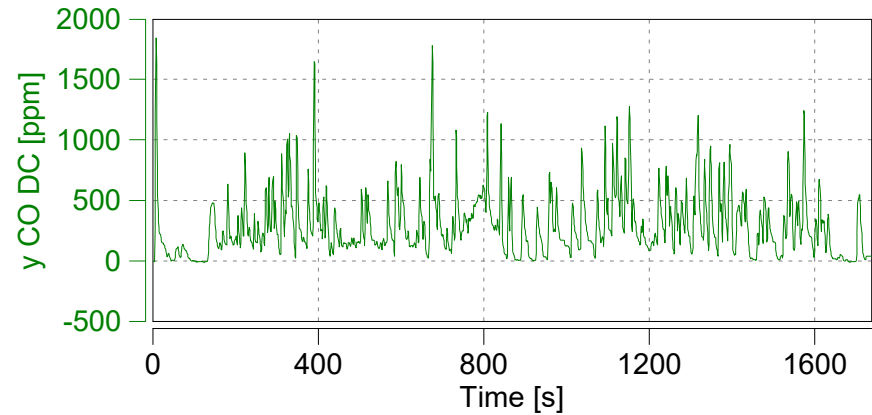
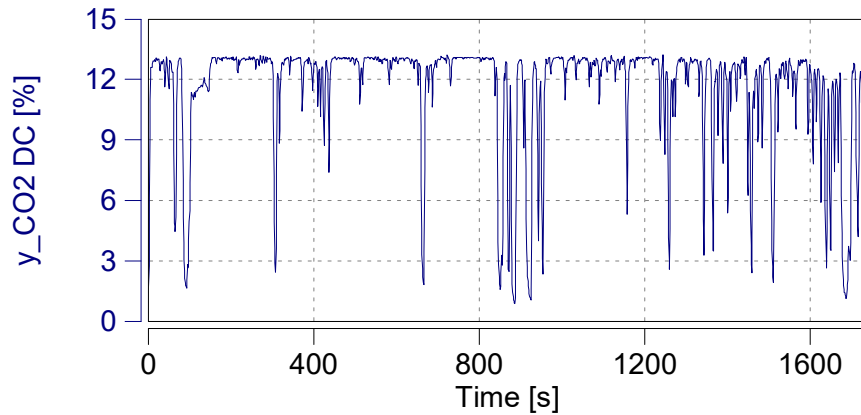
'X247-1267 A1 HWY EAST'

Start Date: 12/05/2019

Start Time: 09:26:25.0

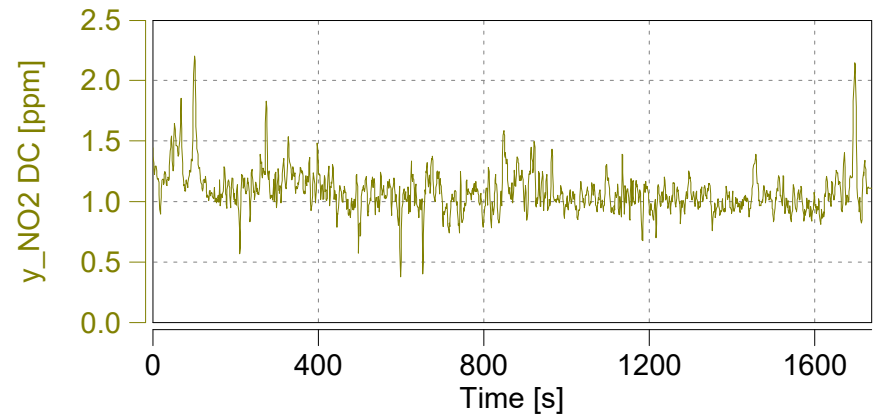
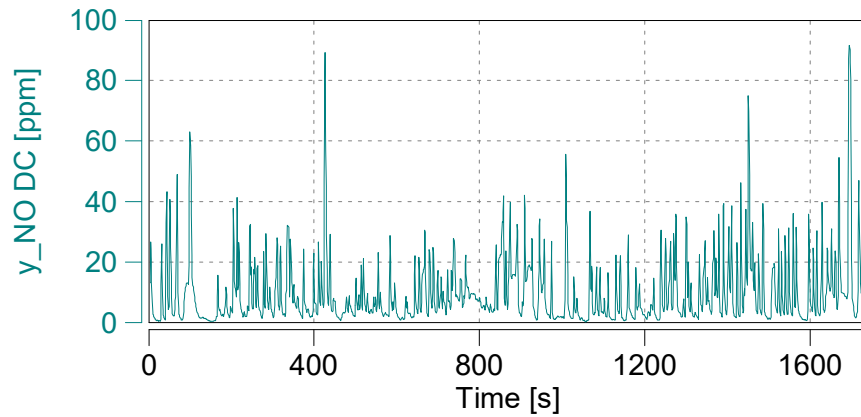
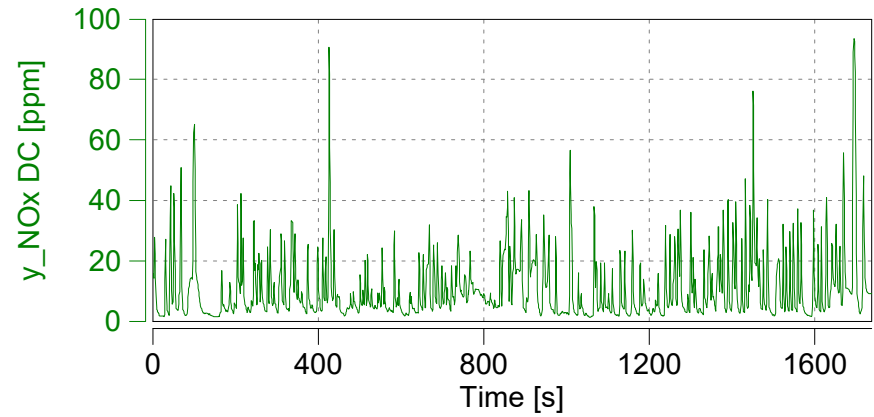
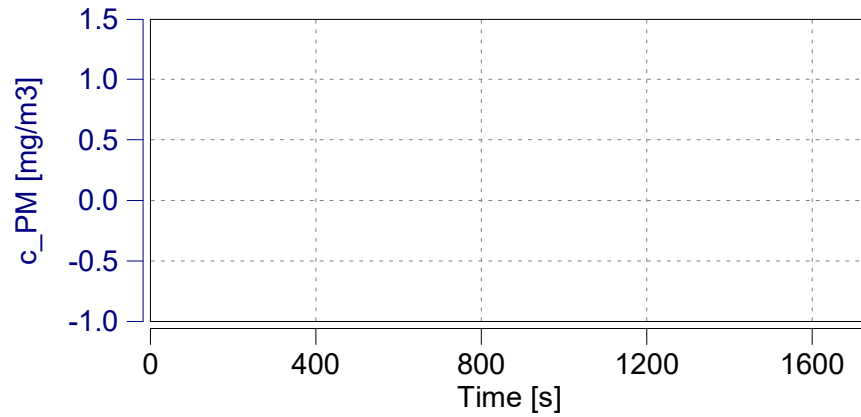


Concerto M.O.V.E., 2019



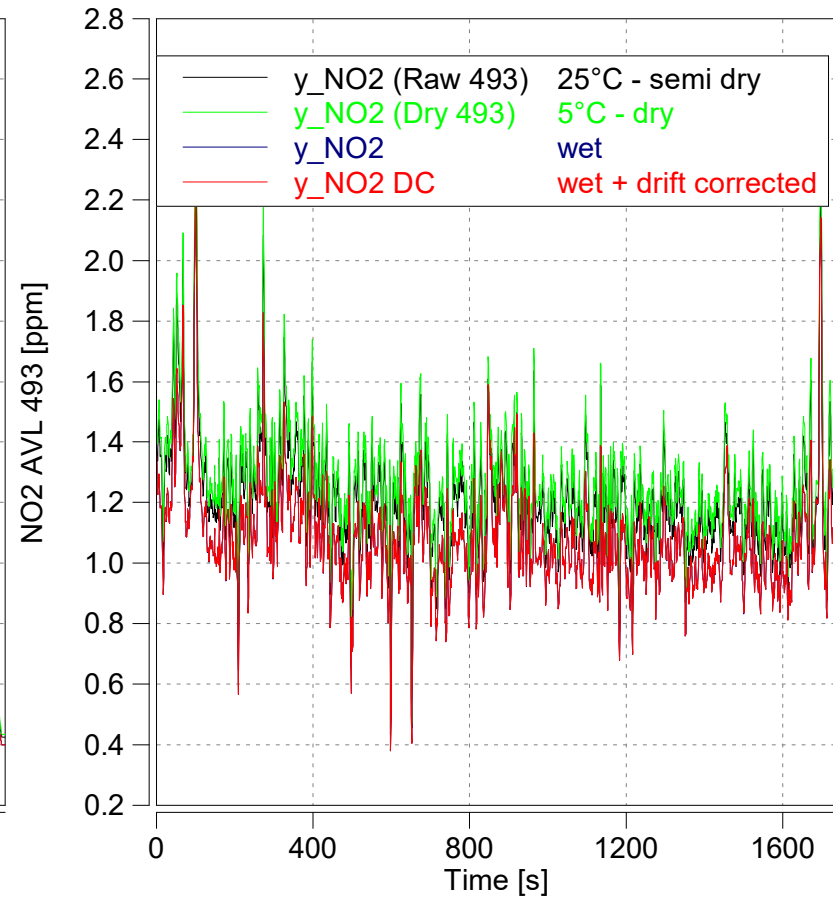
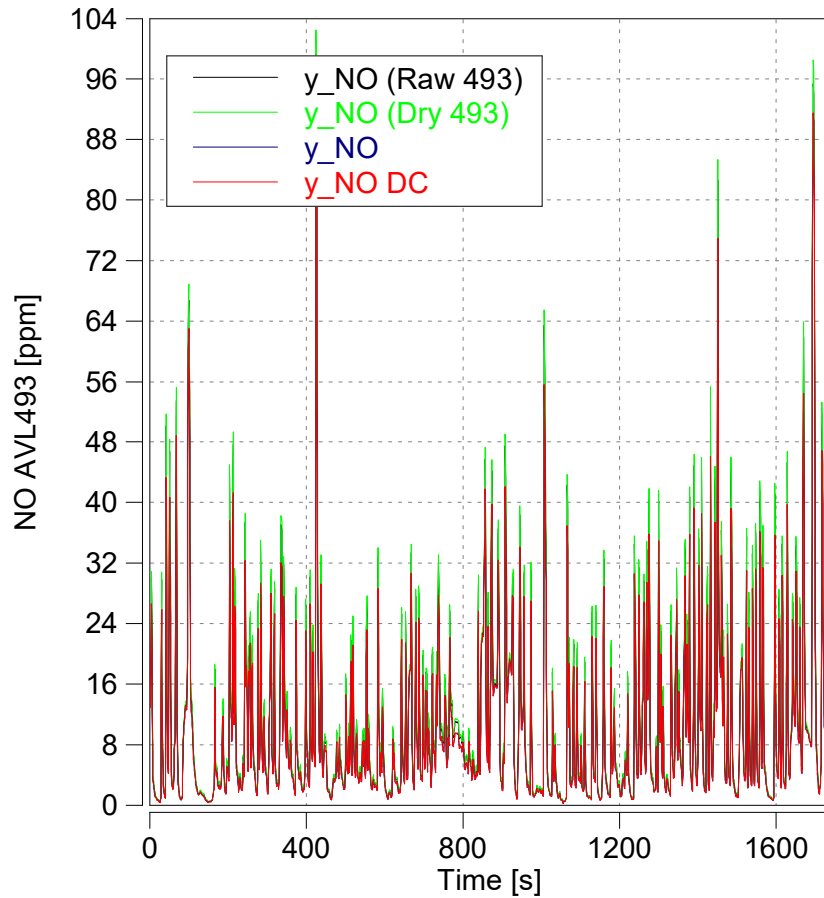
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

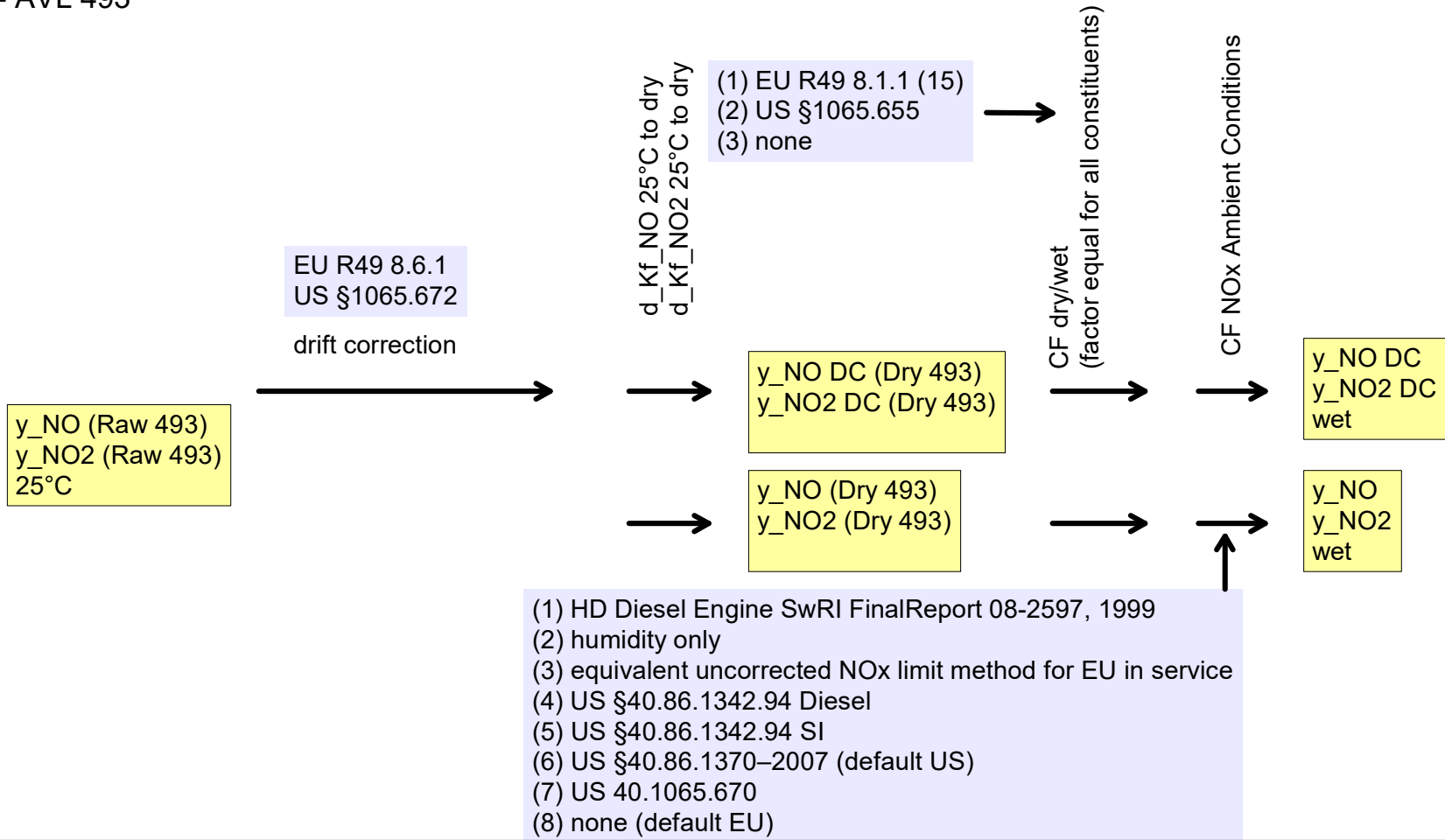


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493





Case: X247-1267

Page: Corrected Emissions (5)

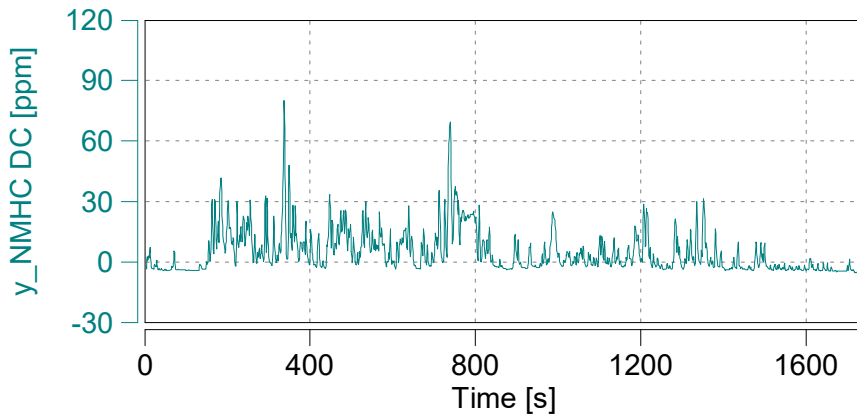
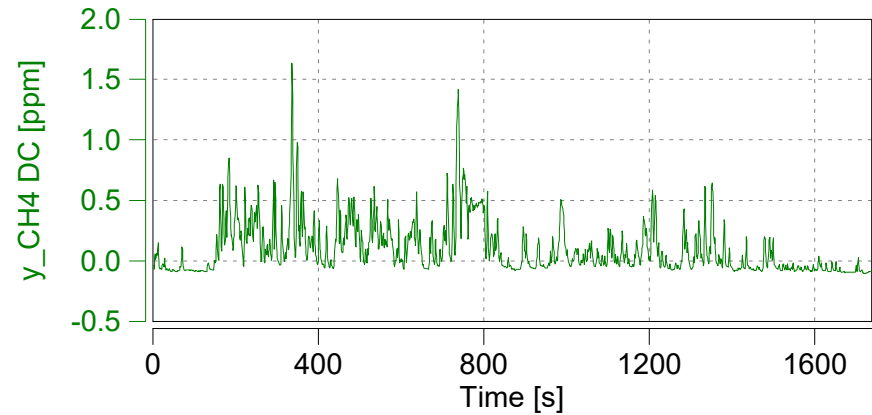
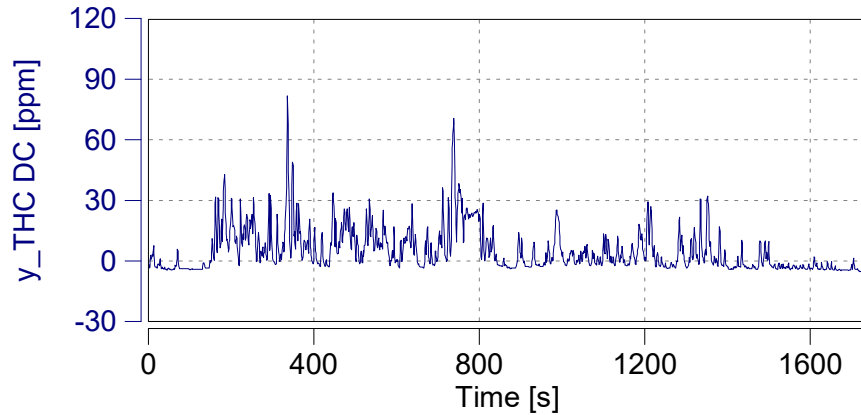
'X247-1267 A1 HWY EAST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



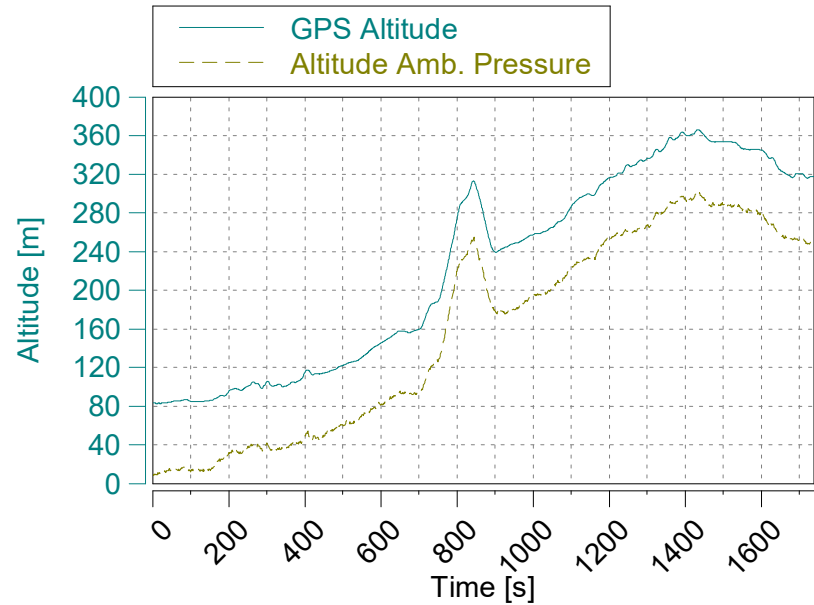
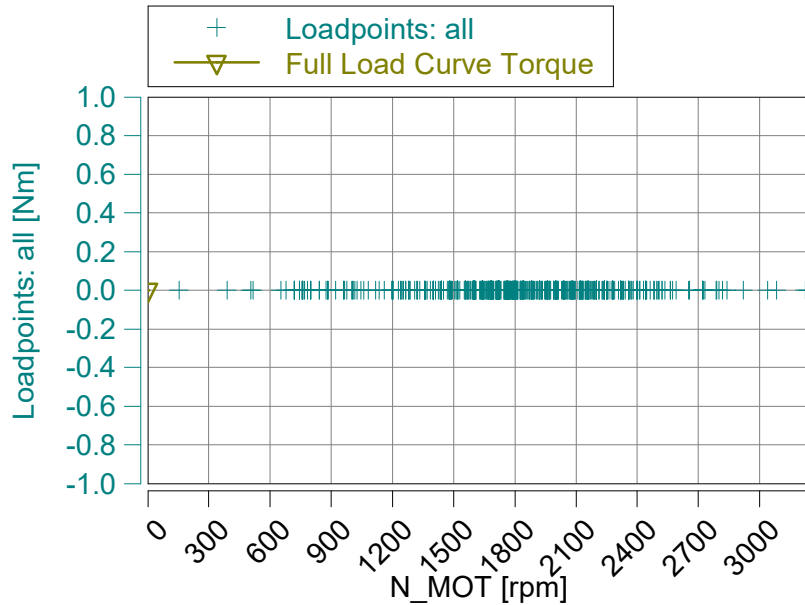
Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR X247-1267						
Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)				#ERROR		
Vehicle description (e.g. vehicle model, prototype)				PEMS		
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information	Urban		Rural		Motorway	
Shares of time of the trip in % characterised by urban, rural and motorway operation	14.0		26.9		59.1	
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating				50.1	%	
Decelerating				45.1	%	
Cruising				1.2	%	
Stop				3.6	%	
		Minimum		Maximum		
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio				m = 1.04		
				r <sup>2</sup> = 0.95		



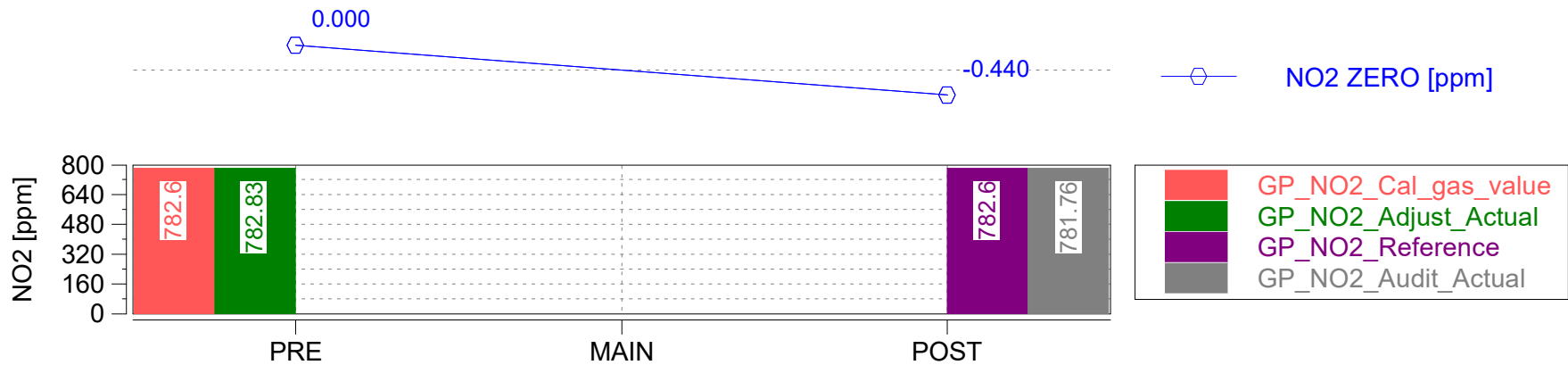
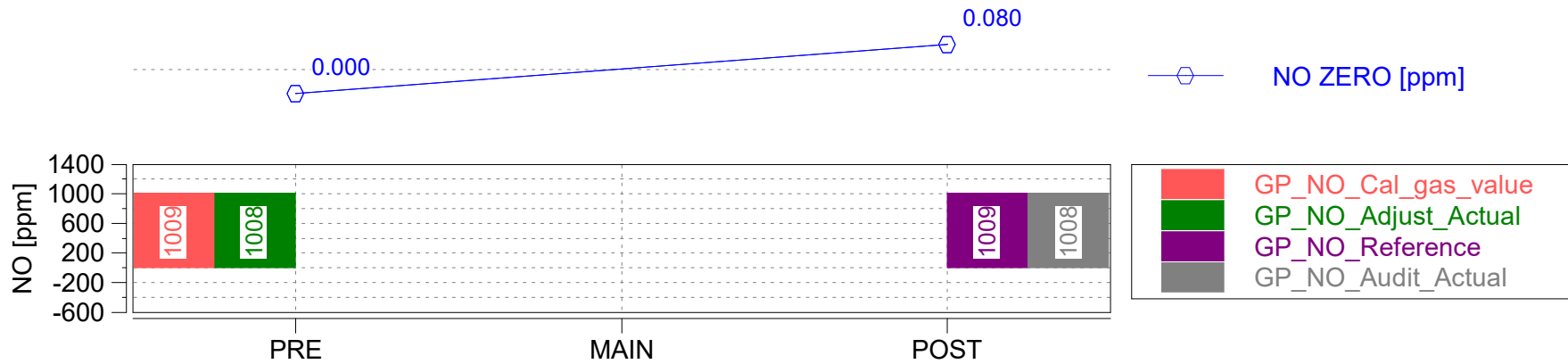
Trip Duration (a)	1738.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	198.7	g/kWh
avg BSFC ISO16183	234.4	g/kWh
Distance ECU	43.8	km
Distance GPS	43.727	km

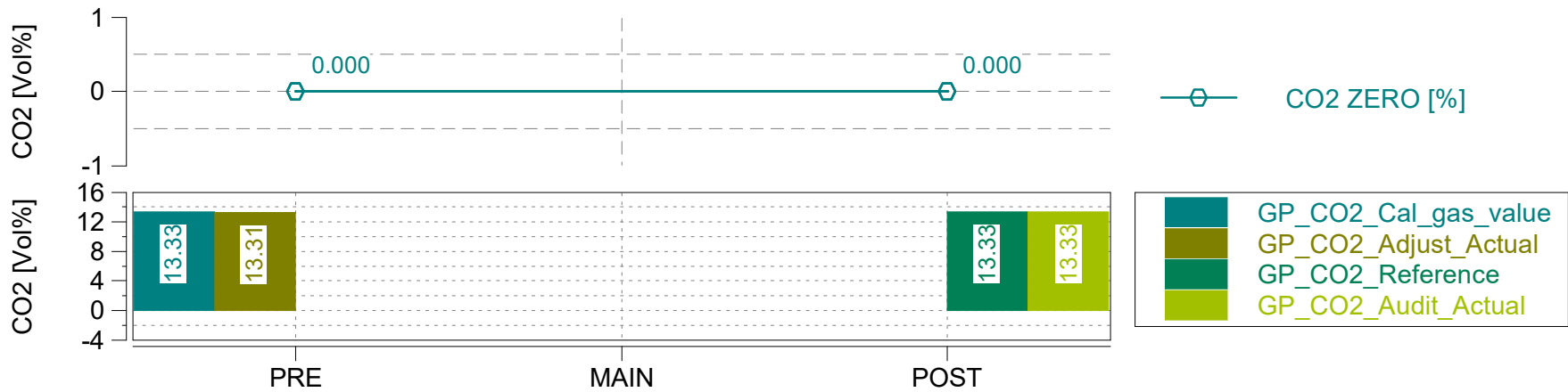
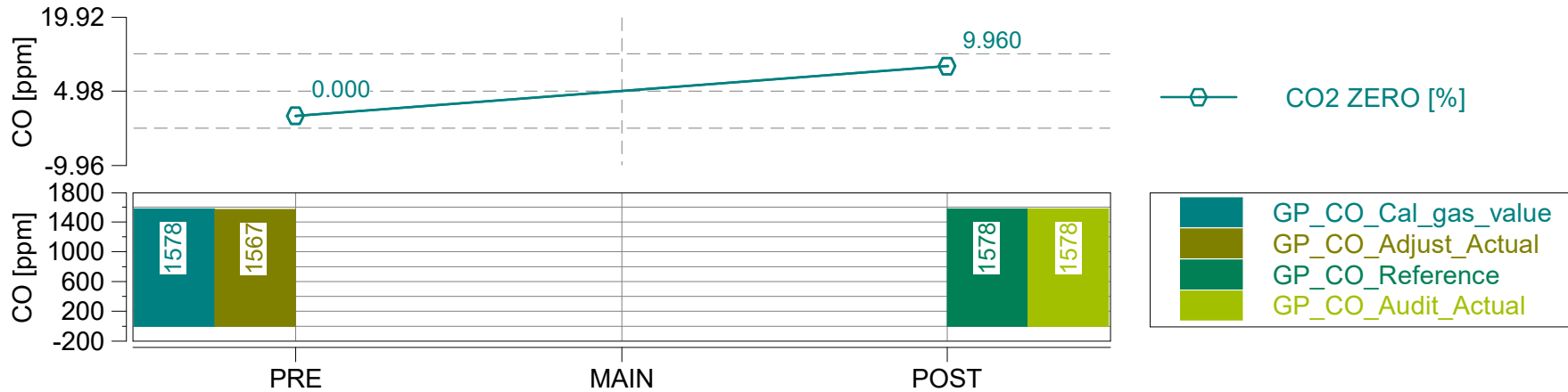
GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-05	yyyy-mm-dd
GAS PEMS Leak Check Time	11:52:38	hh:mm:ss
GAS PEMS Leak Check External	0.11	%

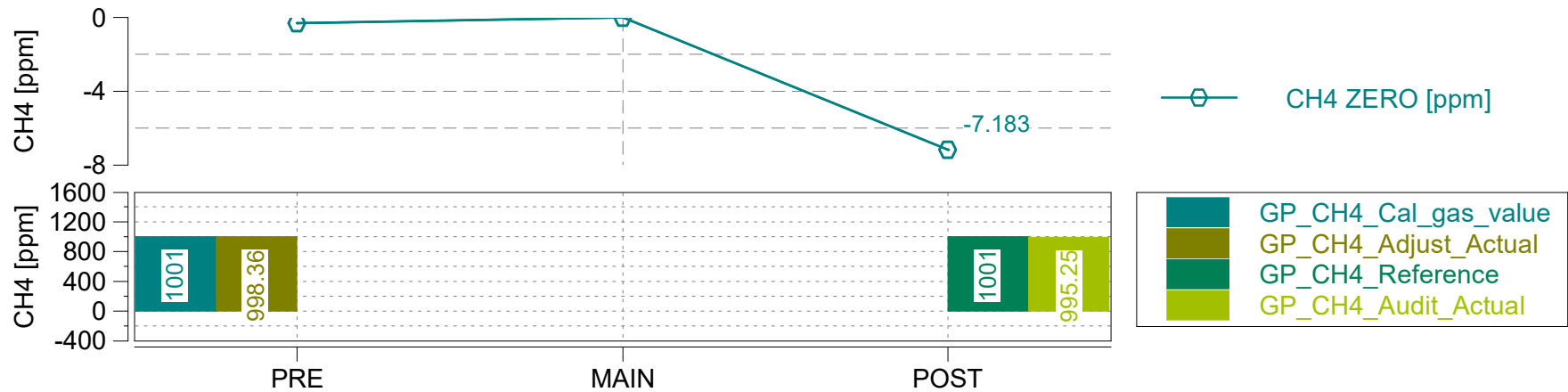
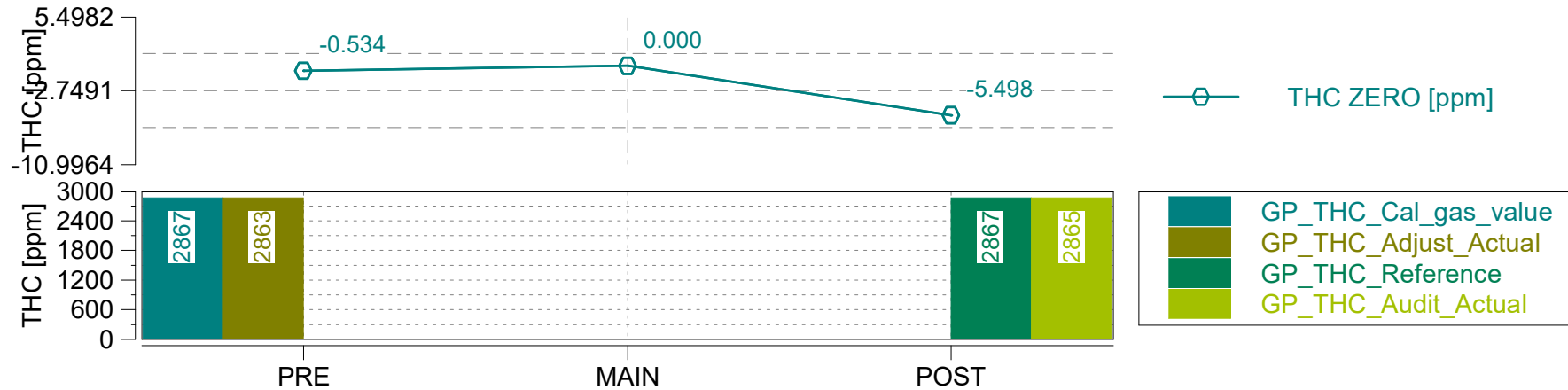
- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90







Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Fuel Rate ECU vs. Calculated

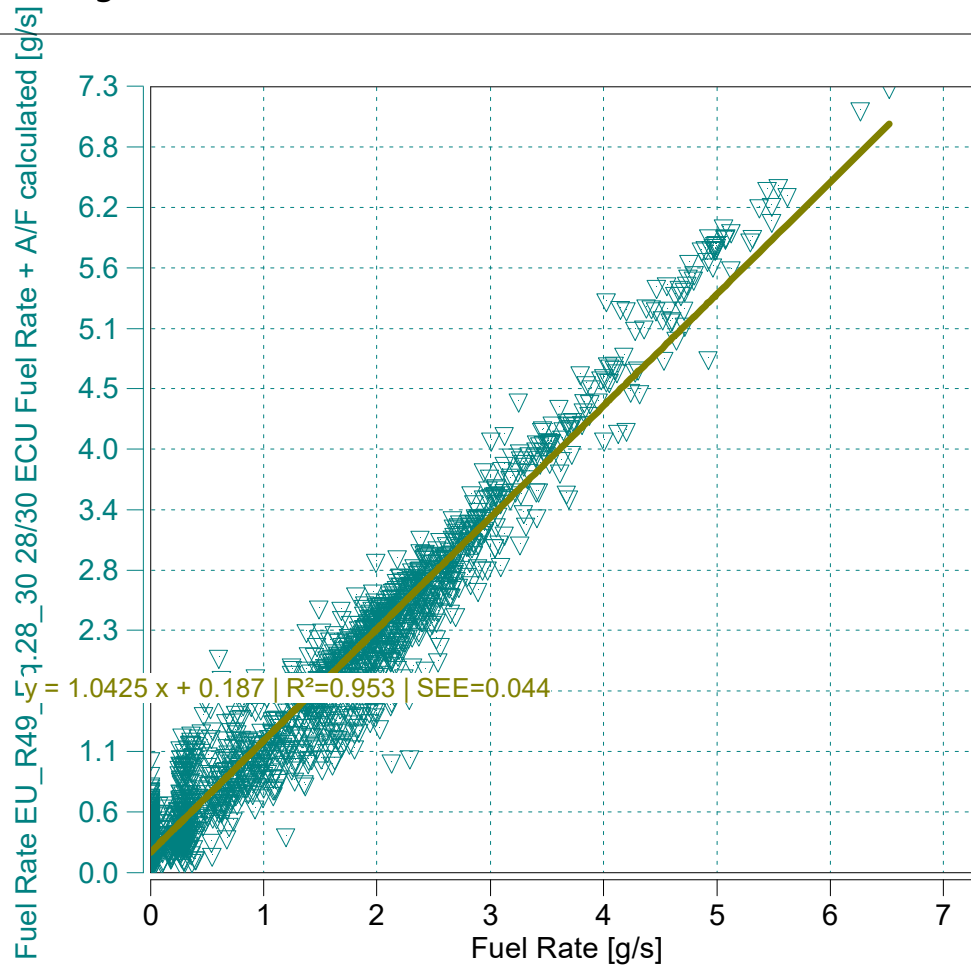
'X247-1267 A1 HWY EAST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



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

$y = 1.0425 x + 0.187 \mid R^2=0.953 \mid SEE=0.044$   
 $m = 1.04$  (0.9 - 1.1 recommended)  
 $R^2 = 0.95$  (min 0.9 mandatory)

Data from - to [% of Maximum]

Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Trip Duration	1687.00	s	ave THC	2.50542	ppm	BS CO2	531.18901	g/hphr
Trip Duration (a)	1687.00	s	ave NMHC	2.45531	ppm	BS CO	0.88393	g/hphr
Trip Distance	28.09	mi	ave CH4	0.05011	ppm	BS THC	0.00922	g/hphr
Trip Distance (a)	28.09	mi	ave CO	303.04724	ppm	BS NMHC	0.00853	g/hphr
Trip Fuel Cons. (b)	2.18	kg	ave CO2	11.19377	%	BS CH4	0.00020	g/hphr
Trip Fuel Cons. (ab)	2.18	kg	ave NOx	10.11737	ppm	BS NO (d)	0.02953	g/hphr
Trip Fuel Cons. EU (ac)	2.57	kg	ave PM	n/a	mg/m3	BS NO2	0.00348	g/hphr
Trip Fuel Cons. US (ac)	2.55	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.03301	g/hphr
Trip Fuel Economy (b)	36.47	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	36.47	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	30.98	mpg_US	tot THC	0.13433	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	31.16	mpg_US	tot NMHC	0.12426	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	36.47	mpg_US	tot CH4	0.00298	g	DS CO2	275.41755	g/mi
Trip Fuel Economy GGE (ab)	36.47	mpg_US	tot CO	12.87272	g	DS CO	0.45831	g/mi
Trip Fuel Economy EU GGE (ac)	30.98	mpg_US	tot CO2	7735.73265	g	DS THC	0.00478	g/mi
Trip Fuel Economy US GGE (ac)	31.16	mpg_US	tot NO (d)	0.43007	g	DS NMHC	0.00442	g/mi
Trip Av. Eng. Speed	1917.25	rpm	tot NO2	0.05063	g	DS CH4	0.00011	g/mi
Trip Av. Torque	80.02	lbft	tot NOx	0.48070	g	DS NO (d)	0.01531	g/mi
Trip Av. Power	31.08	hp	tot Soot	n/a	g	DS NO2	0.00180	g/mi
Trip Work	14.56	hphr	tot Soot meas	n/a	g	DS NOx	0.01711	g/mi
Trip Work (a)	14.56	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	41.25	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	34.06	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	34.30	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	68.66	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3549.63124	g/kg
Trip Av. Humidity	50.96	%	Trip Av. Veh. Speed	59.93990	mi/hr	FS CO	5.90680	g/kg
Trip Av. GPS Altitude	207.17	m	Trip Distance Share Urban	6.06474	% distance	FS THC	0.06164	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	5.85493	% distance	FS NMHC	0.05702	g/kg
			Trip Distance Share Motorway	88.08033	% distance	FS CH4	0.00137	g/kg
						FS NO (d)	0.19734	g/kg
						FS NO2	0.02323	g/kg
						FS NOx	0.22058	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Case: X247-1267

Page: Trip Summary Drift Corrected

'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



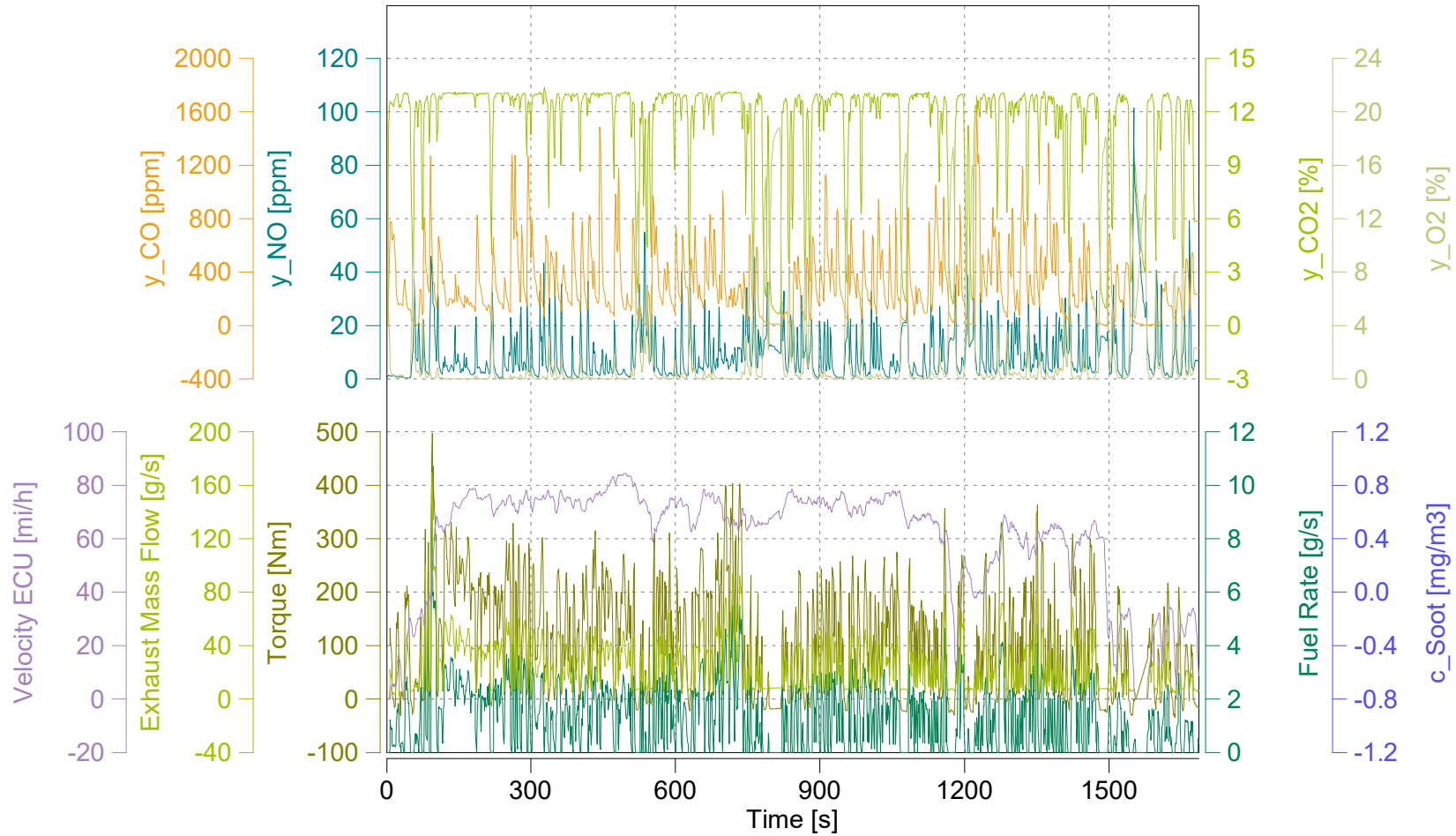
Concerto M.O.V.E, 2019

Trip Duration	1687.00	s	ave THC DC	2.77457	ppm	BS CO2 DC	531.58780	g/hphr
Trip Duration (a)	1687.00	s	ave NMHC DC	2.71908	ppm	BS CO DC	0.88661	g/hphr
Trip Distance	28.09	mi	ave CH4 DC	0.05549	ppm	BS THC DC	0.00961	g/hphr
Trip Distance (a)	28.09	mi	ave CO DC	303.96607	ppm	BS NMHC DC	0.00889	g/hphr
			ave CO2 DC	11.20218	%	BS CH4 DC	0.00021	g/hphr
Trip Fuel Cons. (b)	2.18	kg	ave NOx DC	10.11967	ppm	BS NO DC (d)	0.02954	g/hphr
Trip Fuel Cons. (ab)	2.18	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00348	g/hphr
Trip Fuel Cons. EU (ac)	2.57	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.03302	g/hphr
Trip Fuel Cons. US (ac)	2.55	kg	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
			ave PN DC	n/a	#/cm3	BS Soot meas	n/a	g/hphr
						BS PM	n/a	g/hphr
Trip Fuel Economy (b)	36.47	mpg_US				BS PN DC	n/a	#/hpr
Trip Fuel Economy (ab)	36.47	mpg_US	tot THC DC	0.13994	g			
Trip Fuel Economy EU (ac)	30.98	mpg_US	tot NMHC DC	0.12944	g	DS CO2 DC	275.62432	g/mi
Trip Fuel Economy US (ac)	31.16	mpg_US	tot CH4 DC	0.00310	g	DS CO DC	0.45970	g/mi
Trip Fuel Economy GGE (b)	36.47	mpg_US	tot CO DC	12.91175	g	DS THC DC	0.00498	g/mi
Trip Fuel Economy GGE (ab)	36.47	mpg_US	tot CO2 DC	7741.54026	g	DS NMHC DC	0.00461	g/mi
Trip Fuel Economy EU GGE (ac)	30.98	mpg_US	tot NO DC (d)	0.43016	g	DS CH4 DC	0.00011	g/mi
Trip Fuel Economy US GGE (ac)	31.16	mpg_US	tot NO2 DC	0.05065	g	DS NO DC (d)	0.01532	g/mi
			tot NOx DC	0.48081	g	DS NO2 DC	0.00180	g/mi
Trip Av. Eng. Speed	1917.25	rpm	tot Soot	n/a	g	DS NOx DC	0.01712	g/mi
Trip Av. Torque	80.02	lbft	tot Soot meas	n/a	g	DS Soot	n/a	g/mi
Trip Av. Power	31.08	hp	tot PM	n/a	g	DS Soot meas	n/a	g/mi
Trip Work			tot PN DC	n/a	#	DS PM	n/a	g/mi
Trip Work (a)	14.56	hphr				DS PN DC	n/a	#/mi
			PM measurement type	0.00000	-			
Trip Exhaust Mass	41.25	kg	tot Soot on PM filter (estim.)	0.00000	mg	FS CO2 DC	3552.29612	g/kg
Trip Exhaust Mass EU (ac)	34.06	kg	Soot --> PM simple scaling factor	1.00000	-	FS CO DC	5.92471	g/kg
Trip Exhaust Mass US (ac)	34.30	kg				FS THC DC	0.06421	g/kg
			Trip Av. Veh. Speed	59.93990	mi/hr	FS NMHC DC	0.05940	g/kg
Trip Av. Amb. Temperature	68.66	deg_F				FS CH4 DC	0.00142	g/kg
Trip Av. Humidity	50.96	%	Trip Distance Share Urban	6.06474	% distance	FS NO DC (d)	0.19739	g/kg
Trip Av. GPS Altitude	207.17	m	Trip Distance Share Rural	5.85493	% distance	FS NO2 DC	0.02324	g/kg
			Trip Distance Share Motorway	88.08033	% distance	FS NOx DC	0.22063	g/kg
Fuel Type	Petrol (E10)					FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	n/a	#/kg

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

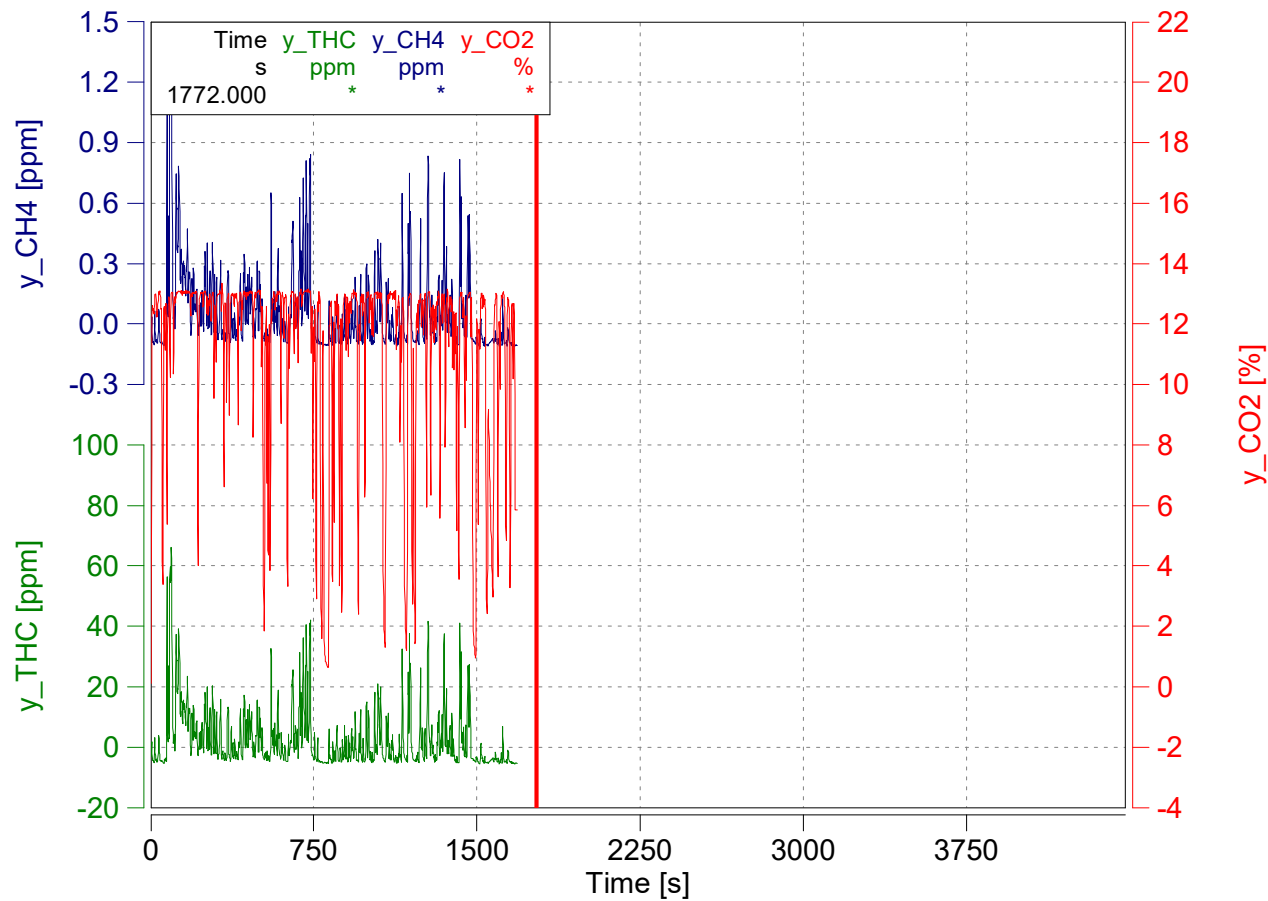
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

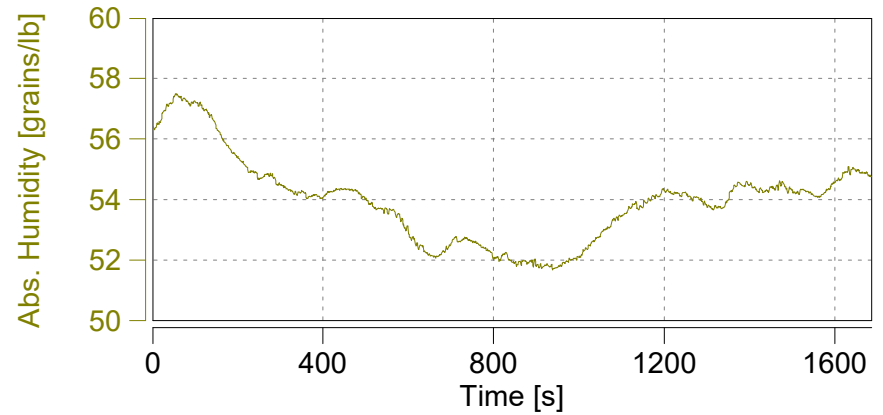
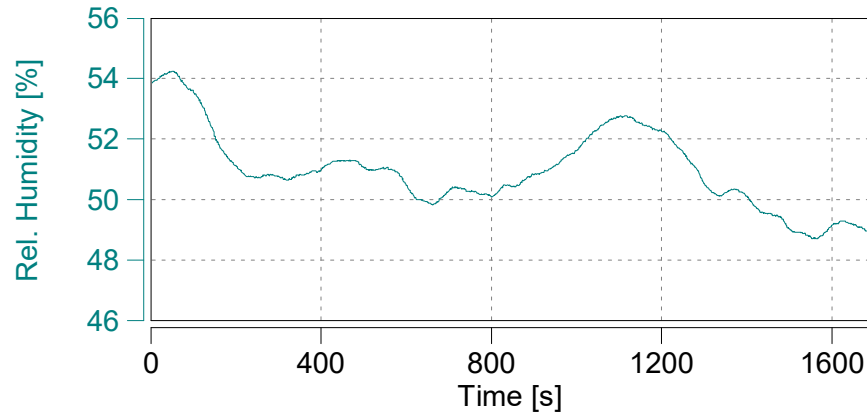
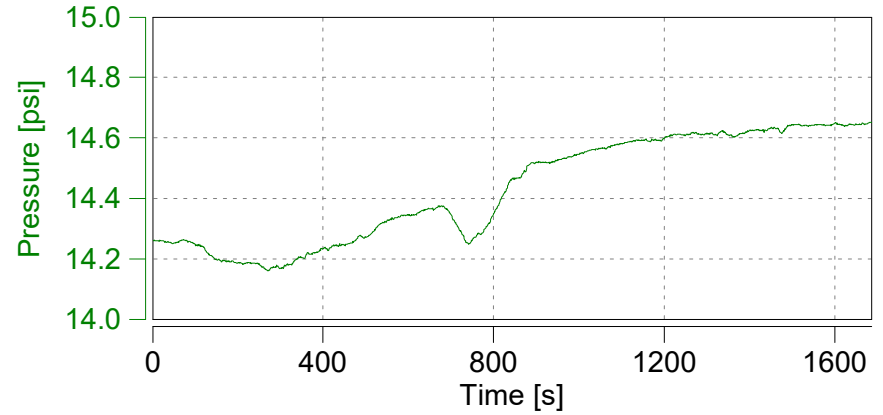
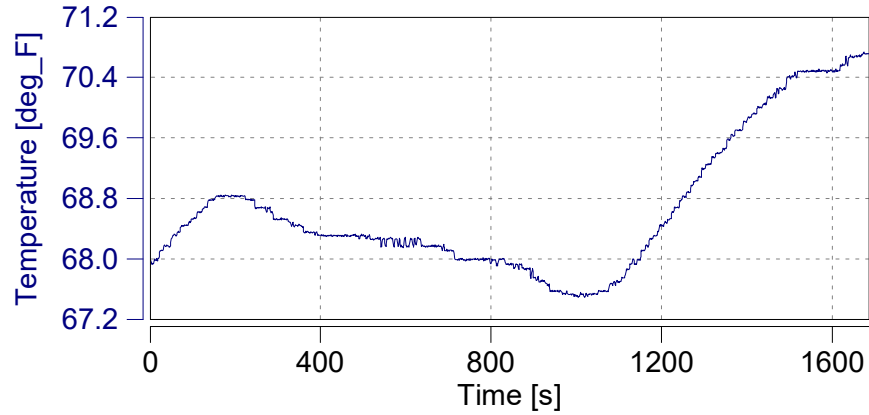


Absolute Time Shifts

y_THC	s	-5.2
y_CH4	s	-7.2

Reset Time Shifts in Plot

Apply Current Values



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: GPS

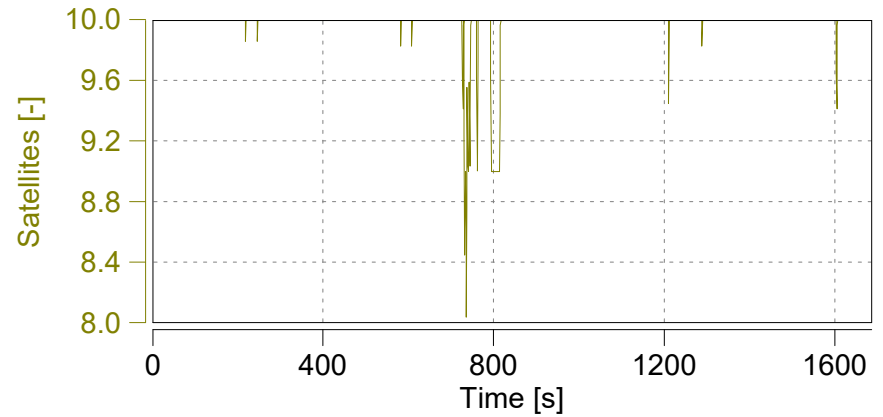
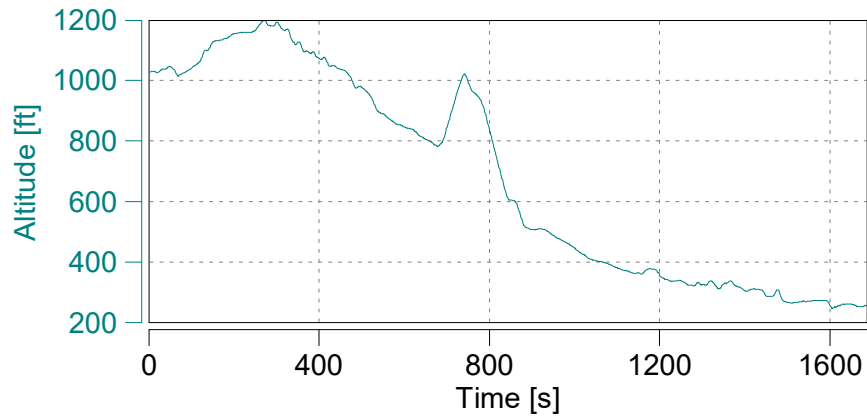
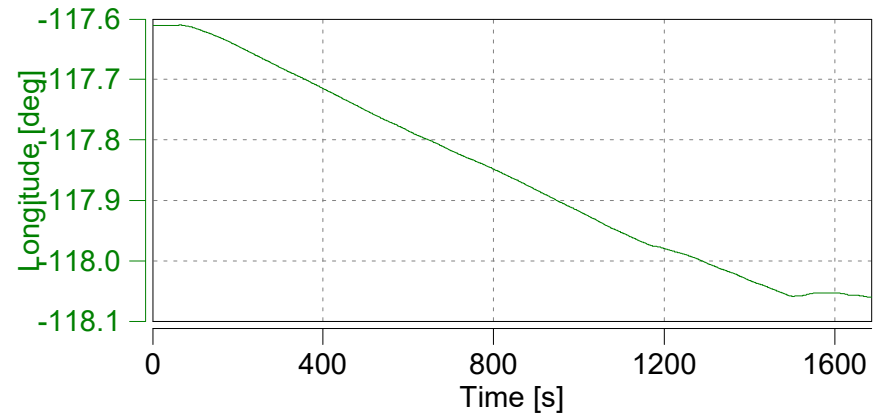
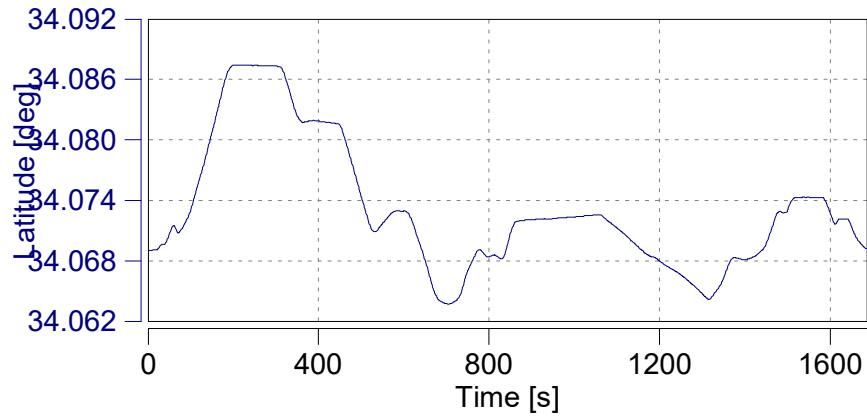
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0

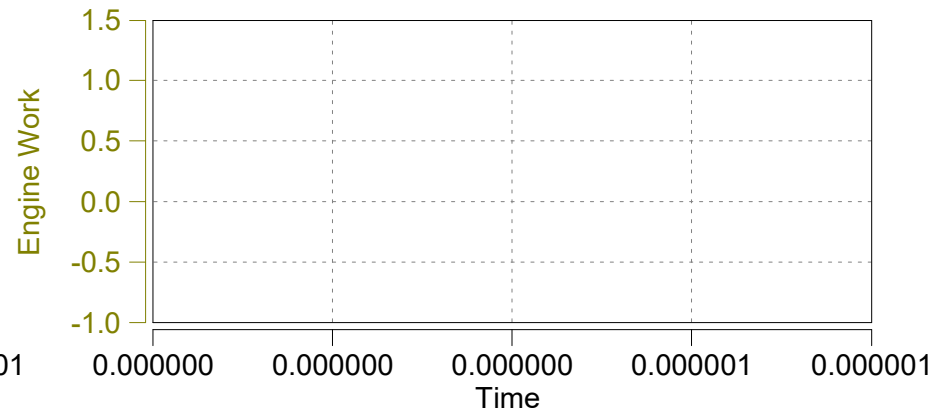
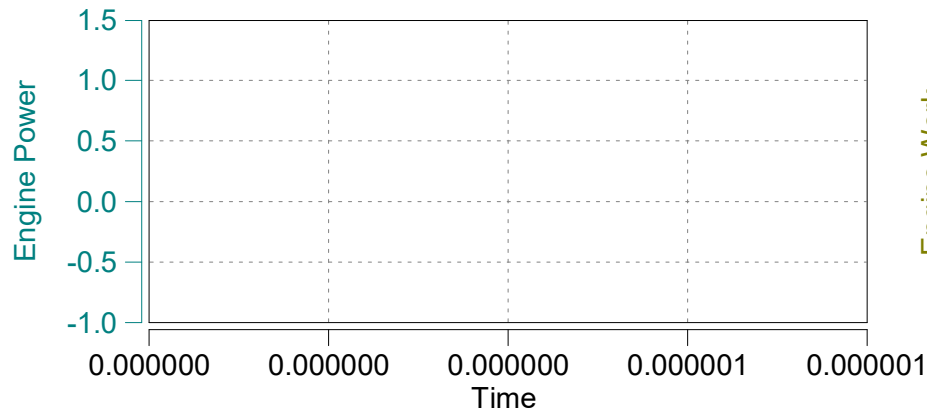
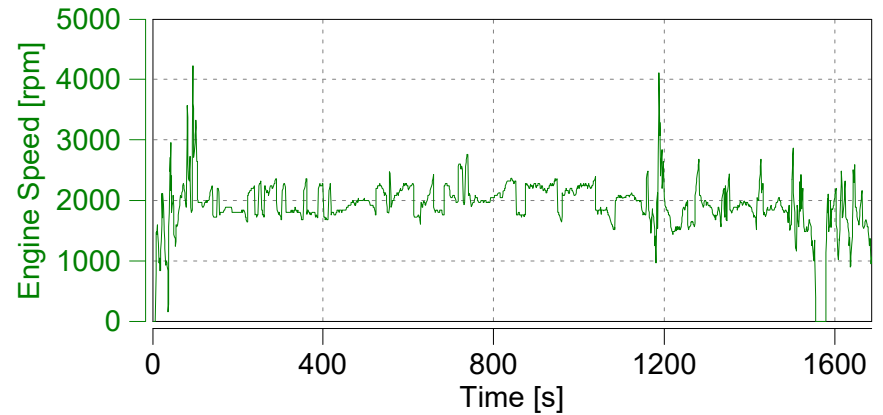
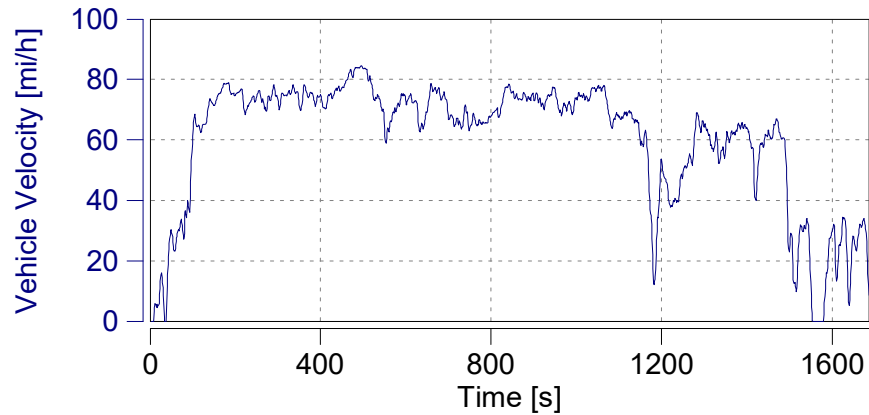


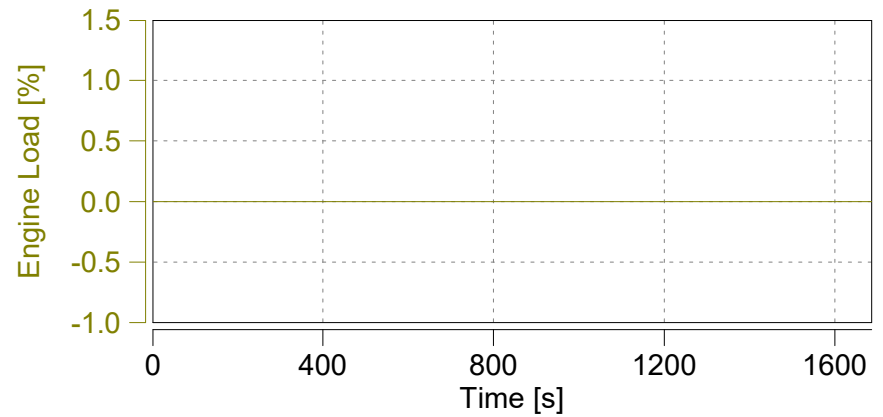
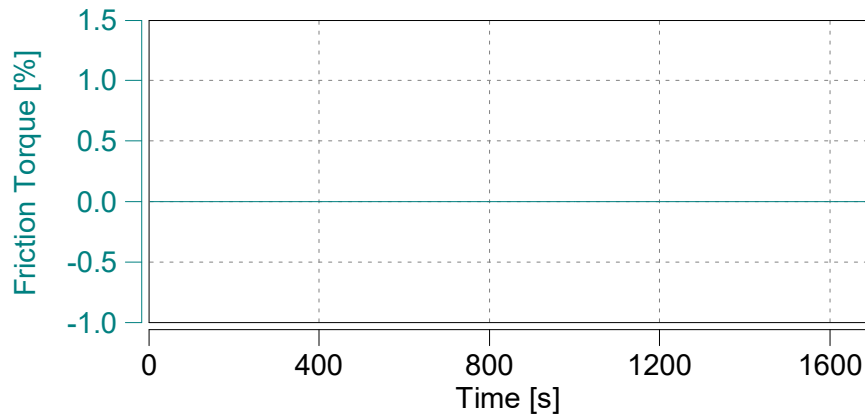
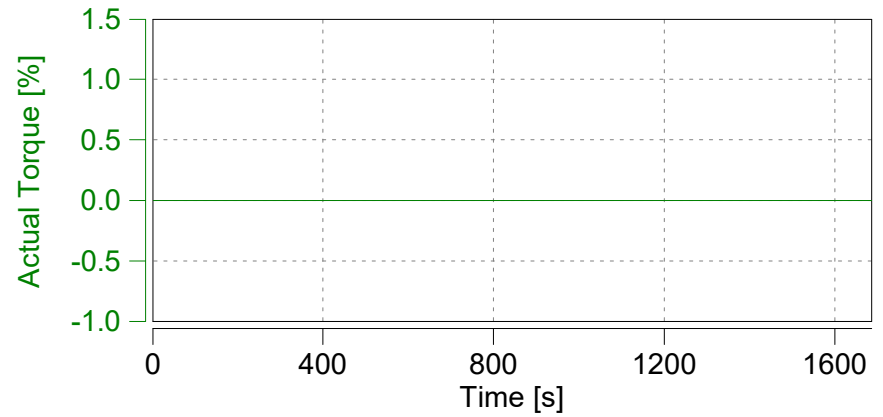
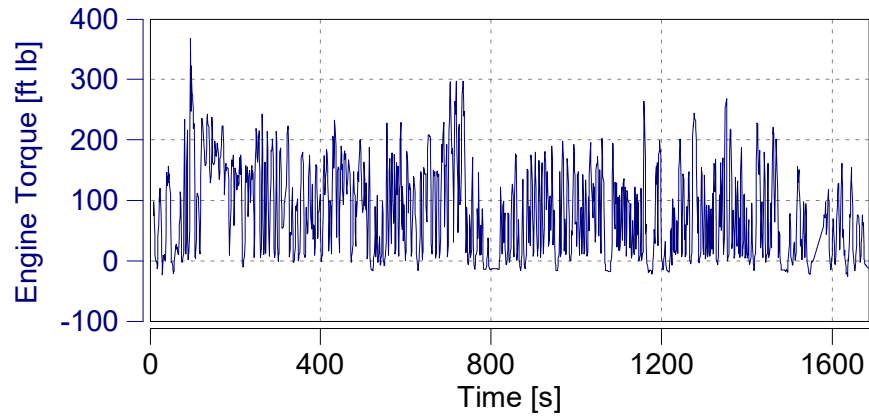
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90





Case: X247-1267

Page: Engine (3)

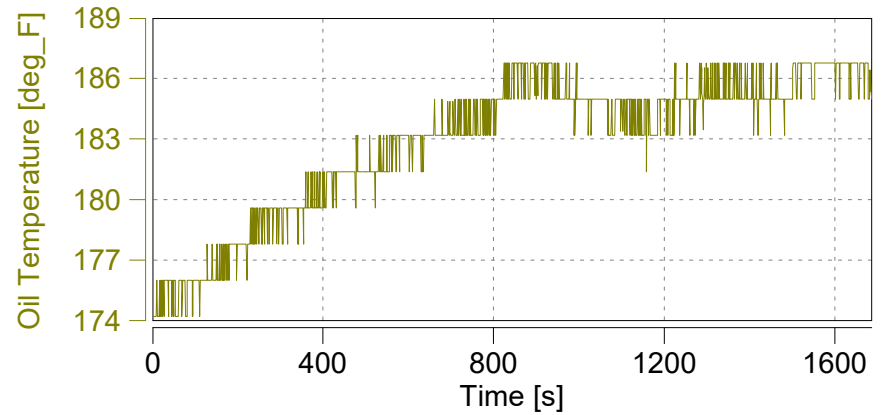
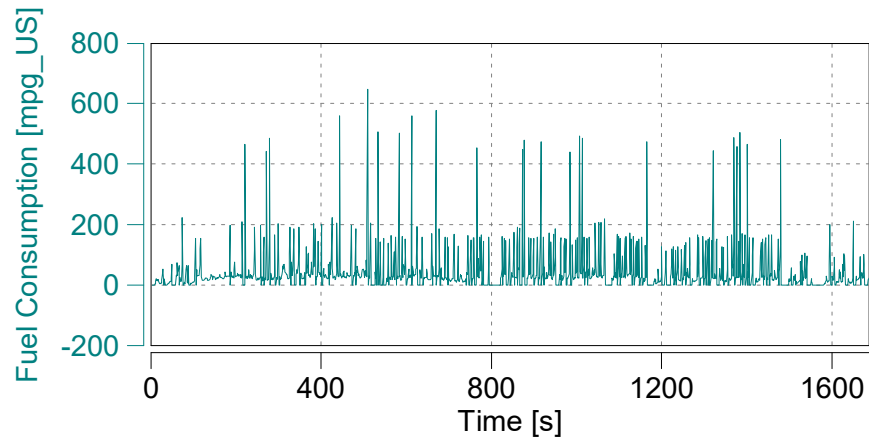
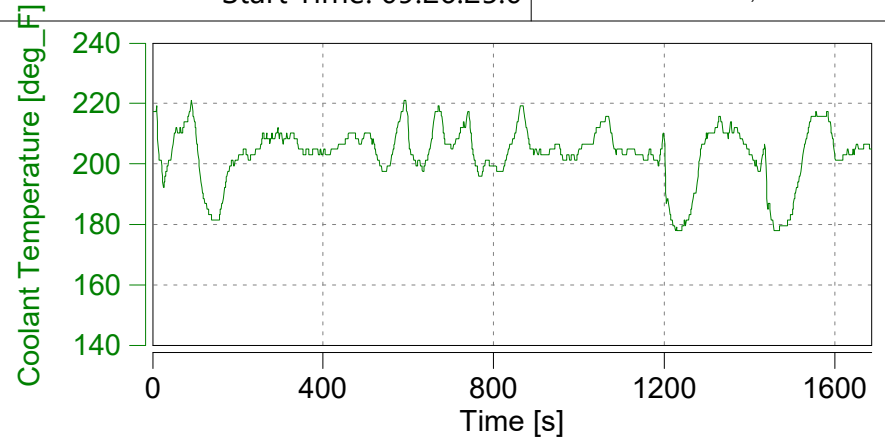
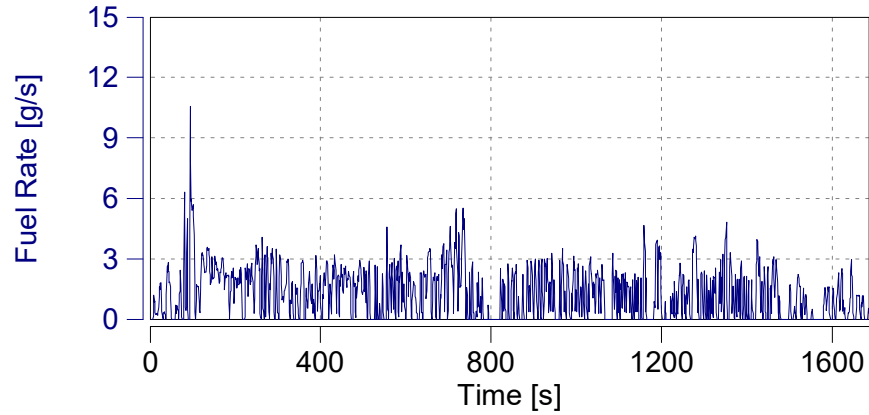
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Case: X247-1267

Page: Exhaust Flow (1)

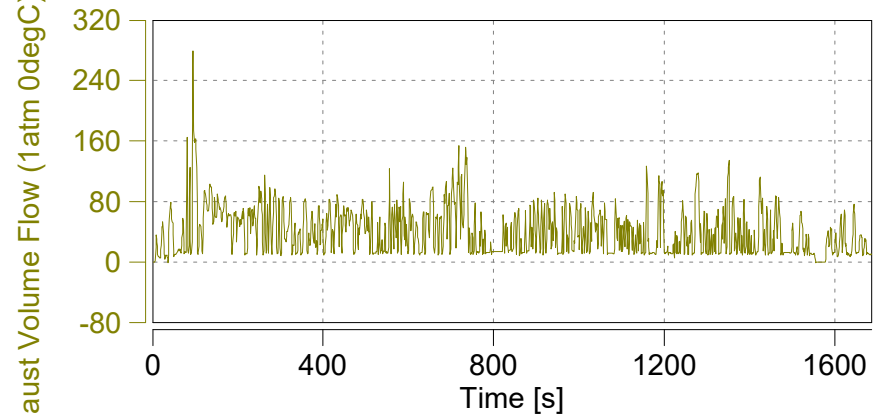
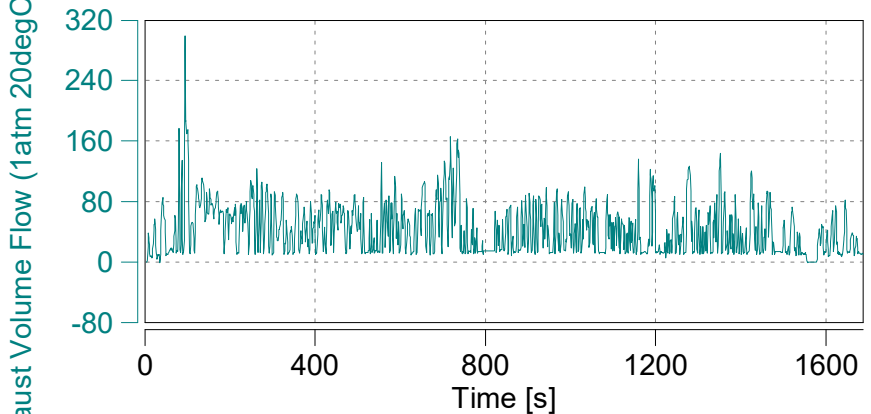
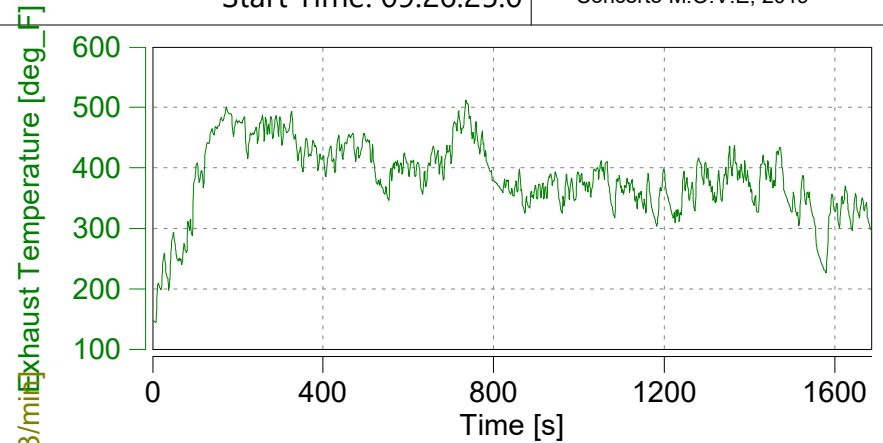
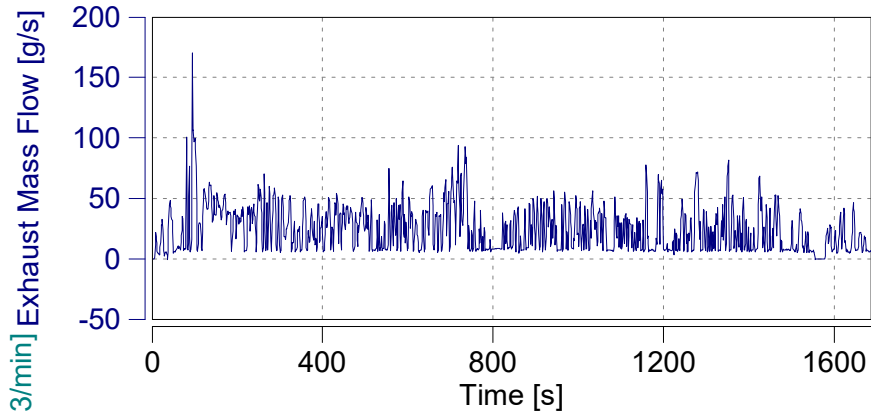
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0

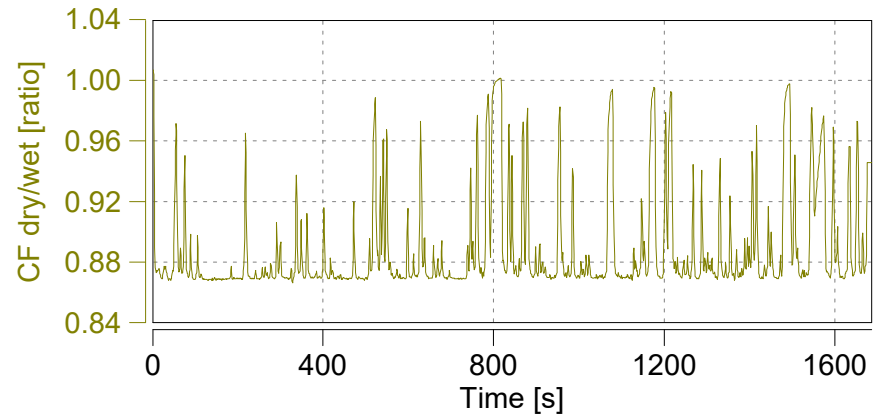
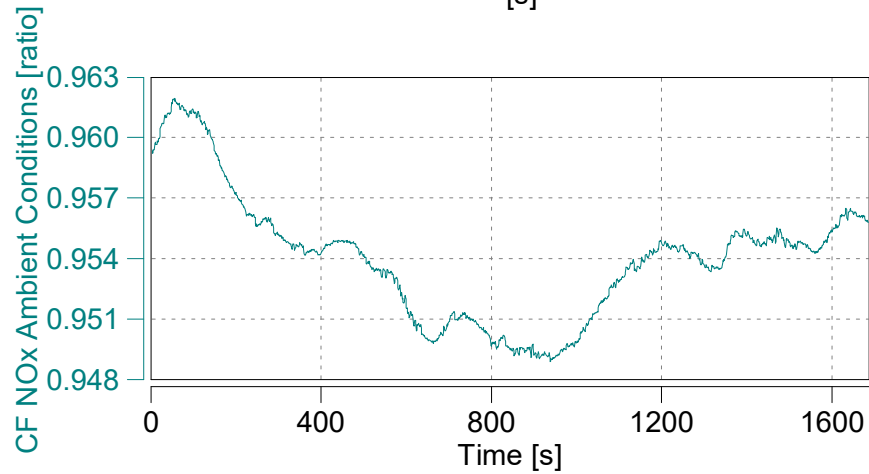
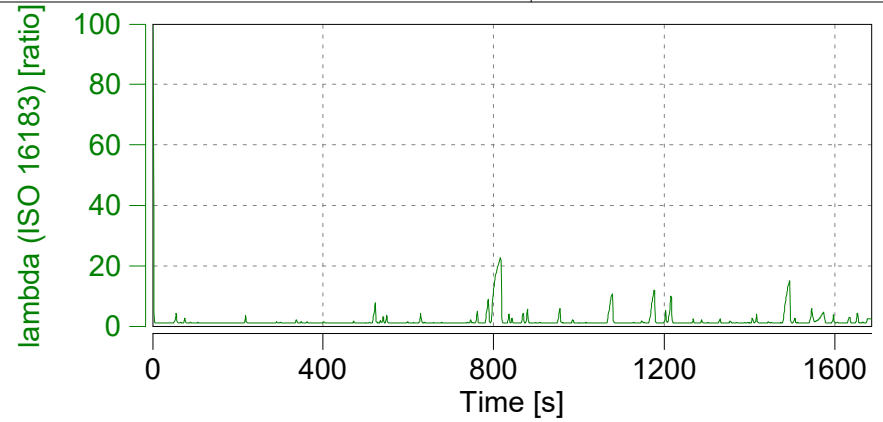
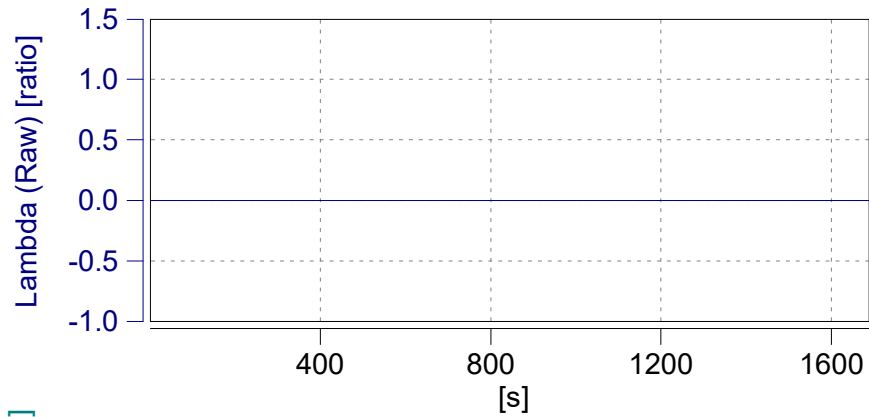


Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Case: X247-1267

Page: Corrected Emissions (1)

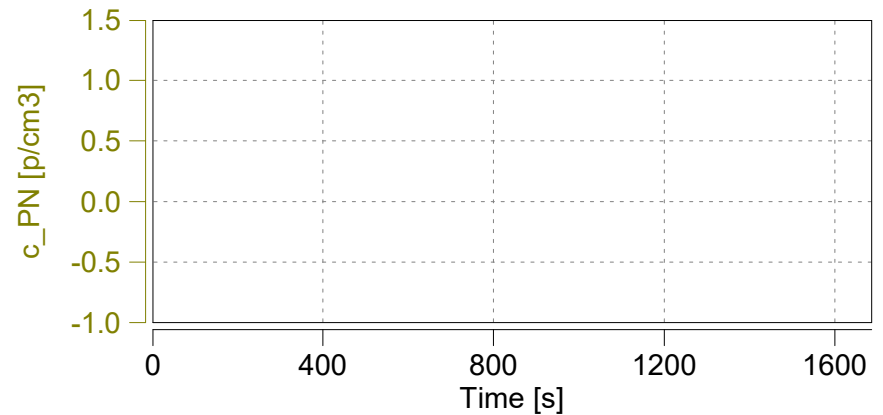
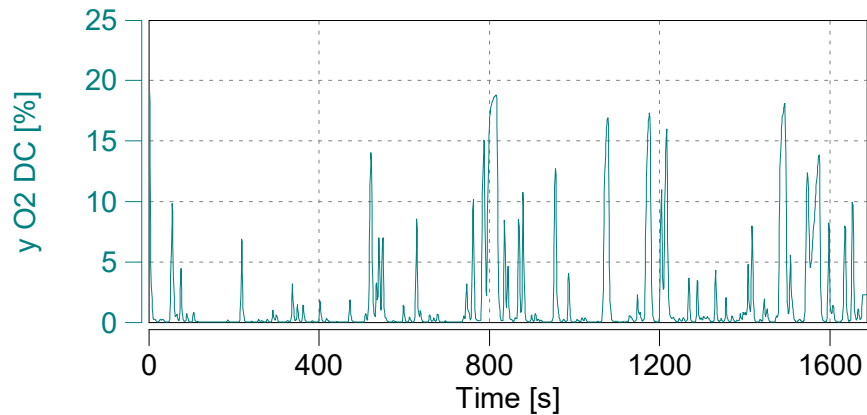
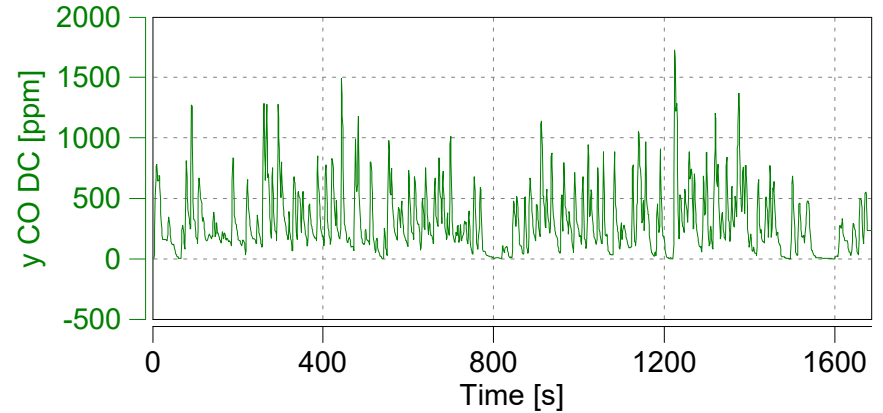
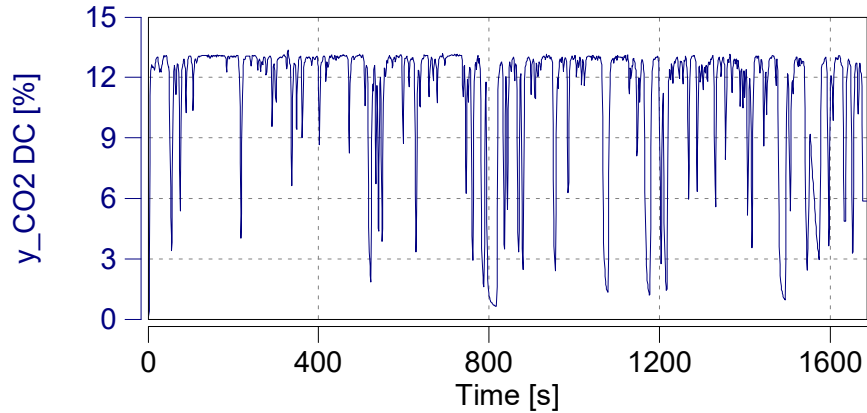
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0

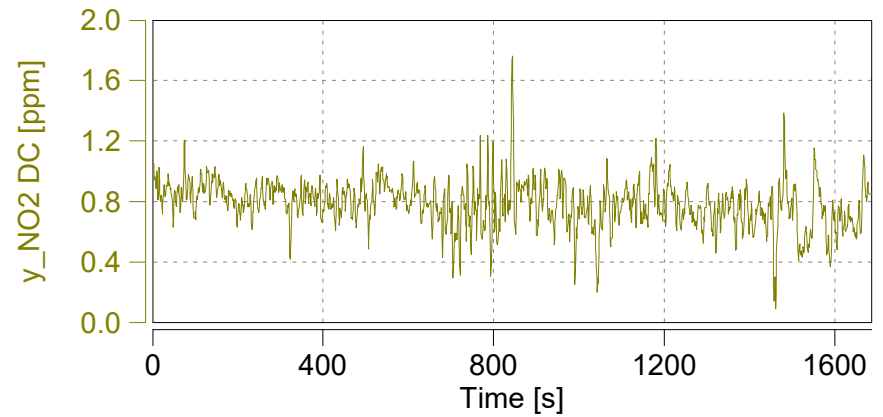
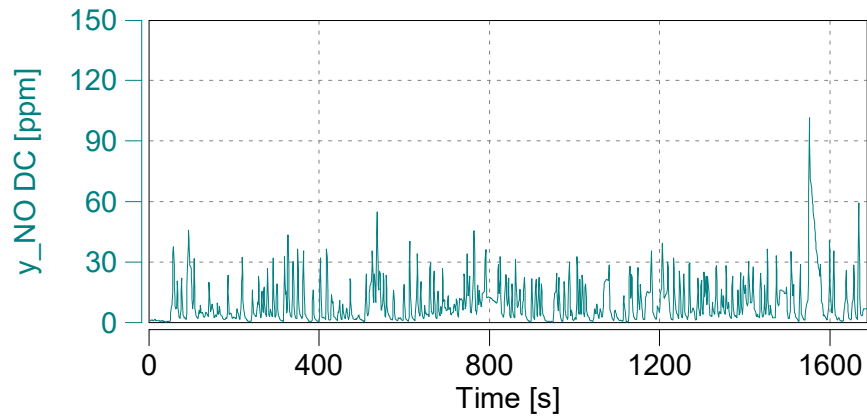
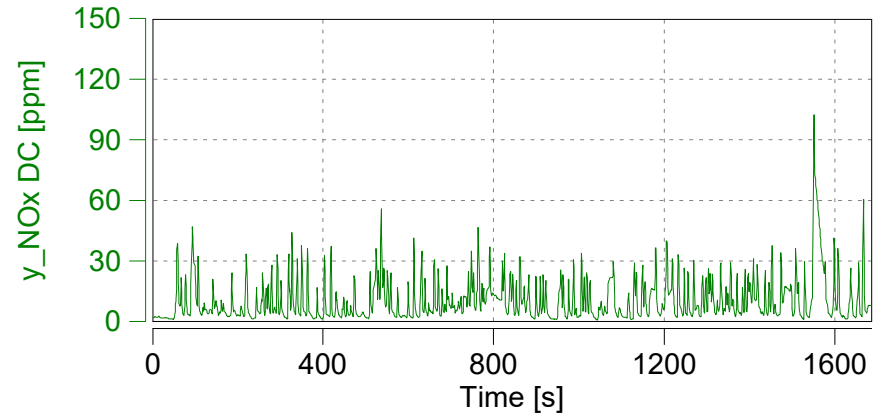
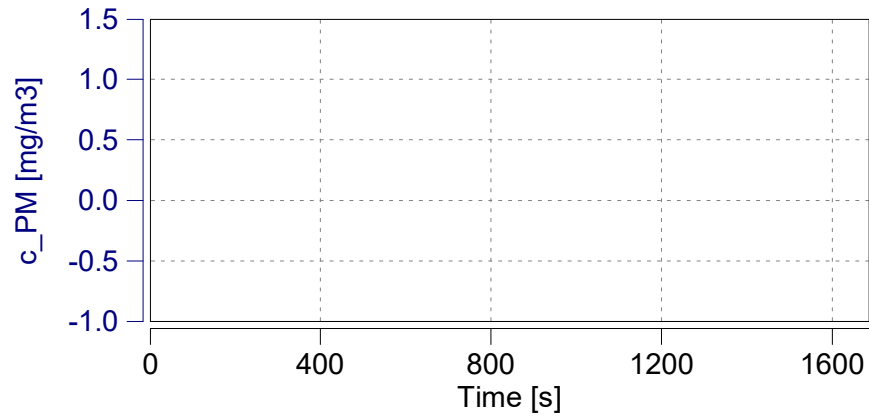


Concerto M.O.V.E, 2019



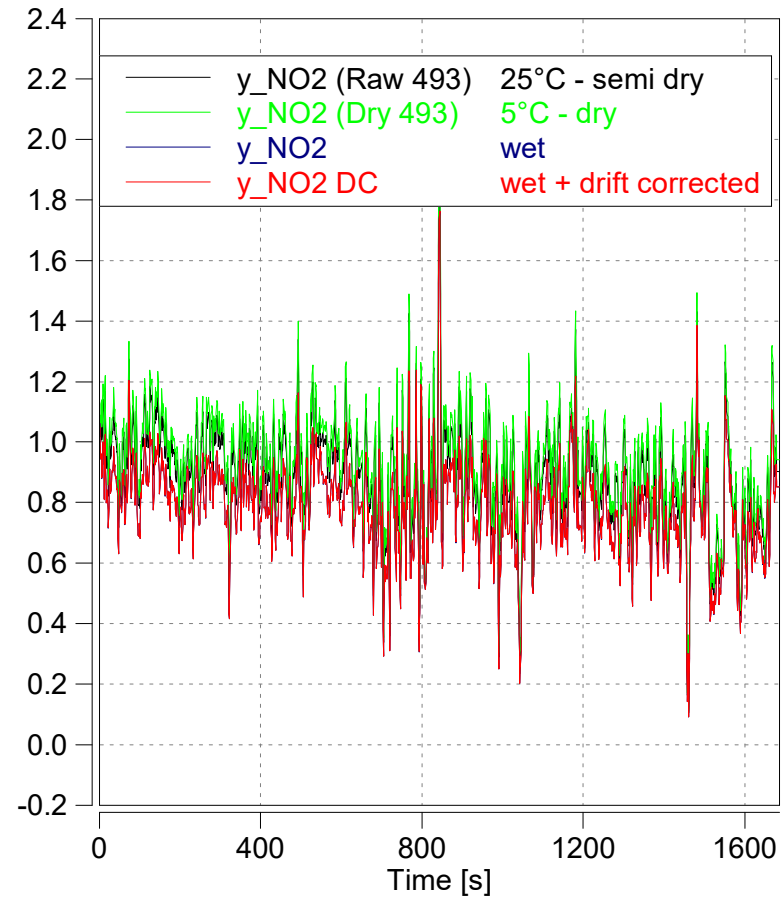
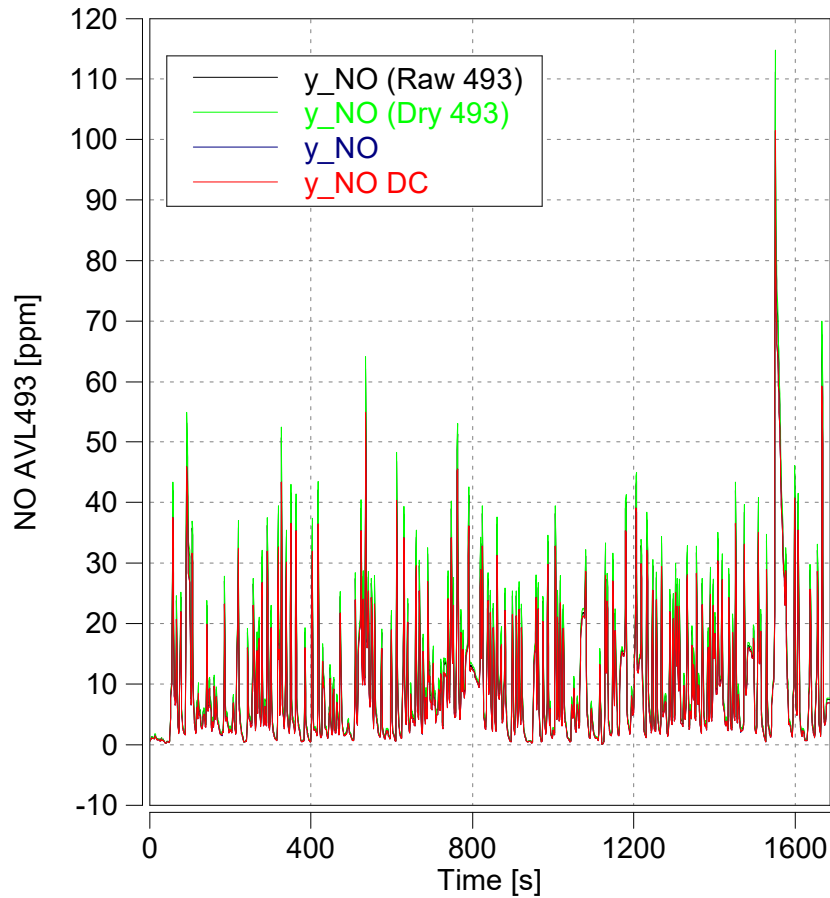
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

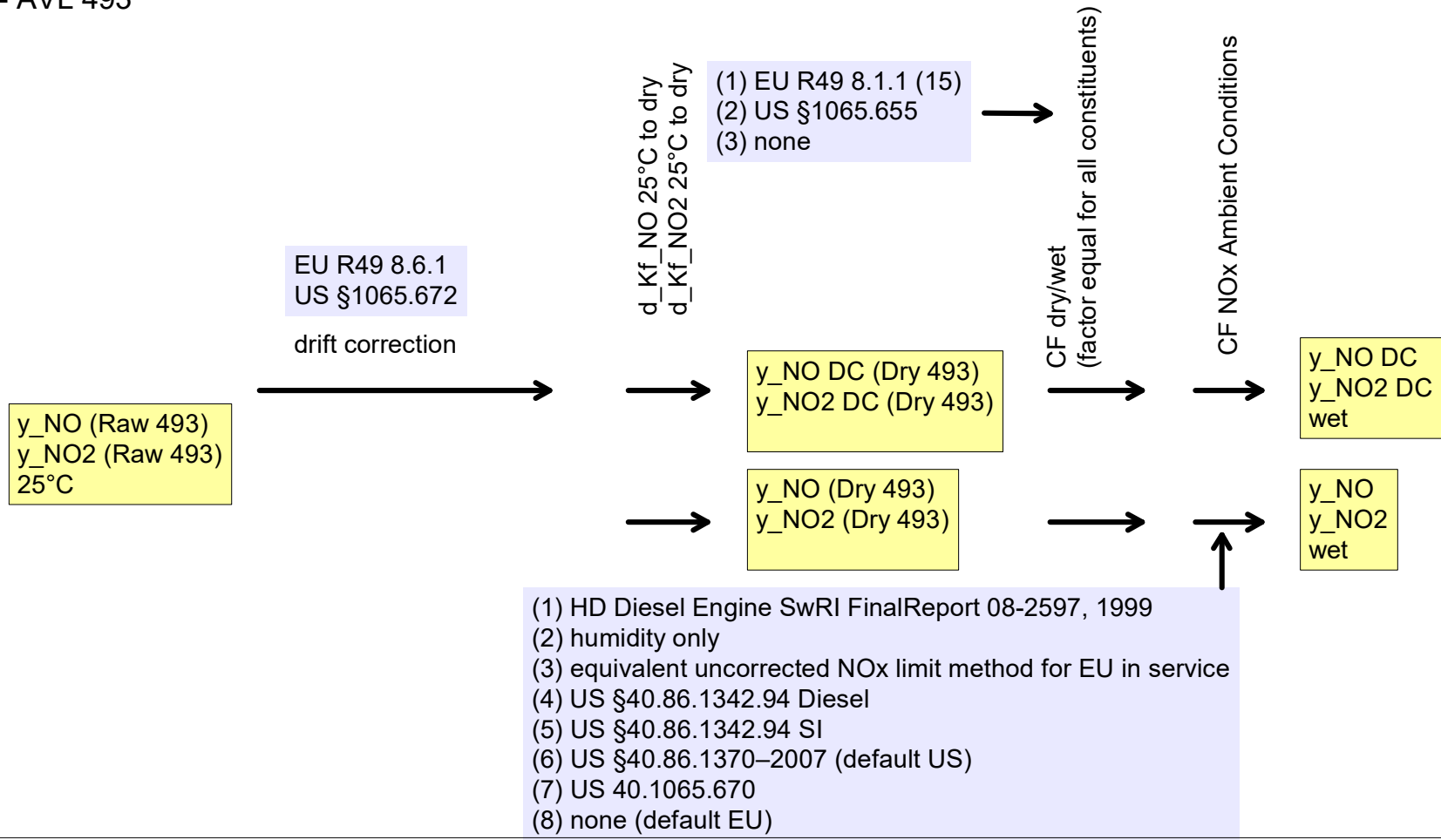


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493



Case: X247-1267

Page: Corrected Emissions (5)

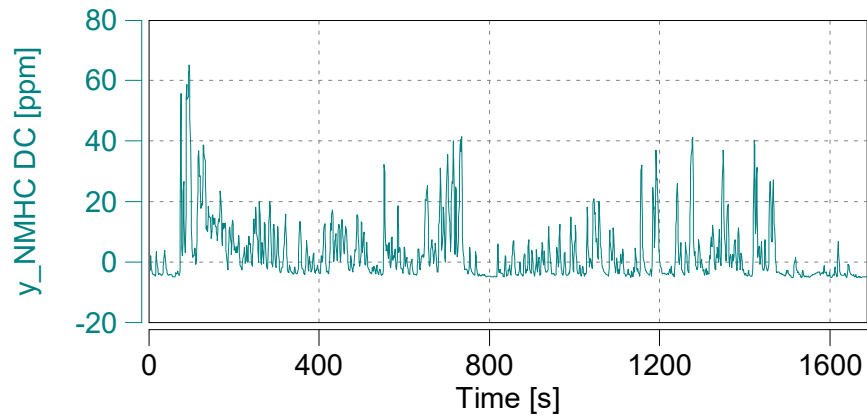
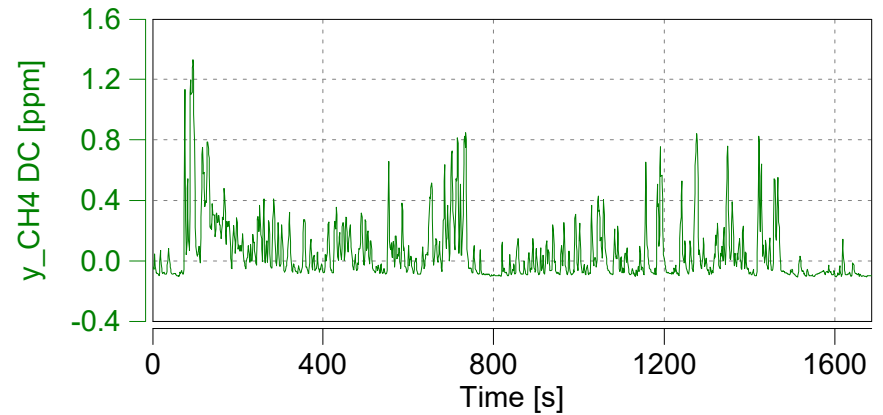
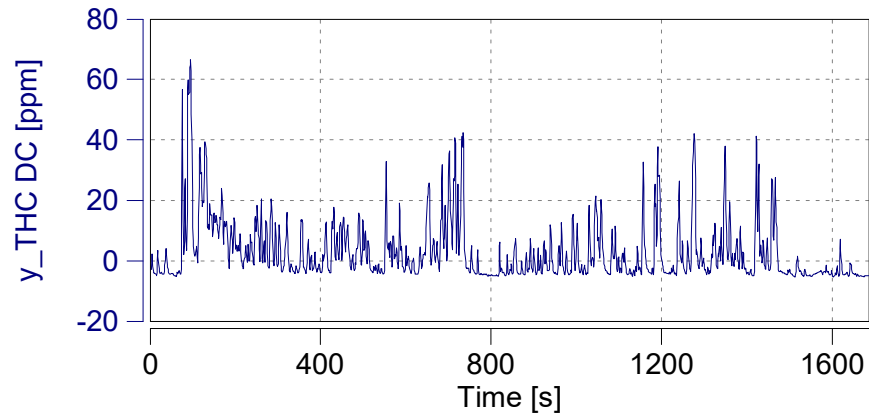
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR X247-1267						
Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)				#ERROR		
Vehicle description (e.g. vehicle model, prototype)				PEMS		
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information		Urban	Rural	Motorway		
Shares of time of the trip in % characterised by urban, rural and motorway operation		17.9	7.5	74.6		
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating				51.0	%	
Decelerating				45.2	%	
Cruising				1.4	%	
Stop				2.4	%	
			Minimum	Maximum		
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio			m = 1.01			
			r <sup>2</sup> = 0.95			



Case: X247-1267

Page: Torque, Amb. Press., Work/CO2, BSFC, Odometer

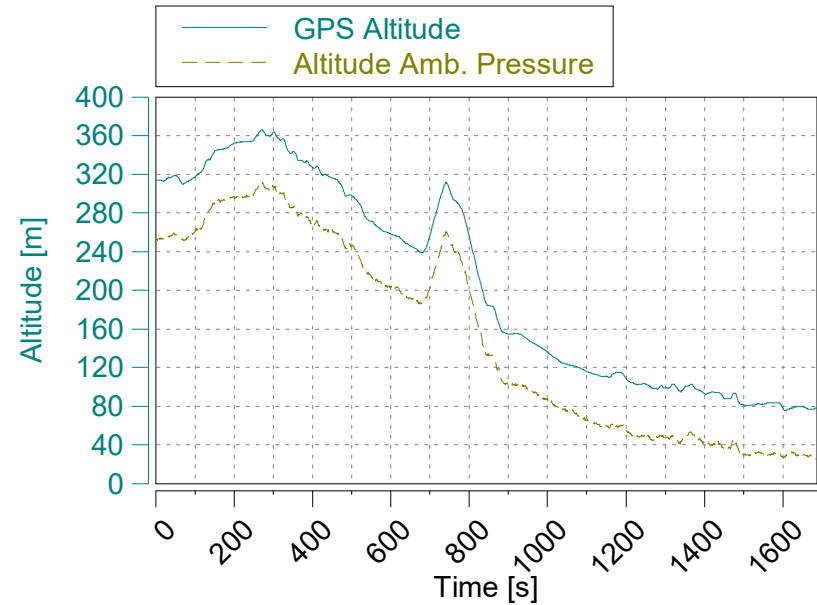
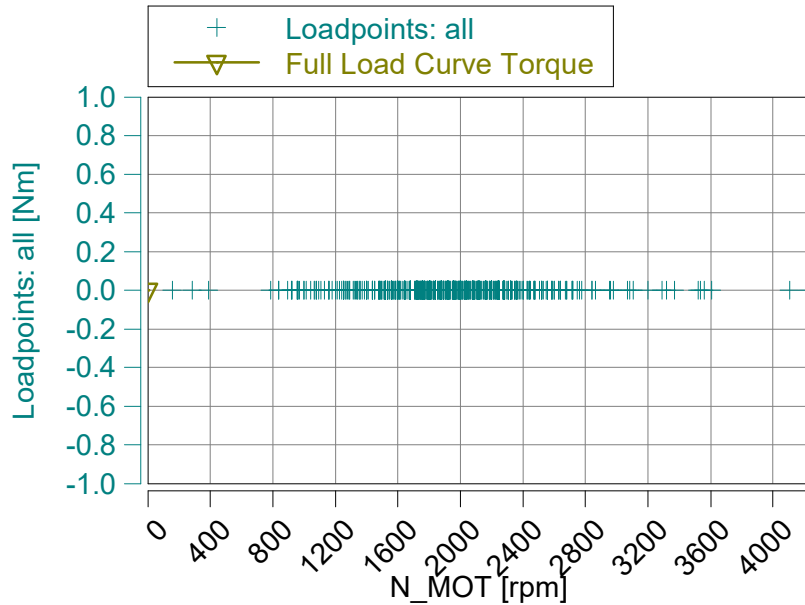
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E., 2019



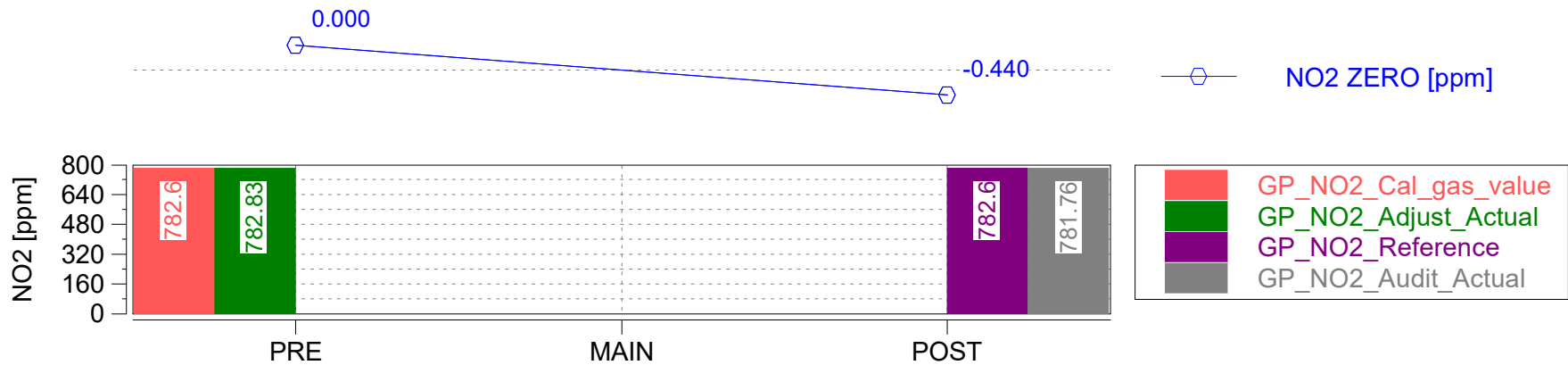
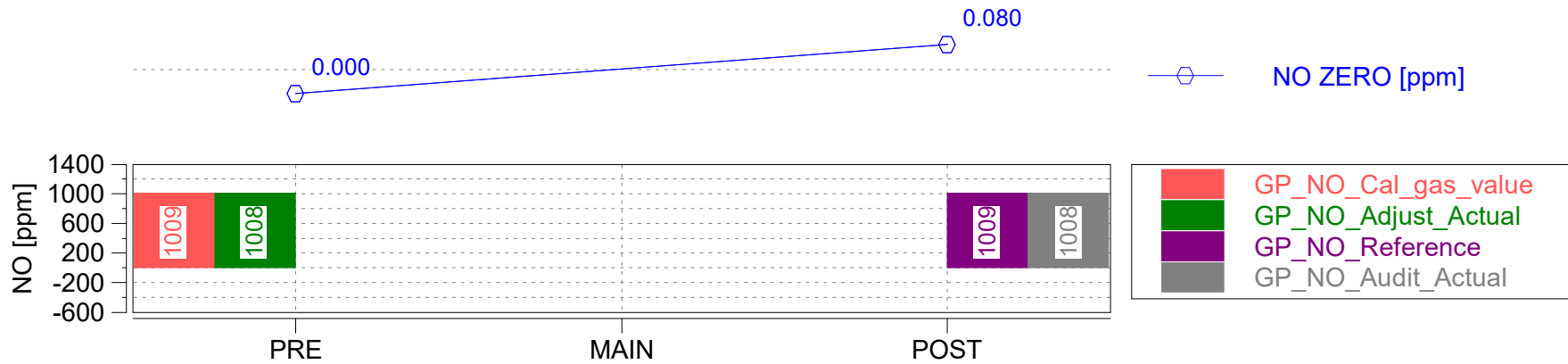
Trip Duration (a)	1687.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	200.7	g/kWh
avg BSFC ISO16183	236.3	g/kWh
Distance ECU	45.2	km
Distance GPS	45.147	km

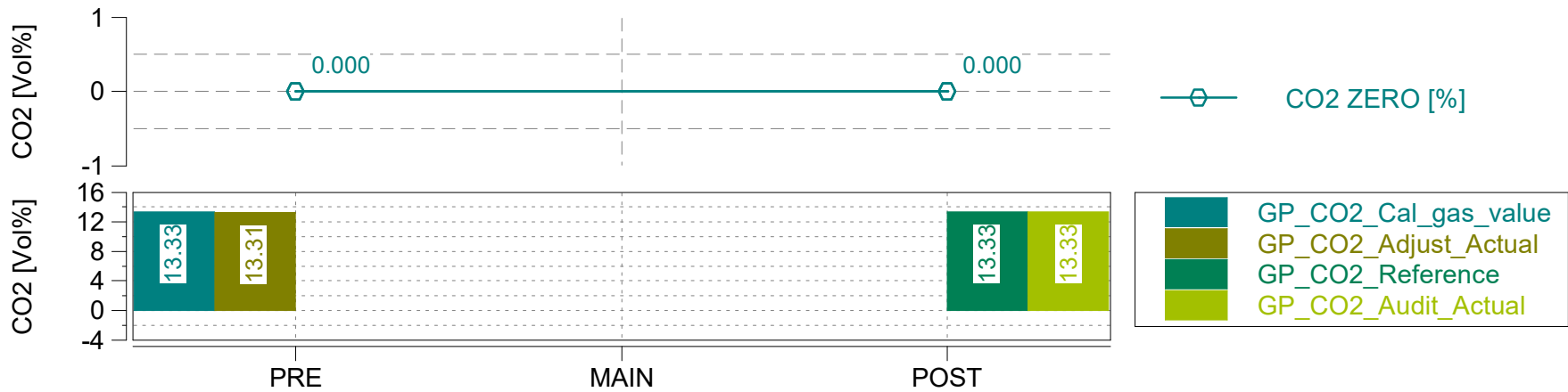
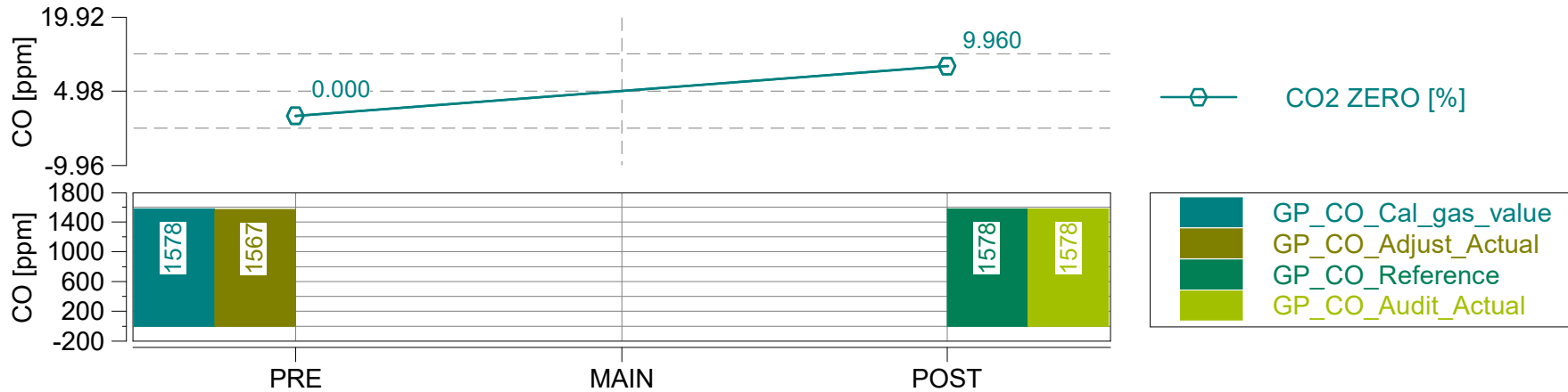
GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-05	yyyy-mm-dd
GAS PEMS Leak Check Time	11:52:38	hh:mm:ss
GAS PEMS Leak Check External	0.11	%

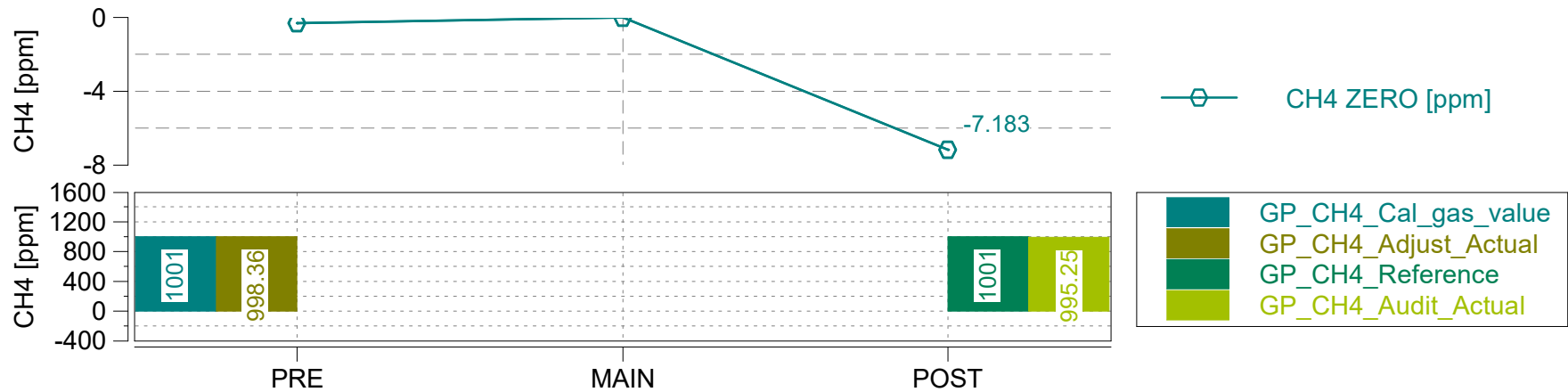
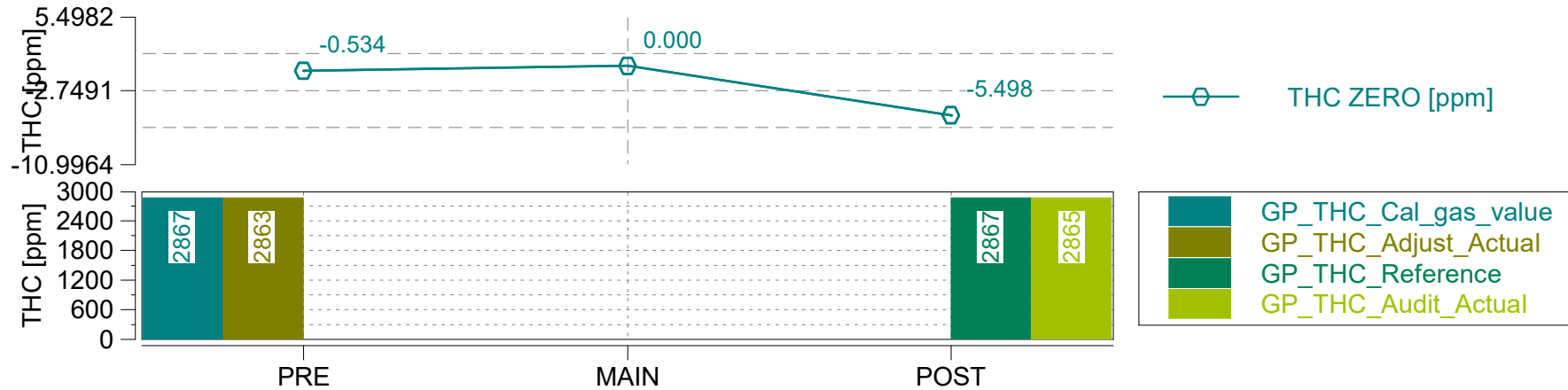
- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90







Case: X247-1267

Page: Fuel Rate ECU vs. Calculated

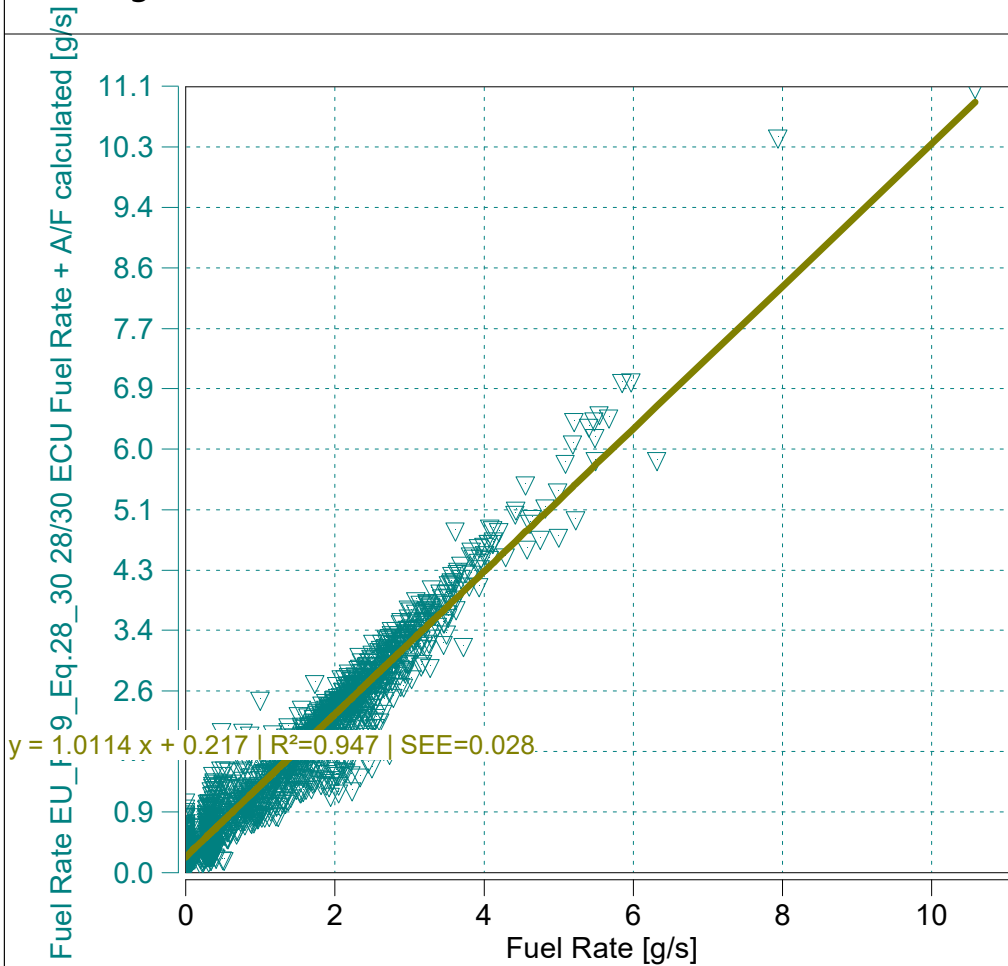
'X247-1267 B2 HWY WEST'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



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

$y = 1.0114 x + 0.217 \mid R^2=0.947 \mid SEE=0.028$   
 $m = 1.01$  (0.9 - 1.1 recommended)  
 $R^2 = 0.95$  (min 0.9 mandatory)

Data from - to [% of Maximum]

0

100

Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Trip Duration	2100.00	s	ave THC	3.72561	ppm	BS CO2	520.91612	g/hphr
Trip Duration (a)	2100.00	s	ave NMHC	3.65110	ppm	BS CO	0.83258	g/hphr
Trip Distance	17.71	mi	ave CH4	0.07451	ppm	BS THC	0.01234	g/hphr
Trip Distance (a)	17.71	mi	ave CO	268.95815	ppm	BS NMHC	0.01141	g/hphr
Trip Fuel Cons. (b)	2.66	kg	ave CO2	10.72577	%	BS CH4	0.00027	g/hphr
Trip Fuel Cons. (ab)	2.66	kg	ave NOx	14.05530	ppm	BS NO (d)	0.02049	g/hphr
Trip Fuel Cons. EU (ac)	3.09	kg	ave PM	n/a	mg/m3	BS NO2	0.00414	g/hphr
Trip Fuel Cons. US (ac)	3.07	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.02464	g/hphr
Trip Fuel Economy (b)	18.82	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	18.82	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	16.24	mpg_US	tot THC	0.22042	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	16.34	mpg_US	tot NMHC	0.20389	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	18.82	mpg_US	tot CH4	0.00489	g	DS CO2	525.40673	g/mi
Trip Fuel Economy GGE (ab)	18.82	mpg_US	tot CO	14.87242	g	DS CO	0.83975	g/mi
Trip Fuel Economy EU GGE (ac)	16.24	mpg_US	tot CO2	9305.19759	g	DS THC	0.01245	g/mi
Trip Fuel Economy US GGE (ac)	16.34	mpg_US	tot NO (d)	0.36607	g	DS NMHC	0.01151	g/mi
Trip Av. Eng. Speed	1691.13	rpm	tot NO2	0.07401	g	DS CH4	0.00028	g/mi
Trip Av. Torque	82.01	lbft	tot NOx	0.44008	g	DS NO (d)	0.02067	g/mi
Trip Av. Power	30.62	hp	tot Soot	n/a	g	DS NO2	0.00418	g/mi
Trip Work			tot Soot meas	n/a	g	DS NOx	0.02485	g/mi
Trip Work (a)	17.86	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	48.62	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	41.25	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	41.54	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	65.86	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3493.78663	g/kg
Trip Av. Humidity	53.03	%	Trip Av. Veh. Speed	30.36080	mi/hr	FS CO	5.58409	g/kg
Trip Av. GPS Altitude	562.16	m	Trip Distance Share Urban	29.04810	% distance	FS THC	0.08276	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	70.95190	% distance	FS NMHC	0.07655	g/kg
			Trip Distance Share Motorway	0.00000	% distance	FS CH4	0.00183	g/kg
						FS NO (d)	0.13745	g/kg
						FS NO2	0.02779	g/kg
						FS NOx	0.16523	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

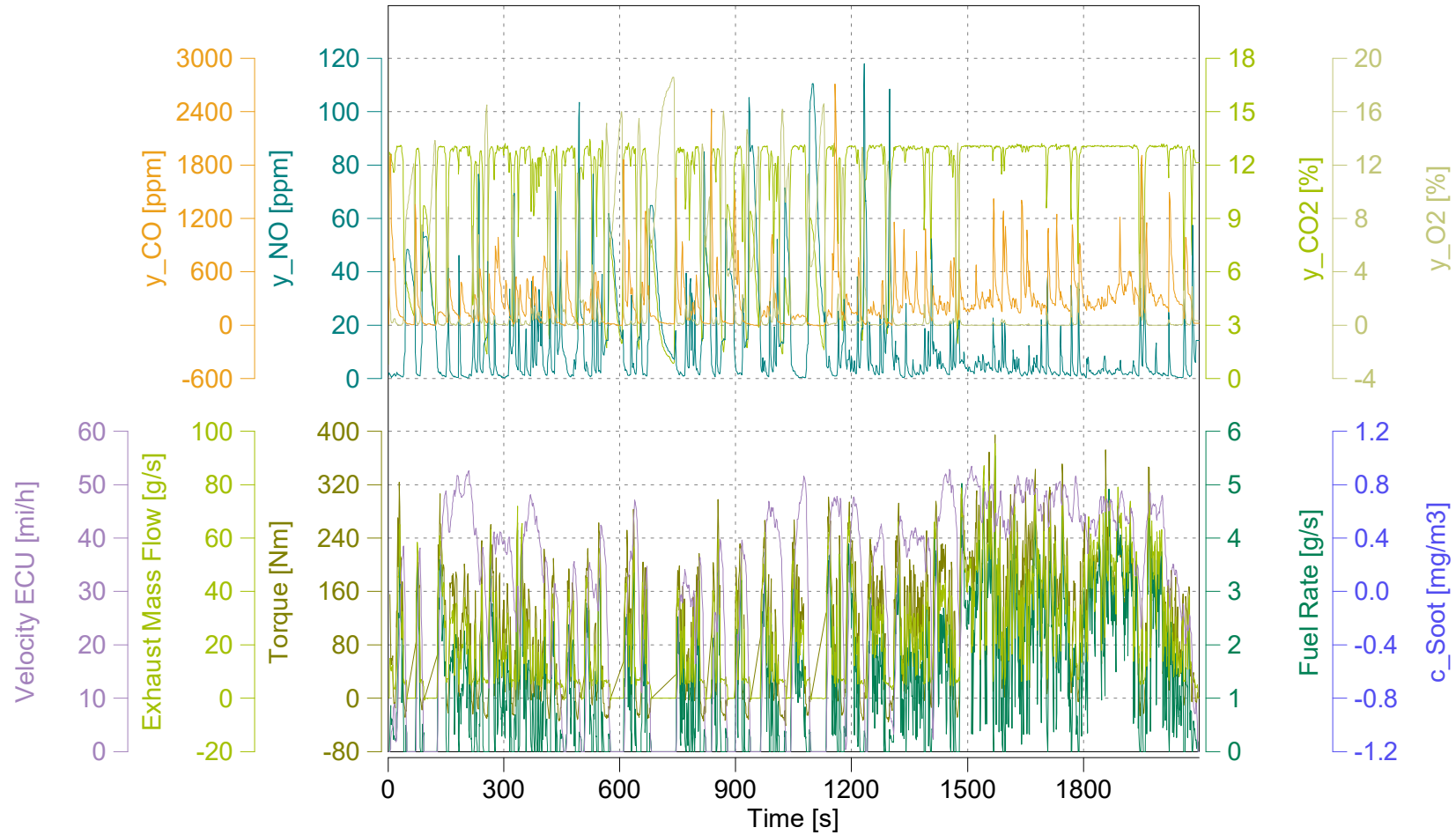


Trip Duration	2100.00	s	ave THC DC	3.99577	ppm	BS CO2 DC	521.30720	g/hphr
Trip Duration (a)	2100.00	s	ave NMHC DC	3.91585	ppm	BS CO DC	0.83510	g/hphr
Trip Distance	17.71	mi	ave CH4 DC	0.07992	ppm	BS THC DC	0.01271	g/hphr
Trip Distance (a)	17.71	mi	ave CO DC	269.77362	ppm	BS NMHC DC	0.01176	g/hphr
Trip Fuel Cons. (b)	2.66	kg	ave CO2 DC	10.73382	%	BS CH4 DC	0.00028	g/hphr
Trip Fuel Cons. (ab)	2.66	kg	ave NOx DC	14.05848	ppm	BS NO DC (d)	0.02050	g/hphr
Trip Fuel Cons. EU (ac)	3.09	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00414	g/hphr
Trip Fuel Cons. US (ac)	3.07	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.02464	g/hphr
Trip Fuel Economy (b)	18.82	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	18.82	mpg_US	ave PN DC	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	16.24	mpg_US	tot THC DC	0.22708	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	16.34	mpg_US	tot NMHC DC	0.21005	g	BS PN DC	n/a	#/hpr
Trip Fuel Economy GGE (b)	18.82	mpg_US	tot CH4 DC	0.00503	g	DS CO2 DC	525.80118	g/mi
Trip Fuel Economy GGE (ab)	18.82	mpg_US	tot CO DC	14.91752	g	DS CO DC	0.84230	g/mi
Trip Fuel Economy EU GGE (ac)	16.24	mpg_US	tot CO2 DC	9312.18347	g	DS THC DC	0.01282	g/mi
Trip Fuel Economy US GGE (ac)	16.34	mpg_US	tot NO DC (d)	0.36614	g	DS NMHC DC	0.01186	g/mi
Trip Av. Eng. Speed	1691.13	rpm	tot NO2 DC	0.07404	g	DS CH4 DC	0.00028	g/mi
Trip Av. Torque	82.01	lbft	tot NOx DC	0.44018	g	DS NO DC (d)	0.02067	g/mi
Trip Av. Power	30.62	hp	tot Soot	n/a	g	DS NO2 DC	0.00418	g/mi
Trip Work	17.86	hphr	tot Soot meas	n/a	g	DS NOx DC	0.02485	g/mi
Trip Work (a)	17.86	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	48.62	kg	tot PN DC	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	41.25	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	41.54	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN DC	n/a	#/mi
Trip Av. Amb. Temperature	65.86	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2 DC	3496.40959	g/kg
Trip Av. Humidity	53.03	%	Trip Av. Veh. Speed	30.36080	mi/hr	FS CO DC	5.60102	g/kg
Trip Av. GPS Altitude	562.16	m	Trip Distance Share Urban	29.04810	% distance	FS THC DC	0.08526	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	70.95190	% distance	FS NMHC DC	0.07887	g/kg
			Trip Distance Share Motorway	0.00000	% distance	FS CH4 DC	0.00189	g/kg
						FS NO DC (d)	0.13747	g/kg
						FS NO2 DC	0.02780	g/kg
						FS NOx DC	0.16527	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

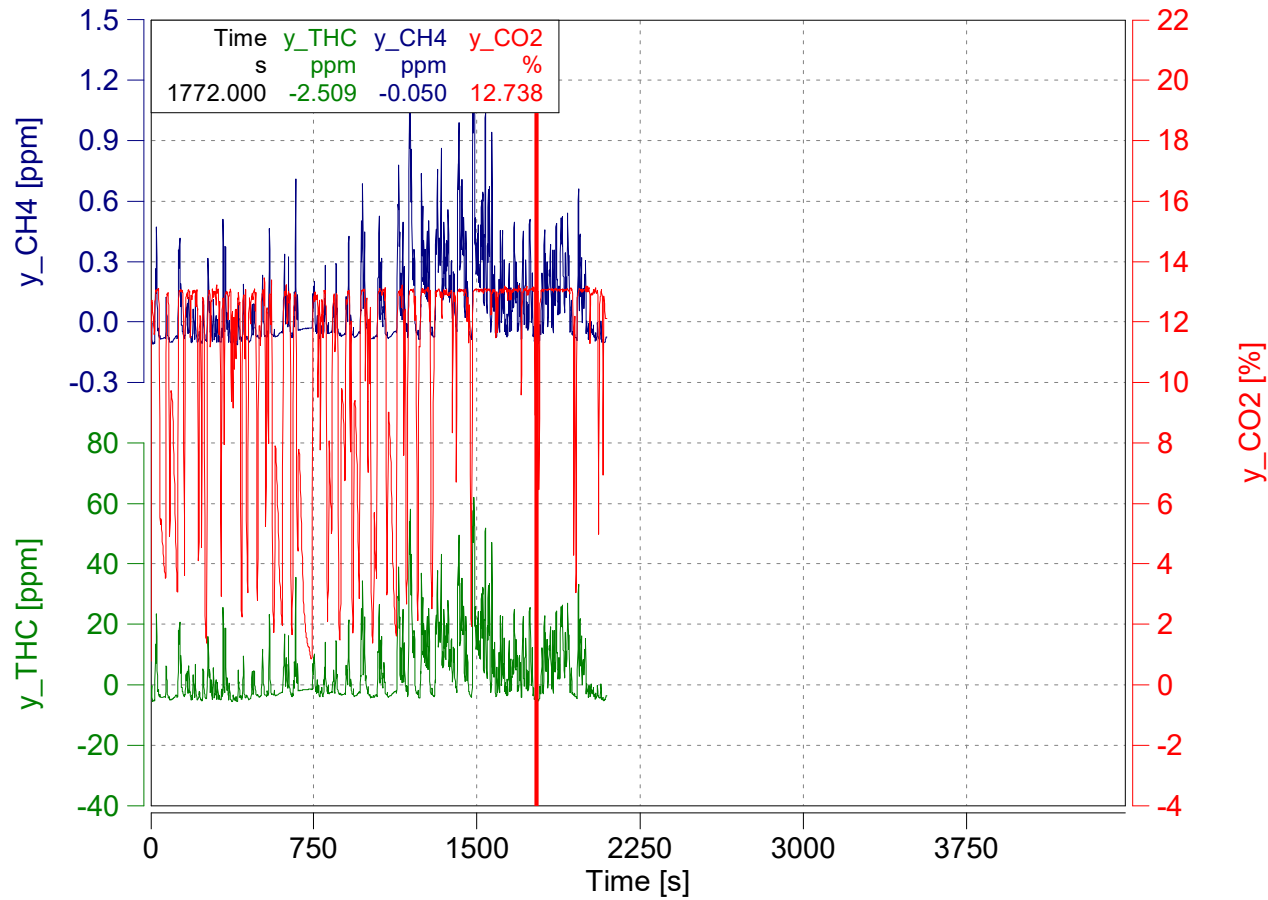
Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



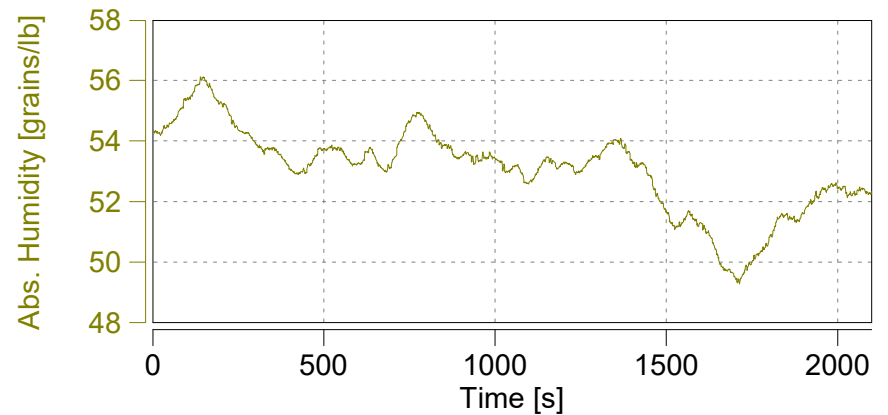
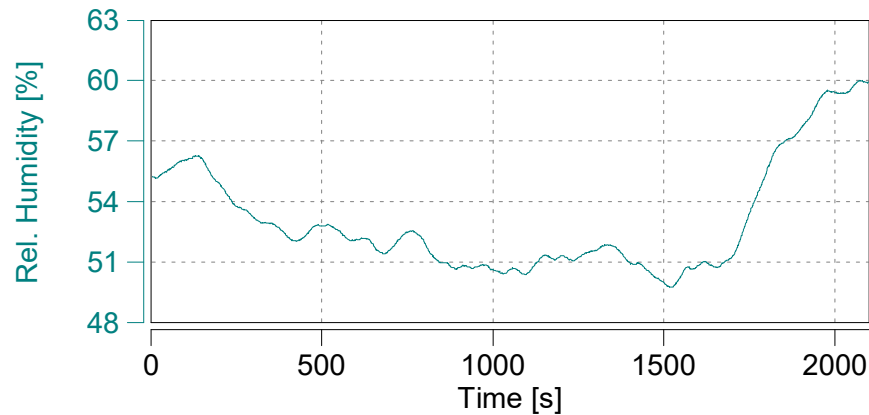
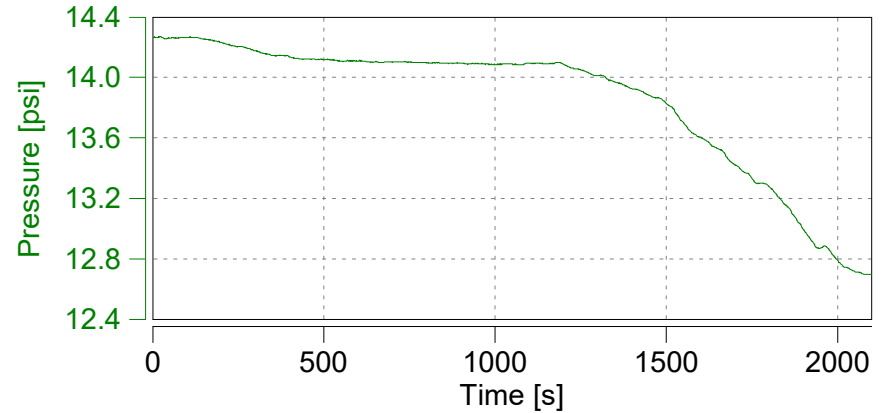
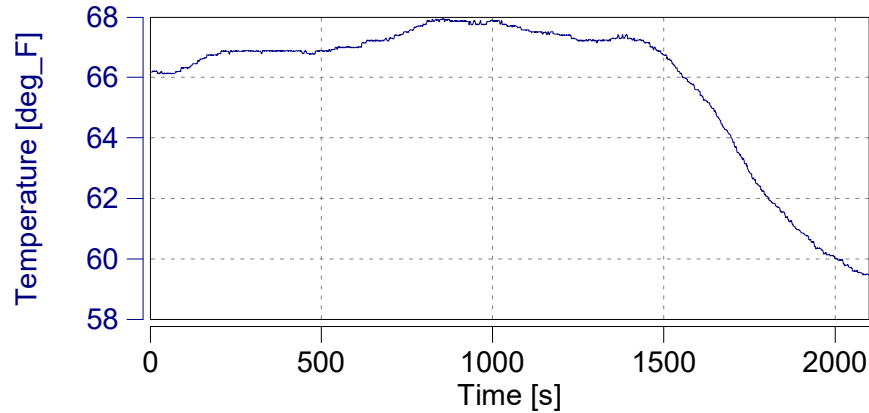


Absolute Time Shifts

y_THC	s	-5.2
y_CH4	s	-7.2

Reset Time Shifts in Plot

Apply Current Values



Case: X247-1267

Page: GPS

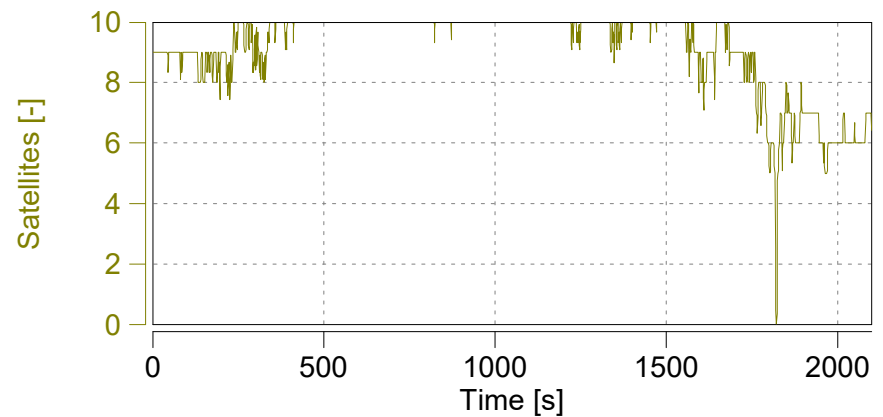
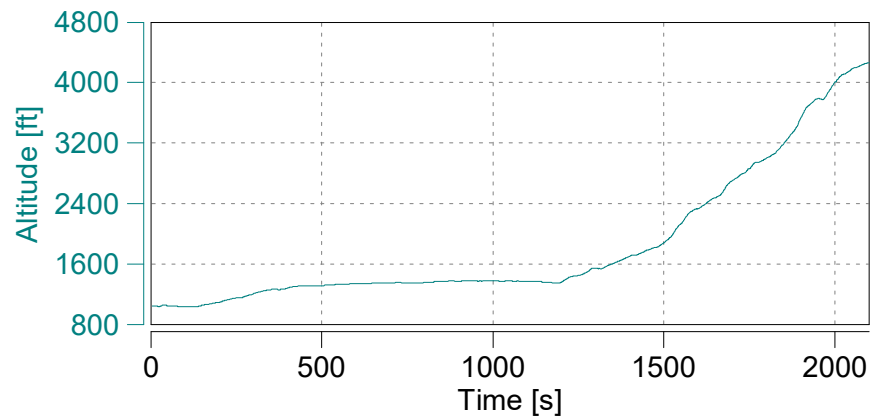
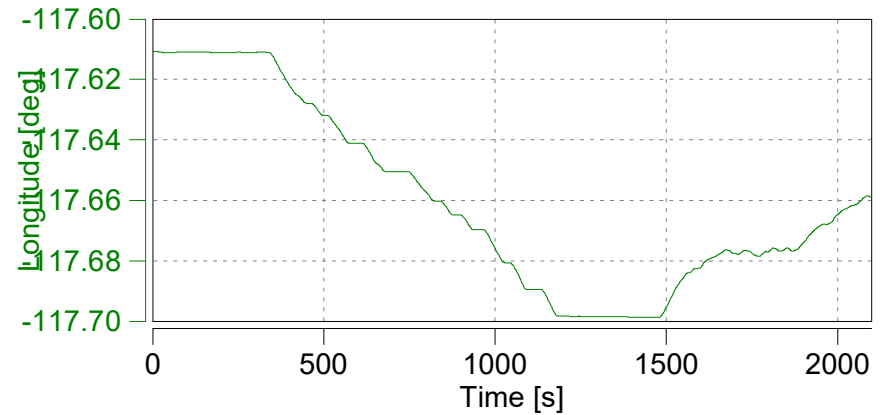
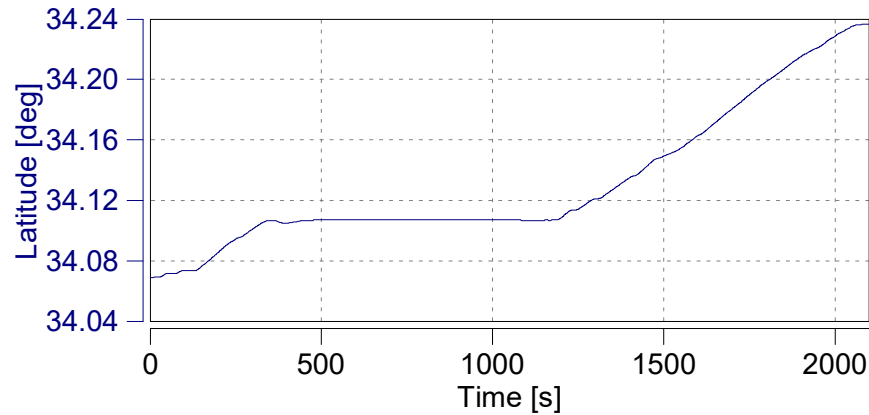
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0

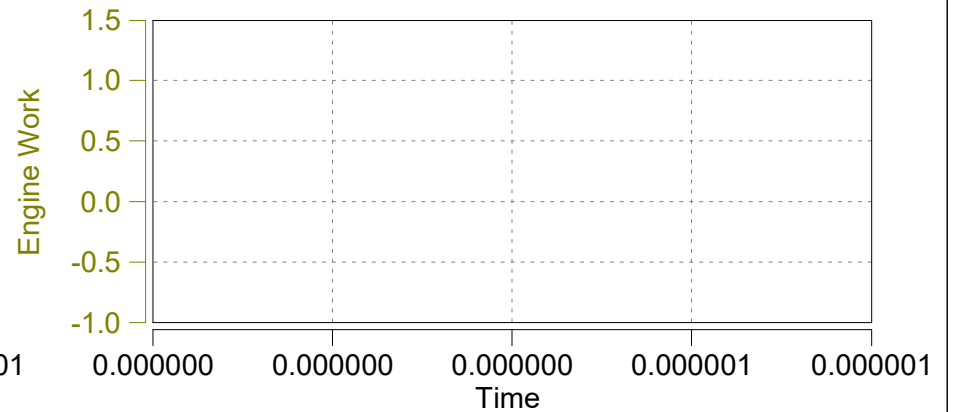
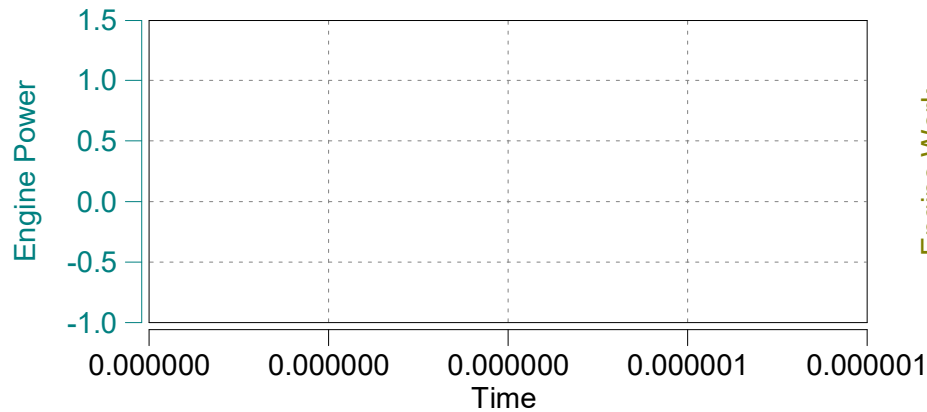
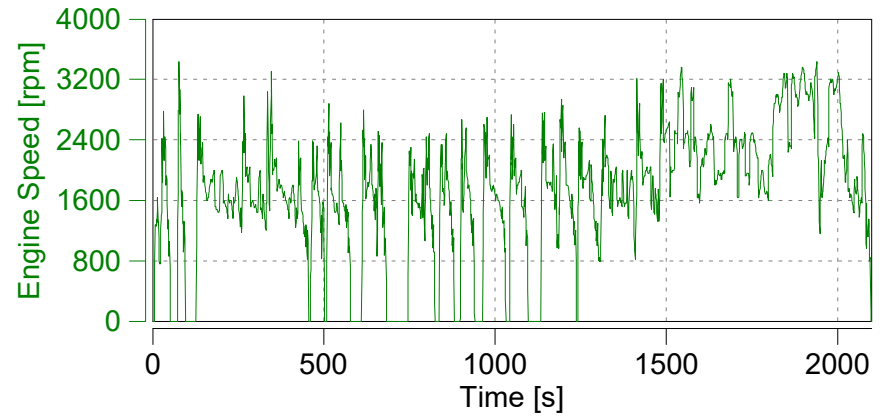
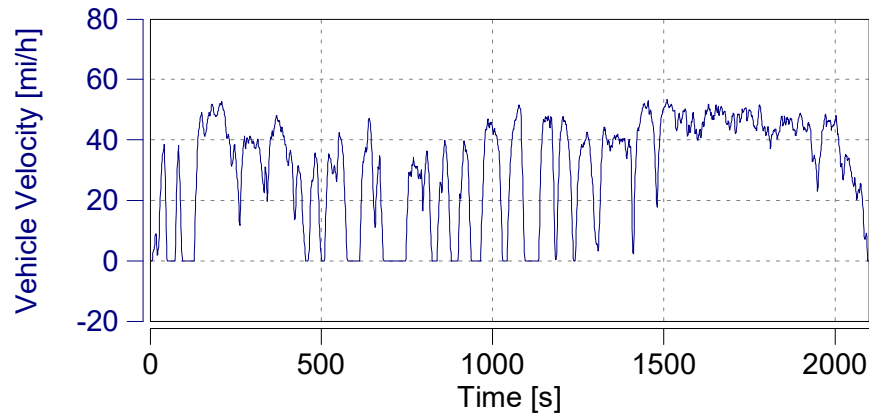


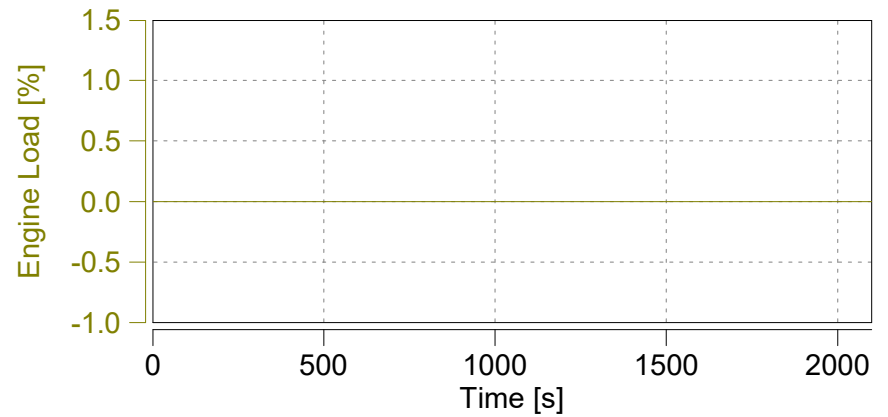
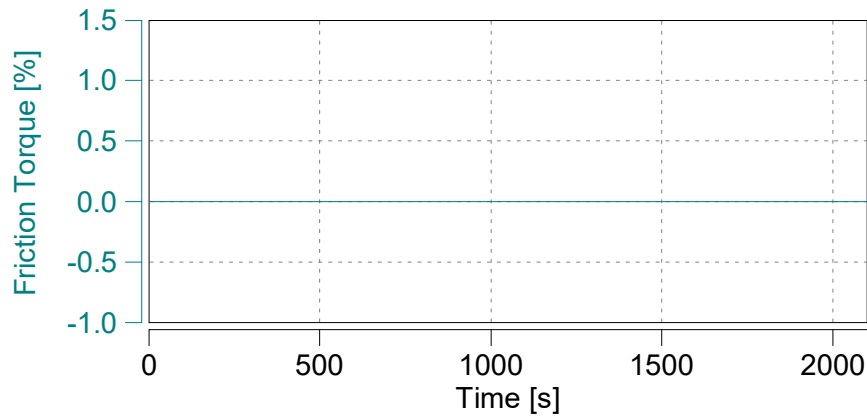
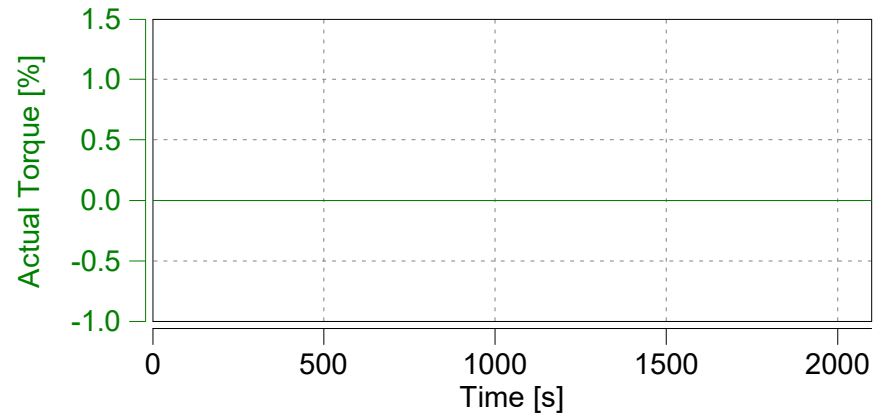
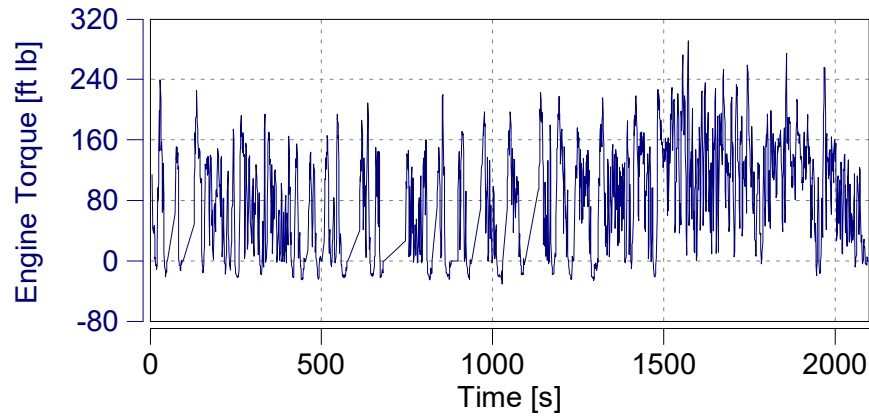
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90





Case: X247-1267

Page: Engine (3)

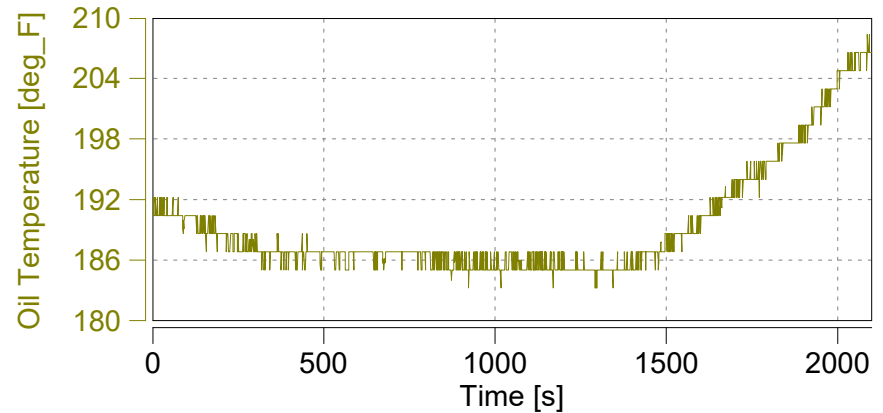
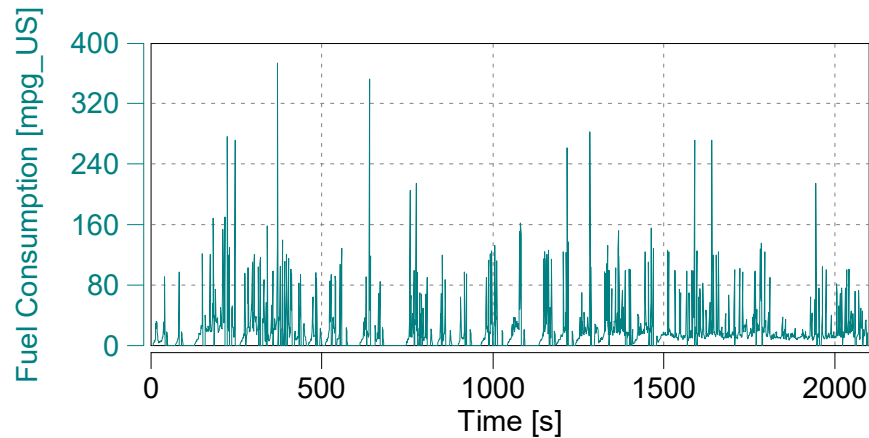
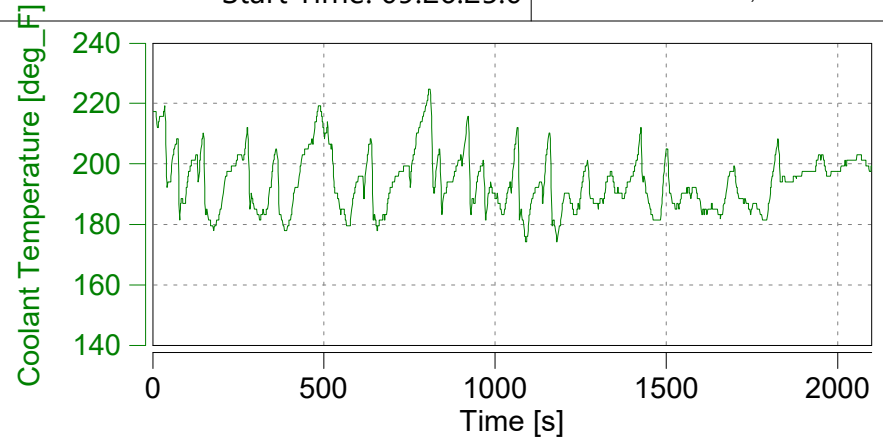
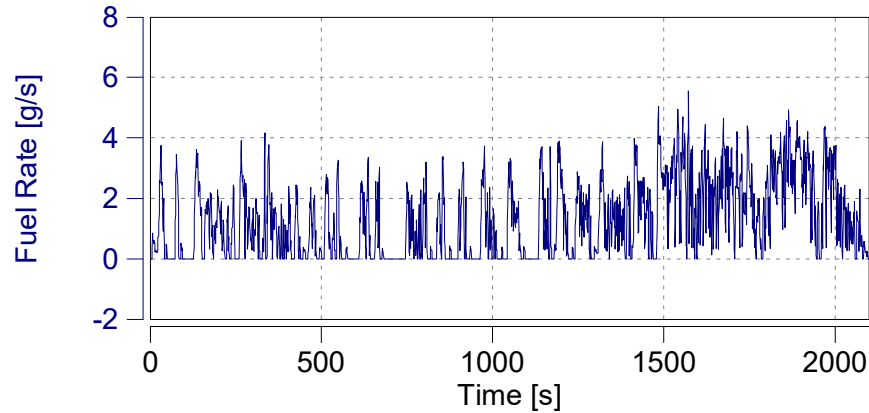
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Exhaust Flow (1)

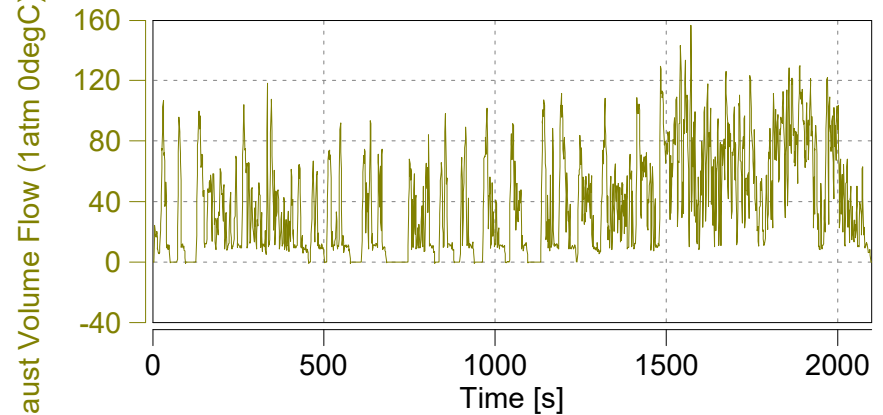
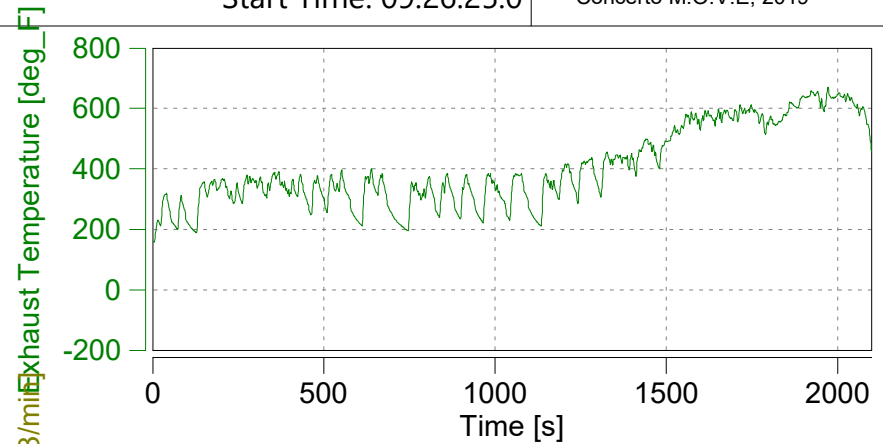
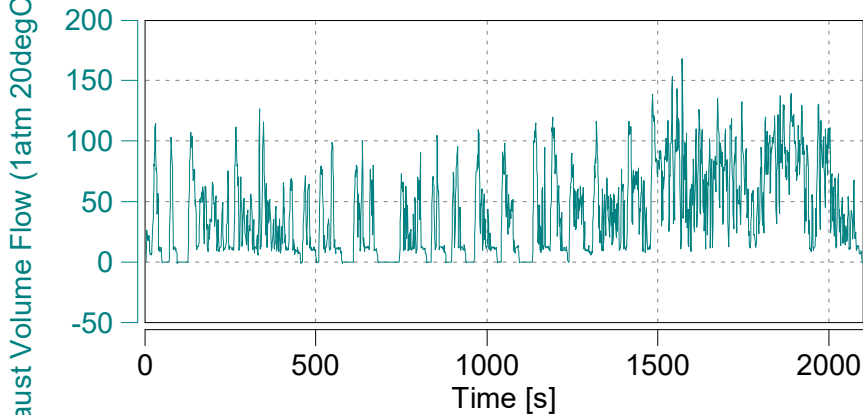
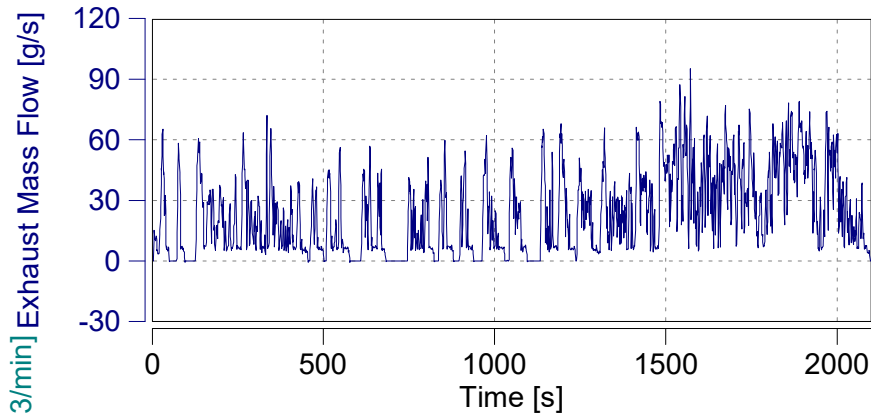
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0

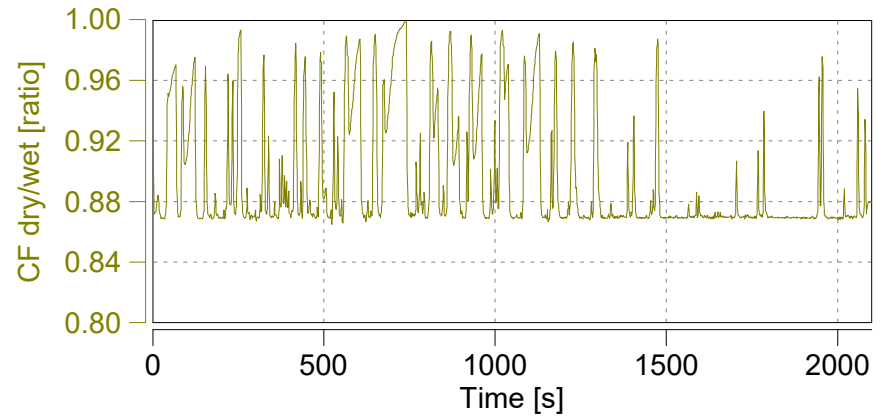
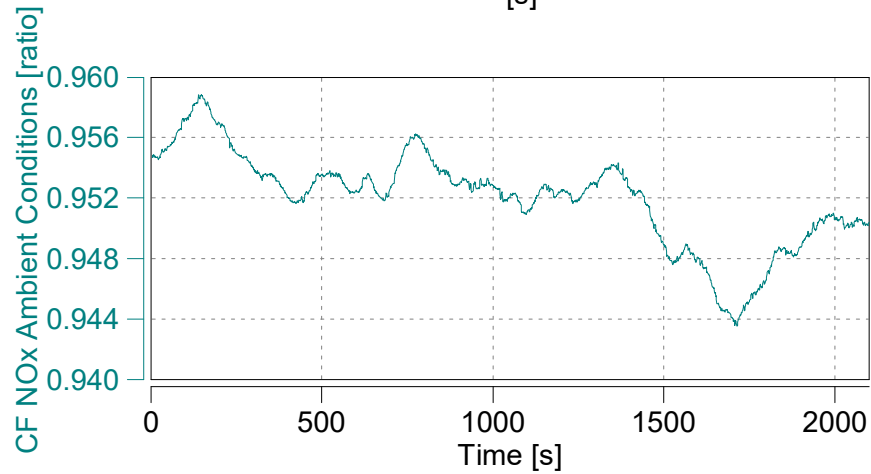
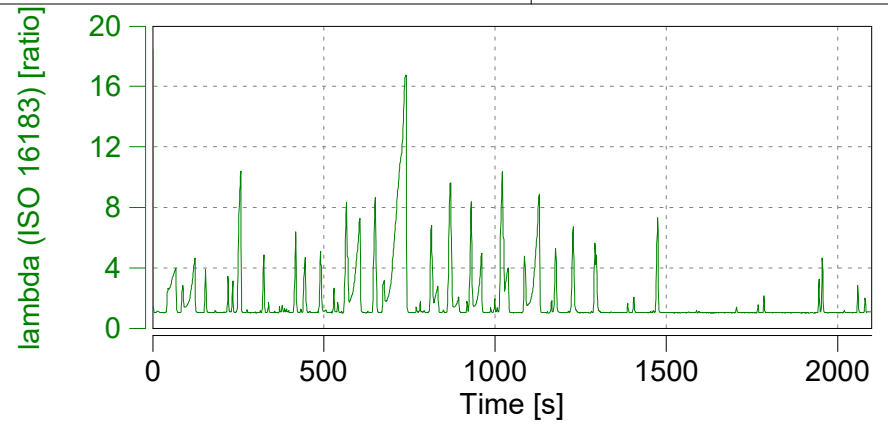
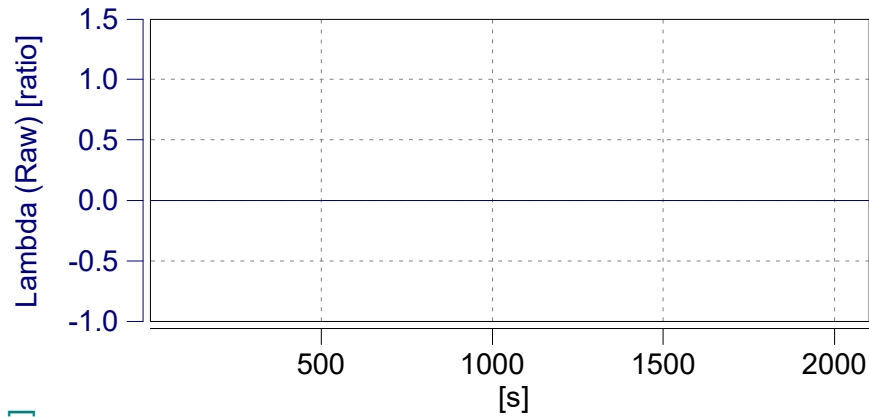


Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Case: X247-1267

Page: Corrected Emissions (1)

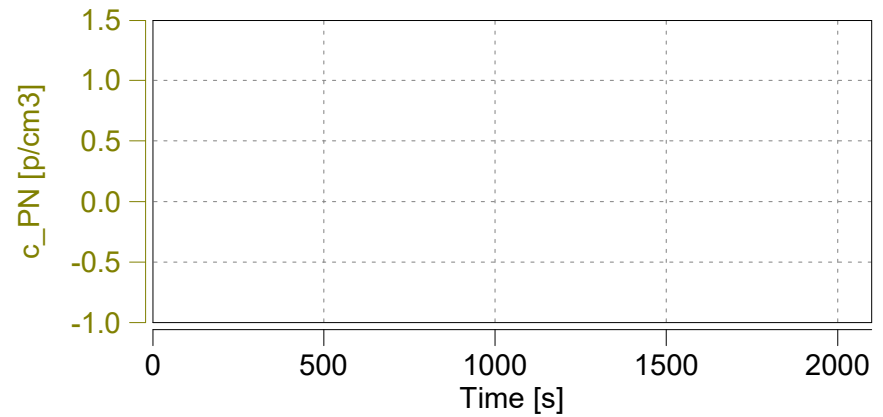
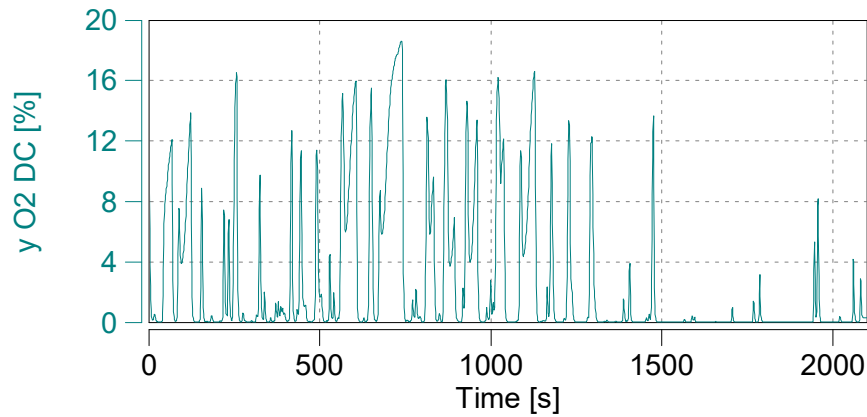
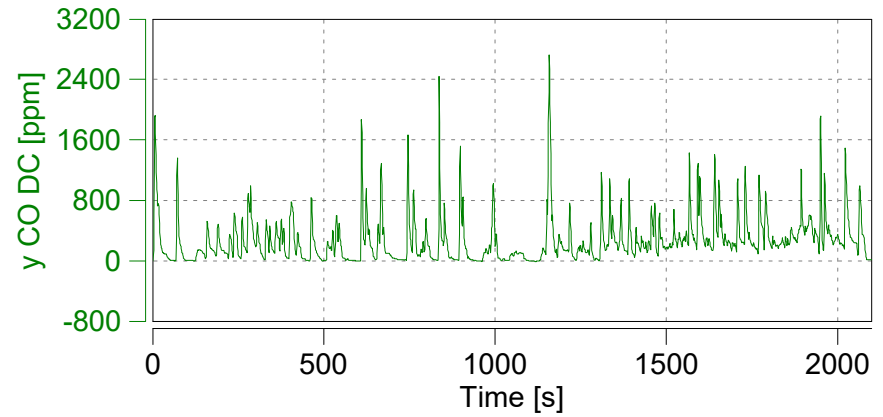
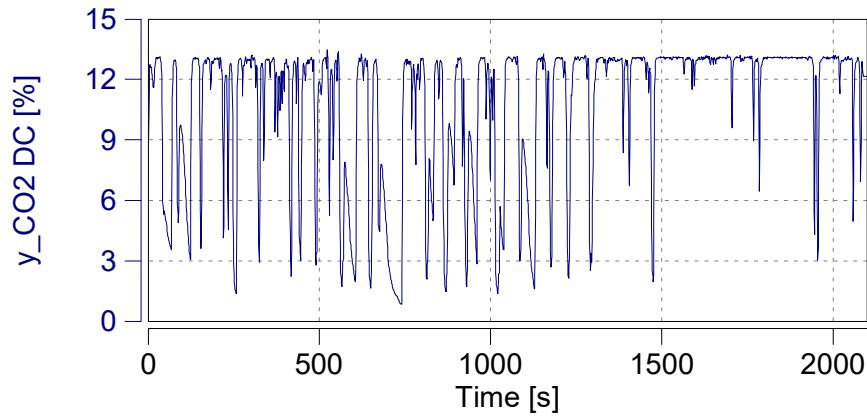
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Corrected Emissions (2)

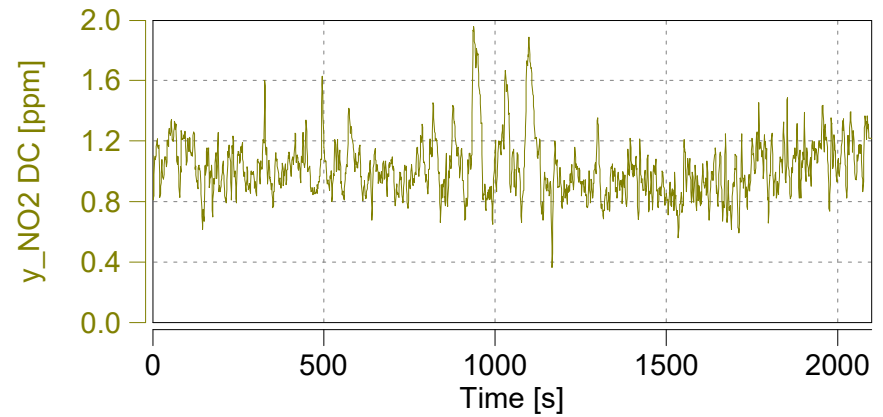
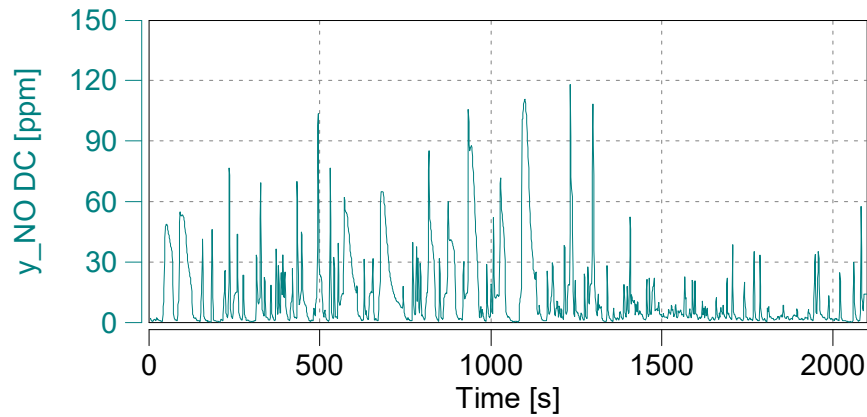
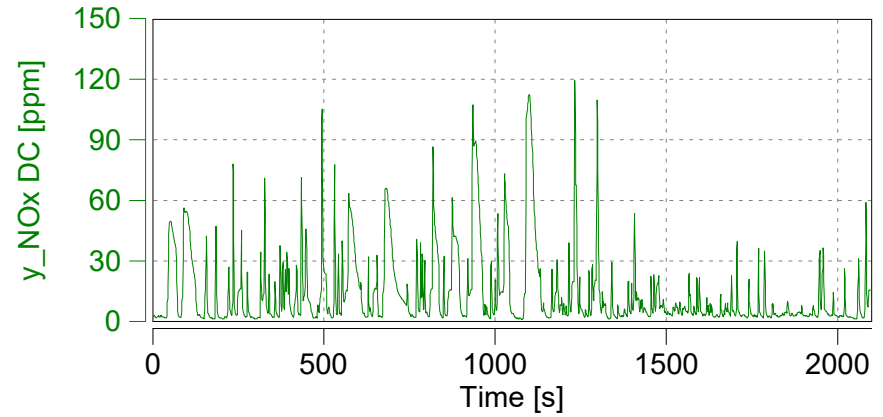
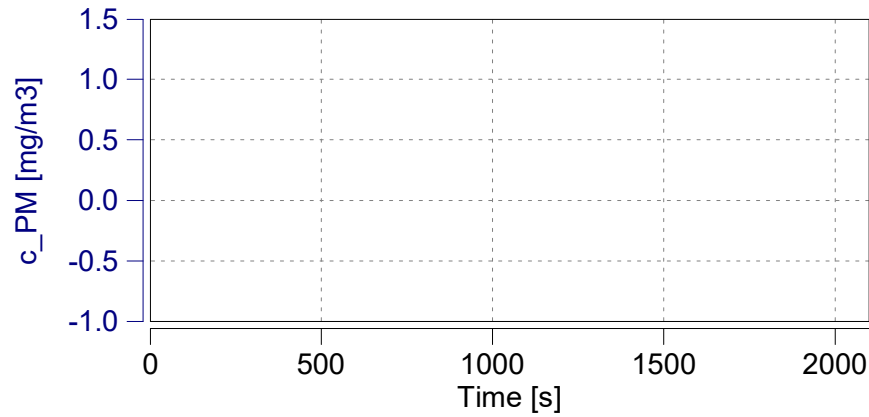
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0

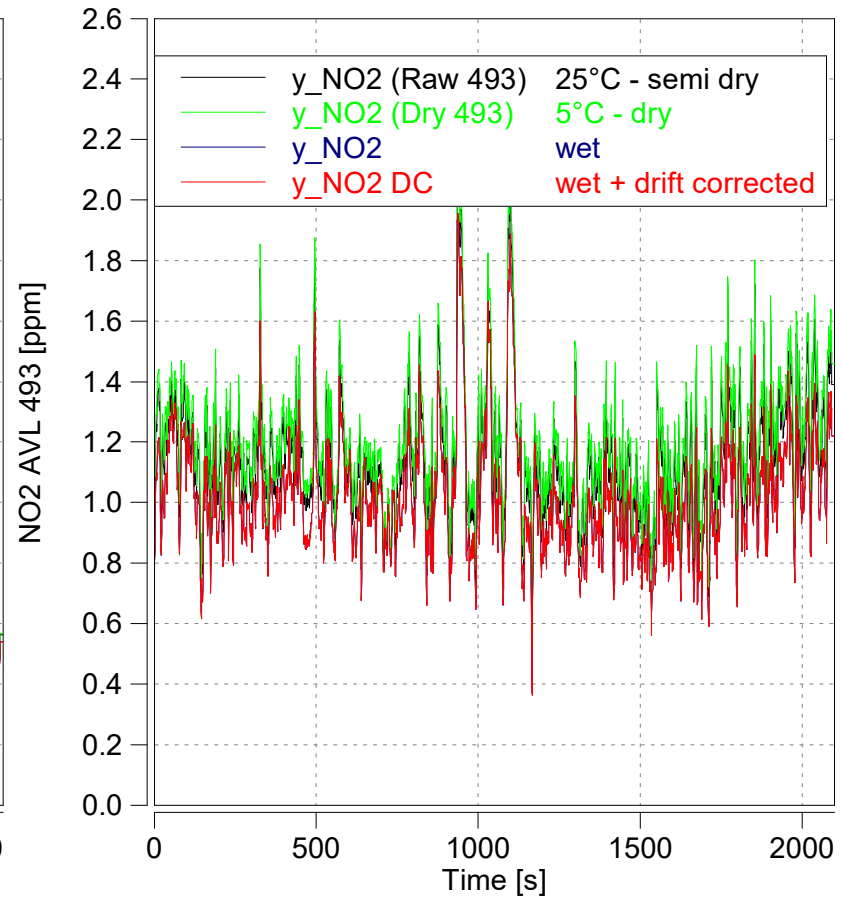
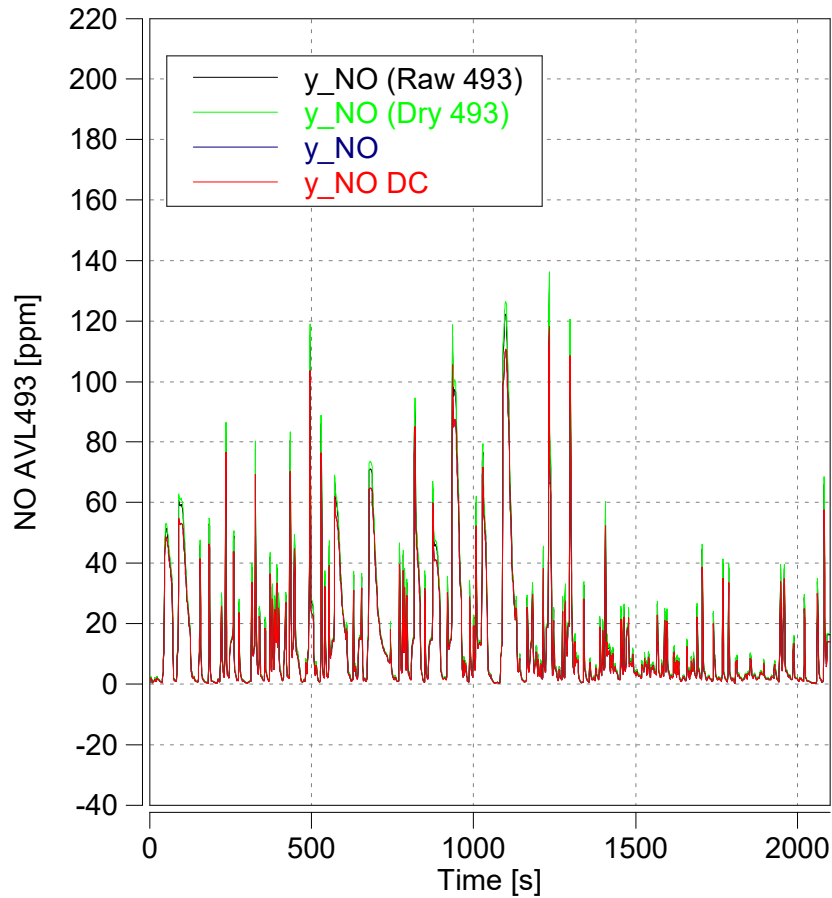


Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

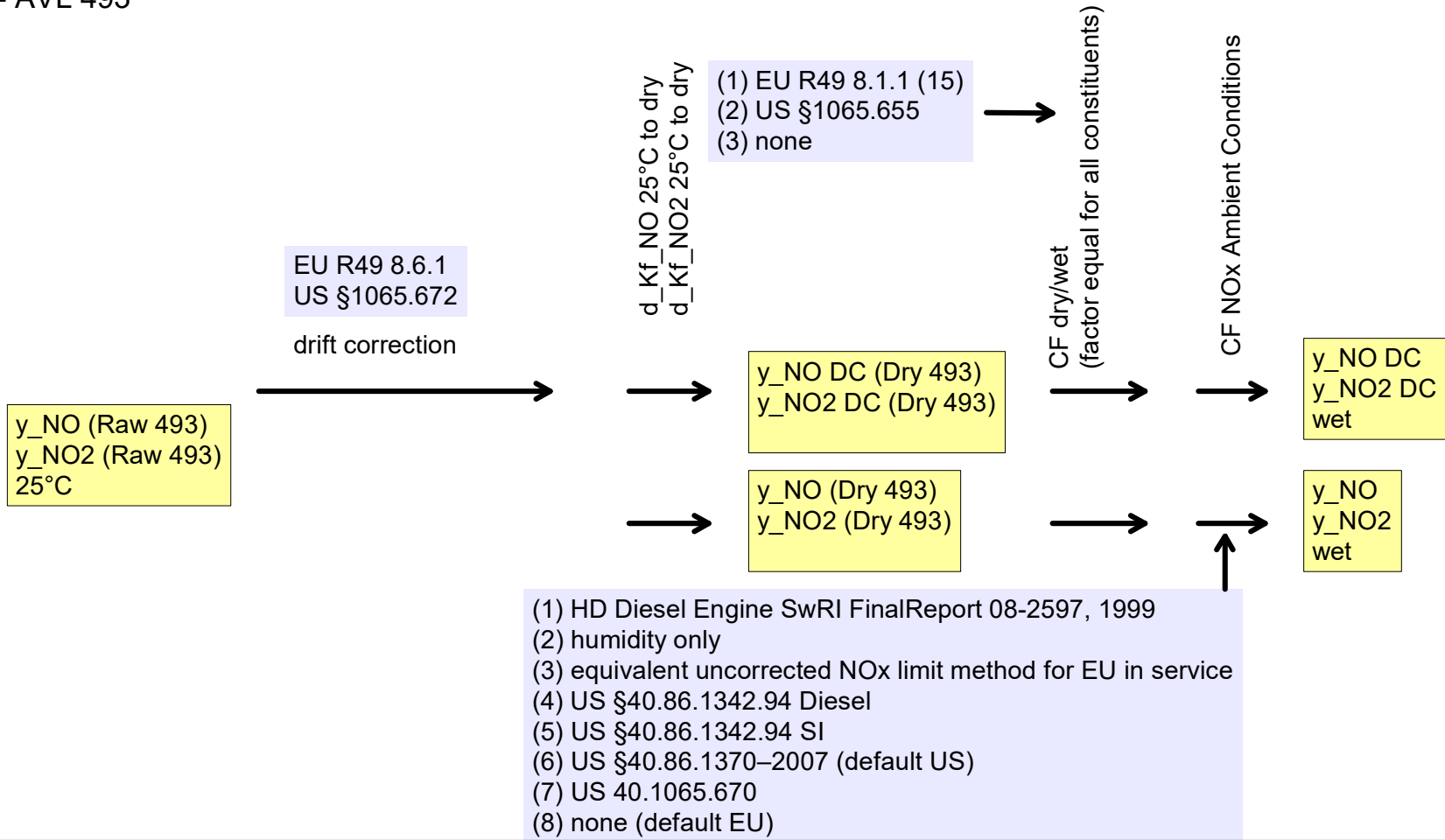


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493



Case: X247-1267

Page: Corrected Emissions (5)

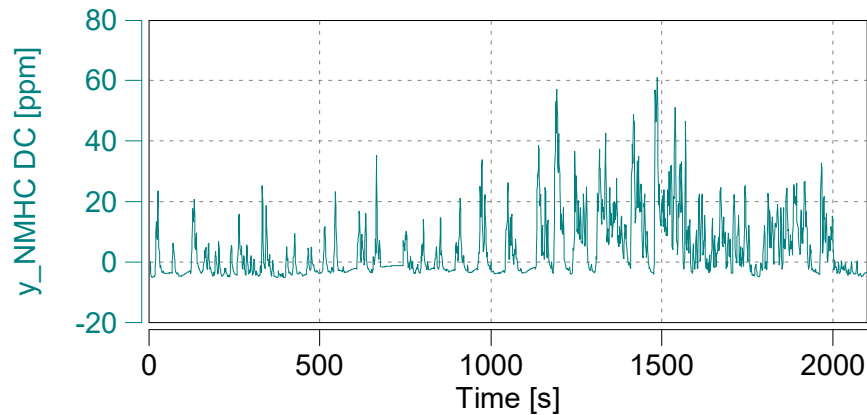
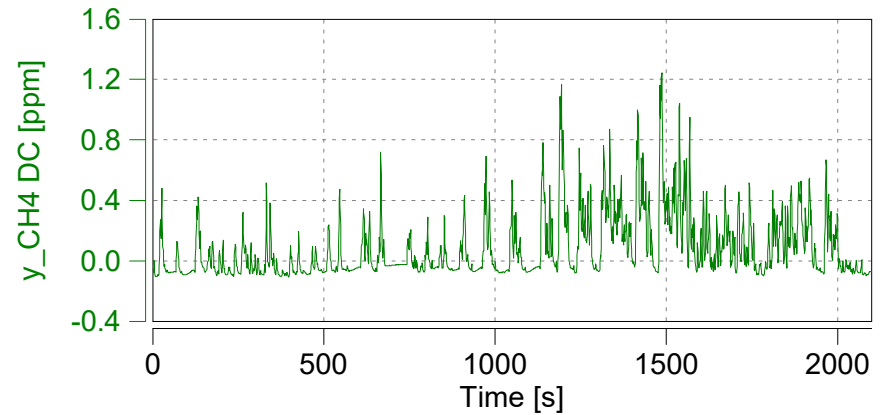
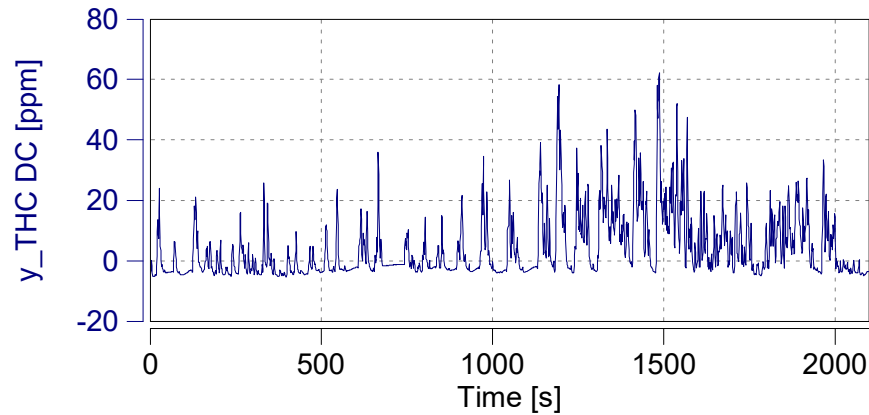
'X247-1267 A2 Mountain Uphill'

Start Date: 12/05/2019

Start Time: 09:26:25.0



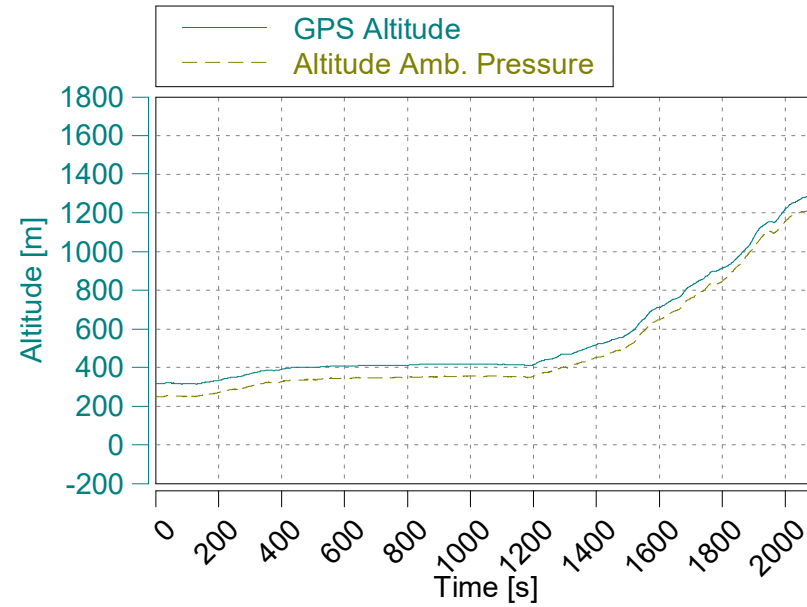
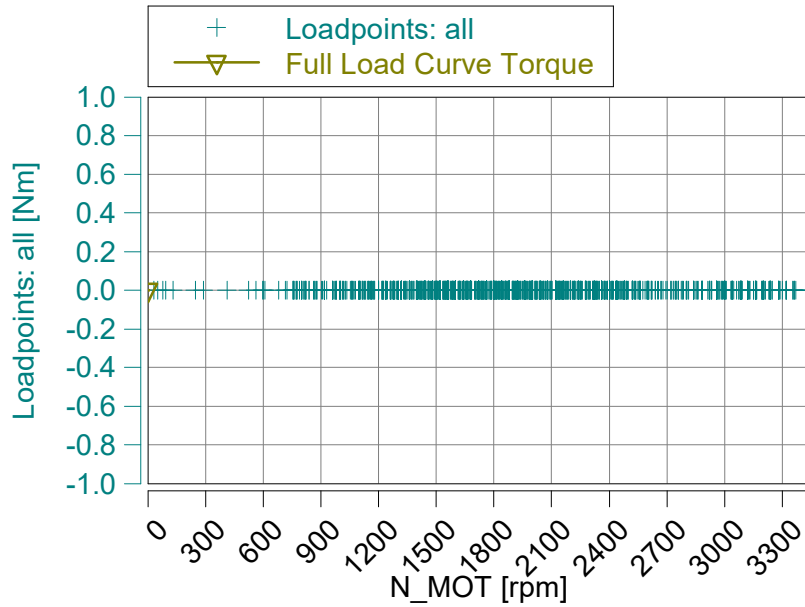
Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR X247-1267						
Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)				#ERROR		
Vehicle description (e.g. vehicle model, prototype)				PEMS		
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information	Urban		Rural		Motorway	
Shares of time of the trip in % characterised by urban, rural and motorway operation	52.0		48.0		0.0	
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating				42.6	%	
Decelerating				42.0	%	
Cruising				0.6	%	
Stop				14.8	%	
		Minimum		Maximum		
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio				m = 1.05		
				r <sup>2</sup> = 0.96		



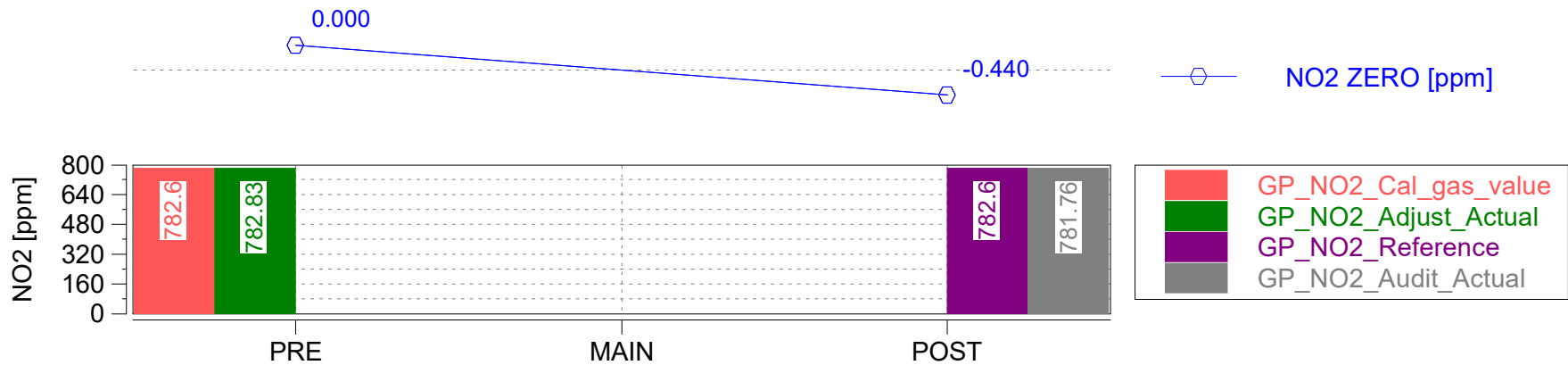
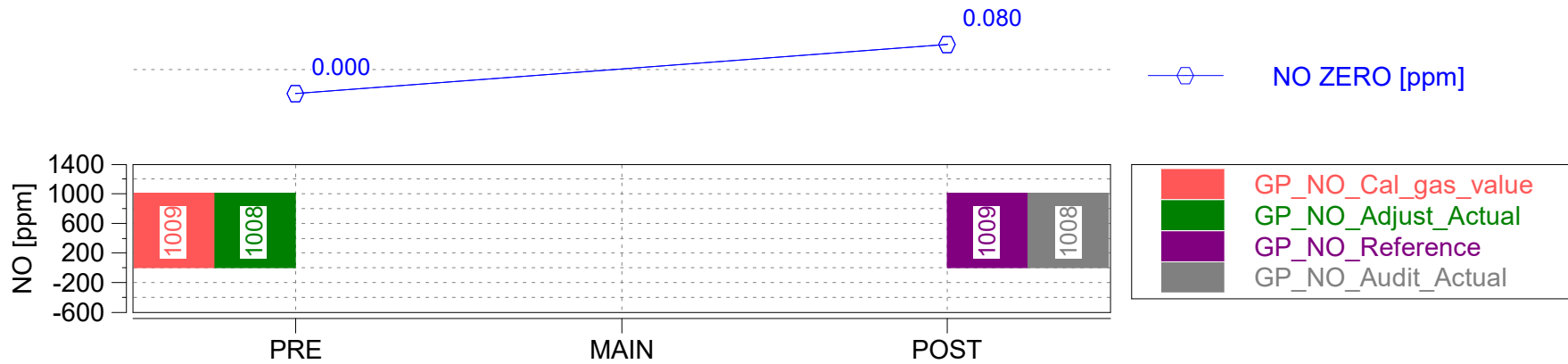
Trip Duration (a)	2100.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	199.9	g/kWh
avg BSFC ISO16183	231.6	g/kWh
Distance ECU	28.5	km
Distance GPS	28.512	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-05	yyyy-mm-dd
GAS PEMS Leak Check Time	11:52:38	hh:mm:ss
GAS PEMS Leak Check External	0.11	%

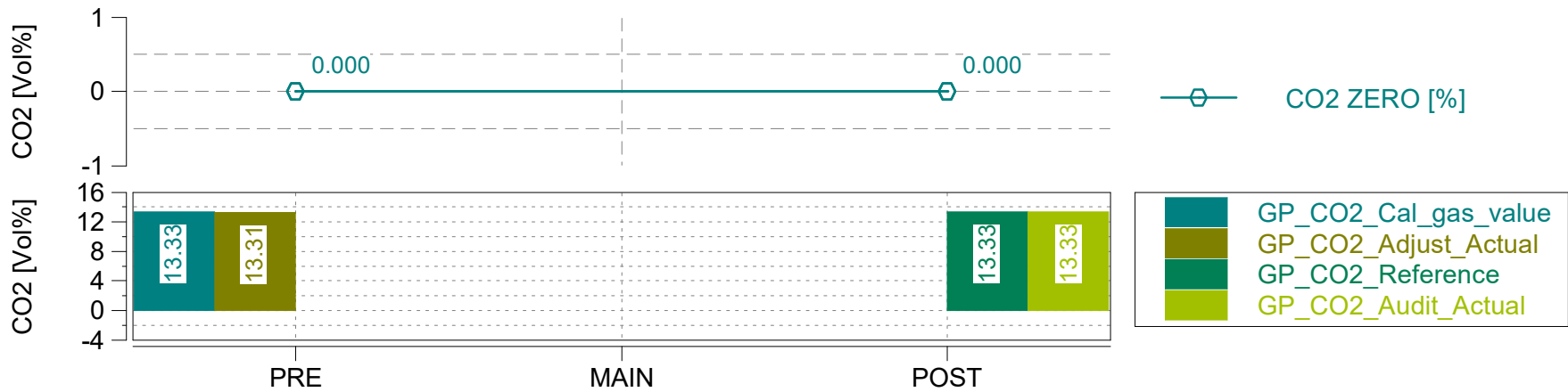
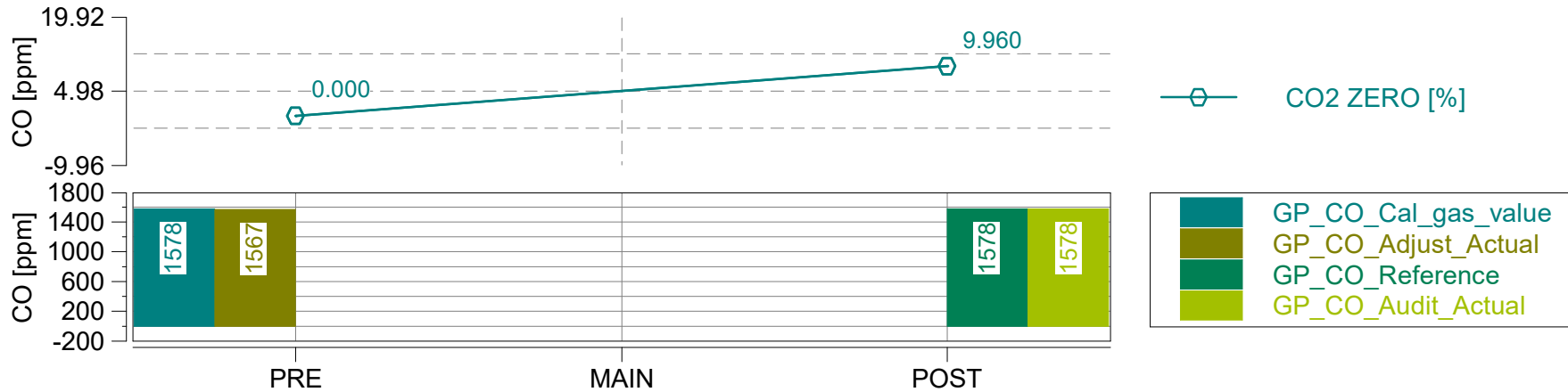
- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

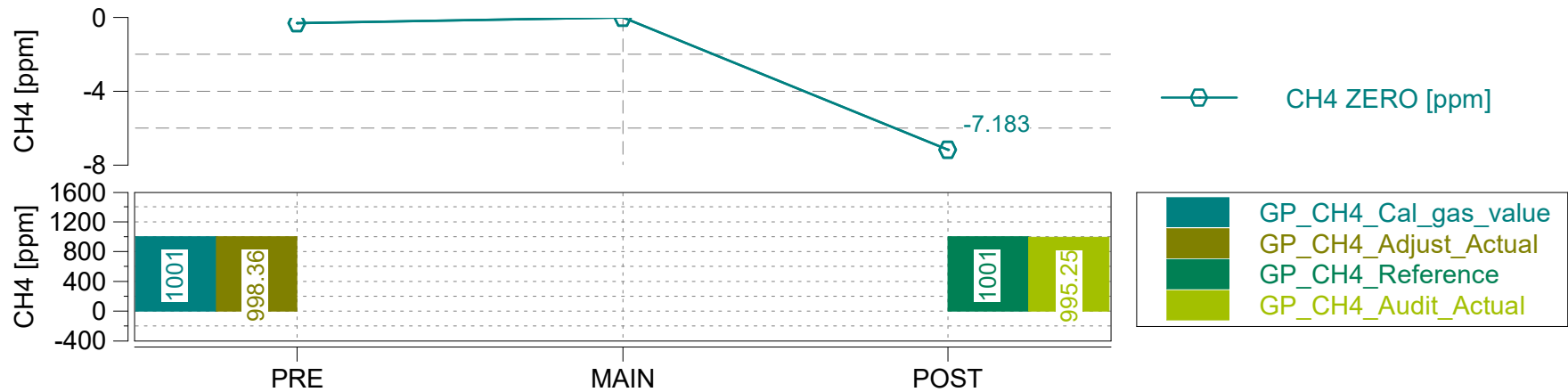
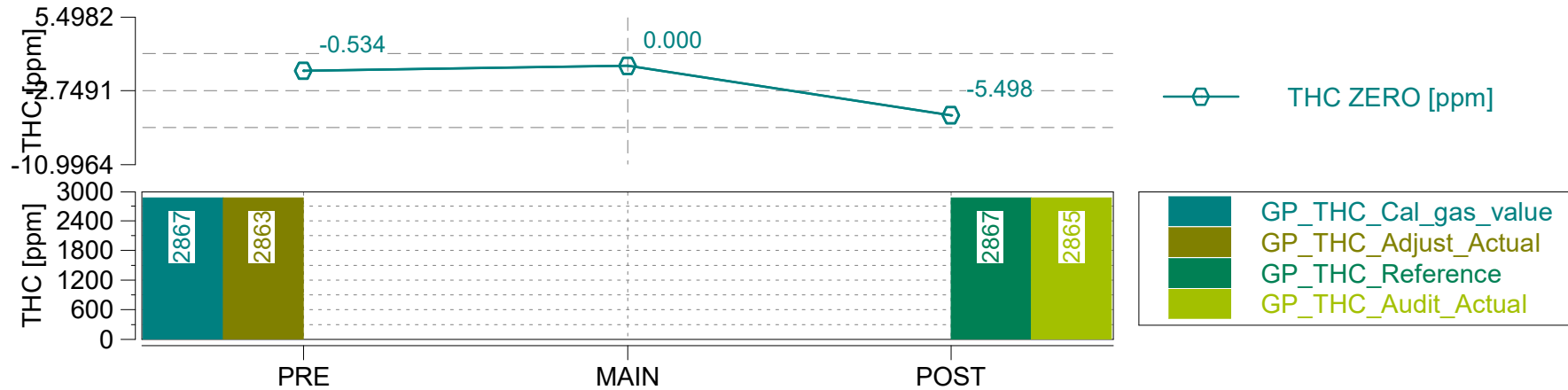
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



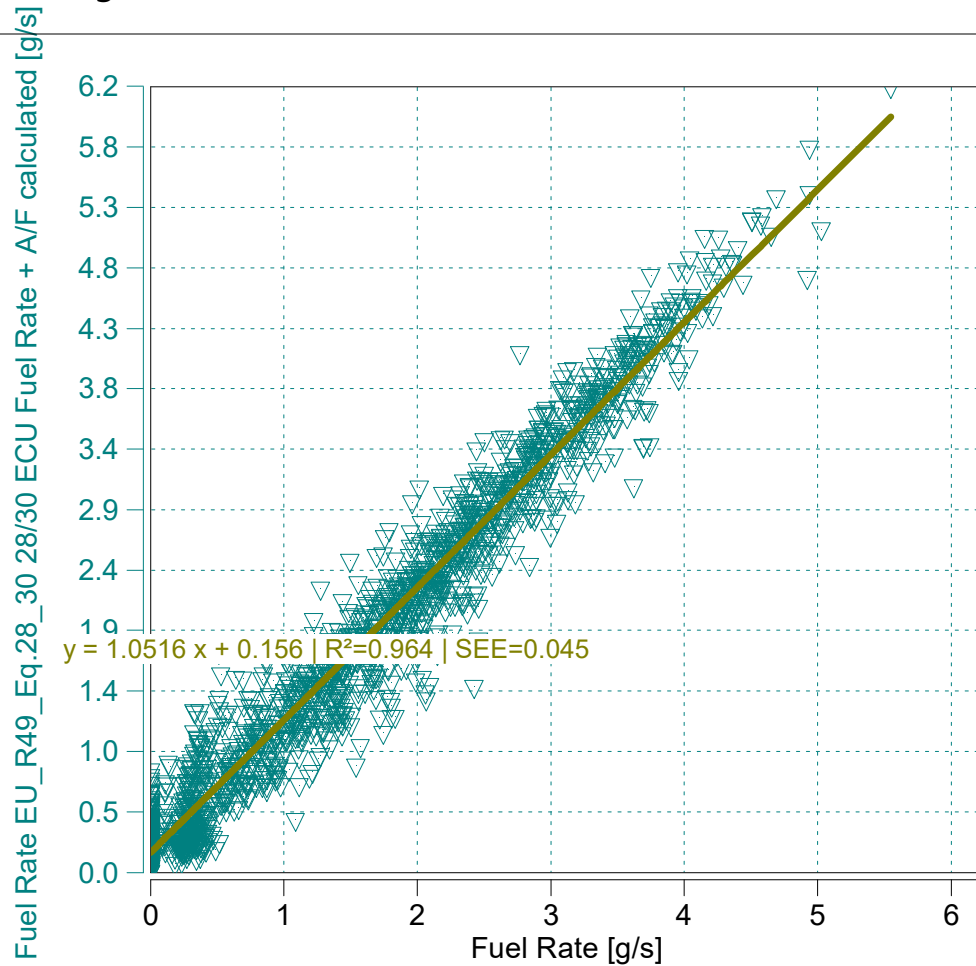






Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



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

$y = 1.0516 x + 0.156 \mid R^2=0.964 \mid SEE=0.045$   
 $m = 1.05$  (0.9 - 1.1 recommended)  
 $R^2 = 0.96$  (min 0.9 mandatory)

Data from - to [% of Maximum]



Trip Duration	1624.00	s	ave THC	7.89465	ppm	BS CO2	810.28888	g/hphr
Trip Duration (a)	1624.00	s	ave NMHC	7.73676	ppm	BS CO	1.12390	g/hphr
Trip Distance	17.31	mi	ave CH4	0.15789	ppm	BS THC	0.03931	g/hphr
Trip Distance (a)	17.31	mi	ave CO	131.67702	ppm	BS NMHC	0.03637	g/hphr
Trip Fuel Cons. (b)	0.71	kg	ave CO2	6.25887	%	BS CH4	0.00087	g/hphr
Trip Fuel Cons. (ab)	0.71	kg	ave NOx	10.11830	ppm	BS NO (d)	0.05882	g/hphr
Trip Fuel Cons. EU (ac)	0.87	kg	ave PM	n/a	mg/m3	BS NO2	0.00938	g/hphr
Trip Fuel Cons. US (ac)	0.86	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.06820	g/hphr
Trip Fuel Economy (b)	69.21	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	69.21	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	56.53	mpg_US	tot THC	0.12687	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	56.83	mpg_US	tot NMHC	0.11736	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	69.21	mpg_US	tot CH4	0.00281	g	DS CO2	151.05675	g/mi
Trip Fuel Economy GGE (ab)	69.21	mpg_US	tot CO	3.62706	g	DS CO	0.20952	g/mi
Trip Fuel Economy EU GGE (ac)	56.53	mpg_US	tot CO2	2614.97711	g	DS THC	0.00733	g/mi
Trip Fuel Economy US GGE (ac)	56.83	mpg_US	tot NO (d)	0.18981	g	DS NMHC	0.00678	g/mi
Trip Av. Eng. Speed	1676.96	rpm	tot NO2	0.03028	g	DS CH4	0.00016	g/mi
Trip Av. Torque	19.56	lbft	tot NOx	0.22009	g	DS NO (d)	0.01096	g/mi
Trip Av. Power	7.15	hp	tot Soot	n/a	g	DS NO2	0.00175	g/mi
Trip Work			tot Soot meas	n/a	g	DS NOx	0.01271	g/mi
Trip Work (a)	3.23	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	19.30	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	12.02	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	12.19	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	62.54	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3694.49327	g/kg
Trip Av. Humidity	59.86	%	Trip Av. Veh. Speed	38.37463	mi/hr	FS CO	5.12439	g/kg
Trip Av. GPS Altitude	602.82	m	Trip Distance Share Urban	14.48309	% distance	FS THC	0.17925	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	75.30036	% distance	FS NMHC	0.16581	g/kg
			Trip Distance Share Motorway	10.21655	% distance	FS CH4	0.00397	g/kg
						FS NO (d)	0.26817	g/kg
						FS NO2	0.04278	g/kg
						FS NOx	0.31095	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

'X247-1267 B1 Mountain Downhill'

Page: Trip Summary Drift Corrected

Start Date: 12/05/2019

Start Time: 09:26:25.0



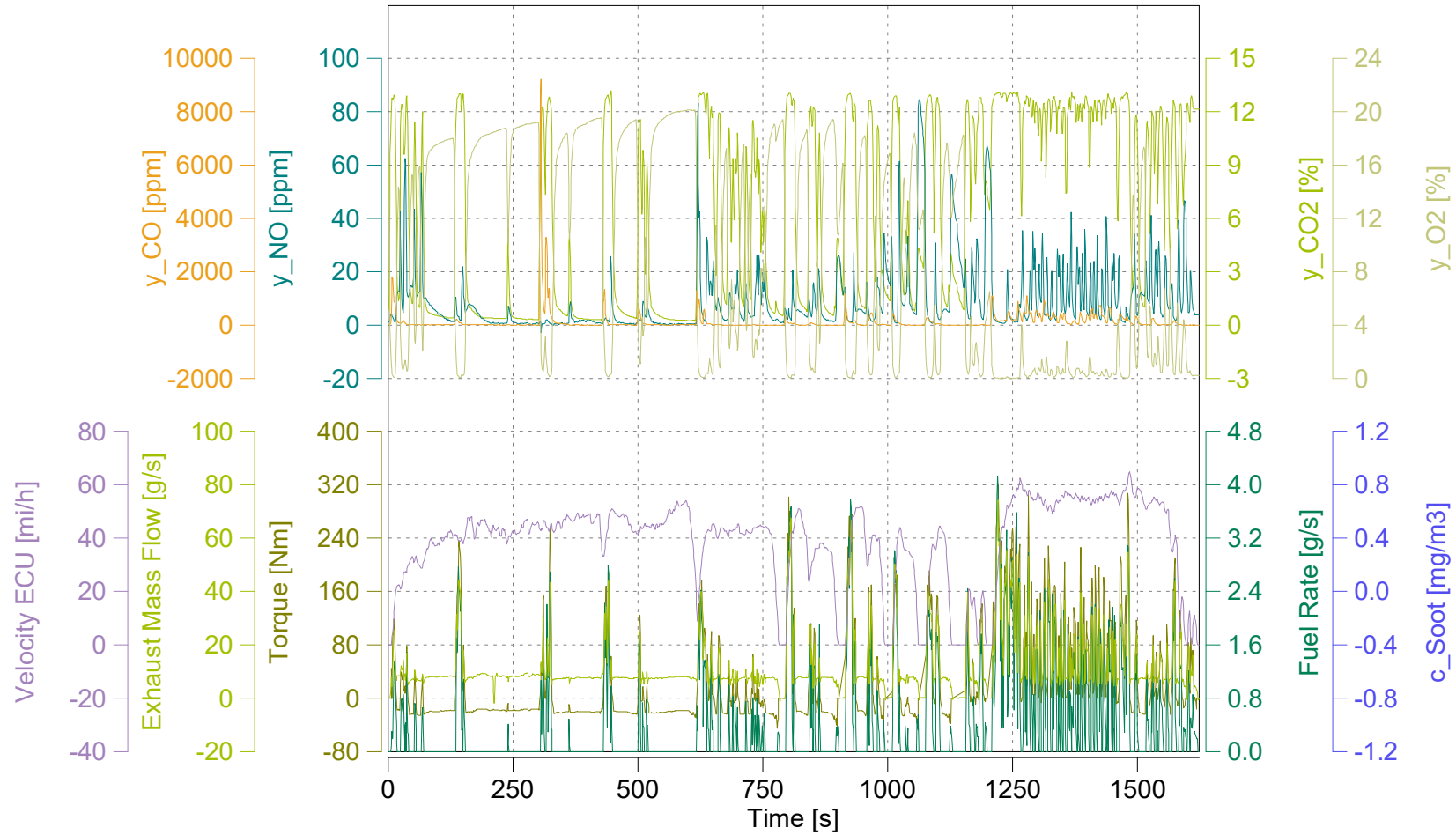
Concerto M.O.V.E, 2019

Trip Duration	1624.00	s	ave THC DC	8.16825	ppm	BS CO2 DC	810.89720	g/hphr
Trip Duration (a)	1624.00	s	ave NMHC DC	8.00489	ppm	BS CO DC	1.12731	g/hphr
Trip Distance	17.31	mi	ave CH4 DC	0.16337	ppm	BS THC DC	0.04014	g/hphr
Trip Distance (a)	17.31	mi	ave CO DC	132.07626	ppm	BS NMHC DC	0.03713	g/hphr
Trip Fuel Cons. (b)	0.71	kg	ave CO2 DC	6.26357	%	BS CH4 DC	0.00089	g/hphr
Trip Fuel Cons. (ab)	0.71	kg	ave NOx DC	10.12064	ppm	BS NO DC (d)	0.05883	g/hphr
Trip Fuel Cons. EU (ac)	0.87	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00939	g/hphr
Trip Fuel Cons. US (ac)	0.86	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.06822	g/hphr
Trip Fuel Economy (b)	69.21	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	69.21	mpg_US	ave PN DC	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	56.53	mpg_US	tot THC DC	0.12955	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	56.83	mpg_US	tot NMHC DC	0.11983	g	BS PN DC	n/a	#/hpr
Trip Fuel Economy GGE (b)	69.21	mpg_US	tot CH4 DC	0.00287	g	DS CO2 DC	151.17015	g/mi
Trip Fuel Economy GGE (ab)	69.21	mpg_US	tot CO DC	3.63806	g	DS CO DC	0.21016	g/mi
Trip Fuel Economy EU GGE (ac)	56.53	mpg_US	tot CO2 DC	2616.94031	g	DS THC DC	0.00748	g/mi
Trip Fuel Economy US GGE (ac)	56.83	mpg_US	tot NO DC (d)	0.18985	g	DS NMHC DC	0.00692	g/mi
Trip Av. Eng. Speed	1676.96	rpm	tot NO2 DC	0.03029	g	DS CH4 DC	0.00017	g/mi
Trip Av. Torque	19.56	lbft	tot NOx DC	0.22015	g	DS NO DC (d)	0.01097	g/mi
Trip Av. Power	7.15	hp	tot Soot	n/a	g	DS NO2 DC	0.00175	g/mi
Trip Work	3.23	hphr	tot Soot meas	n/a	g	DS NOx DC	0.01272	g/mi
Trip Work (a)	3.23	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	19.30	kg	tot PN DC	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	12.02	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	12.19	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN DC	n/a	#/mi
Trip Av. Amb. Temperature	62.54	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2 DC	3697.26691	g/kg
Trip Av. Humidity	59.86	%	Trip Av. Veh. Speed	38.37463	mi/hr	FS CO DC	5.13992	g/kg
Trip Av. GPS Altitude	602.82	m	Trip Distance Share Urban	14.48309	% distance	FS THC DC	0.18303	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	75.30036	% distance	FS NMHC DC	0.16930	g/kg
			Trip Distance Share Motorway	10.21655	% distance	FS CH4 DC	0.00406	g/kg
						FS NO DC (d)	0.26823	g/kg
						FS NO2 DC	0.04280	g/kg
						FS NOx DC	0.31103	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	n/a	#/kg

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

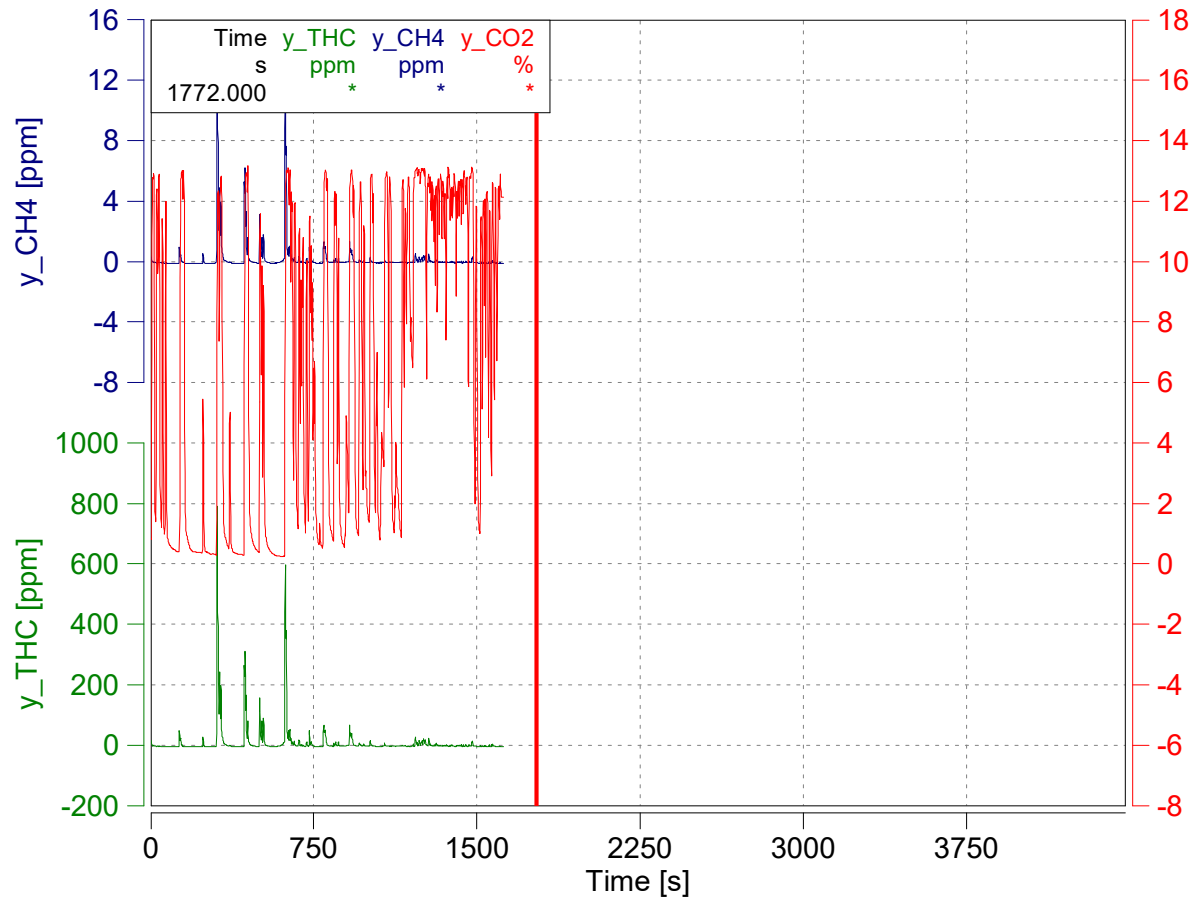
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

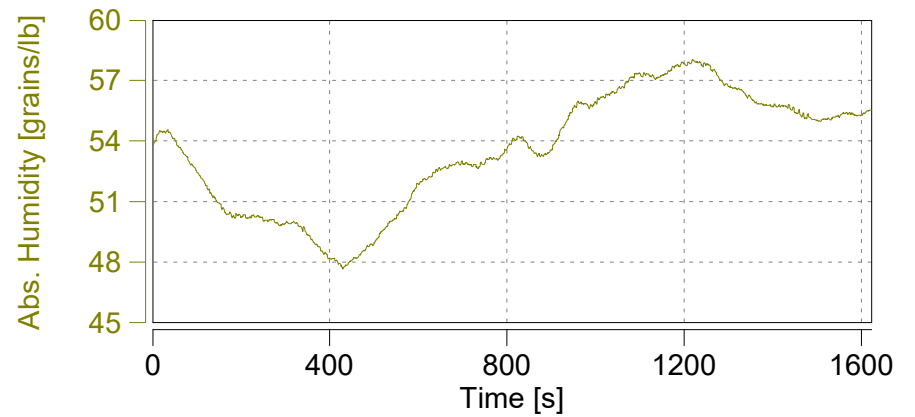
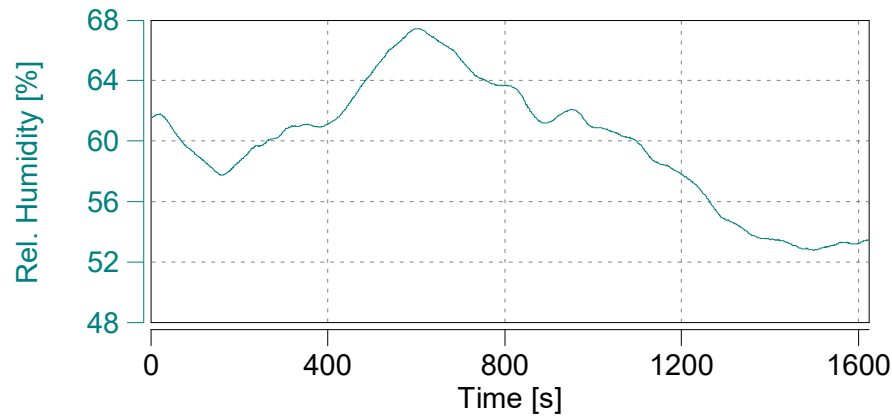
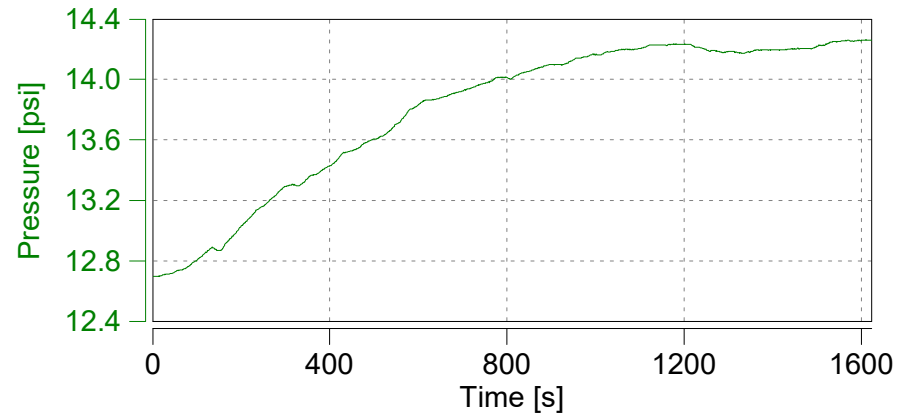
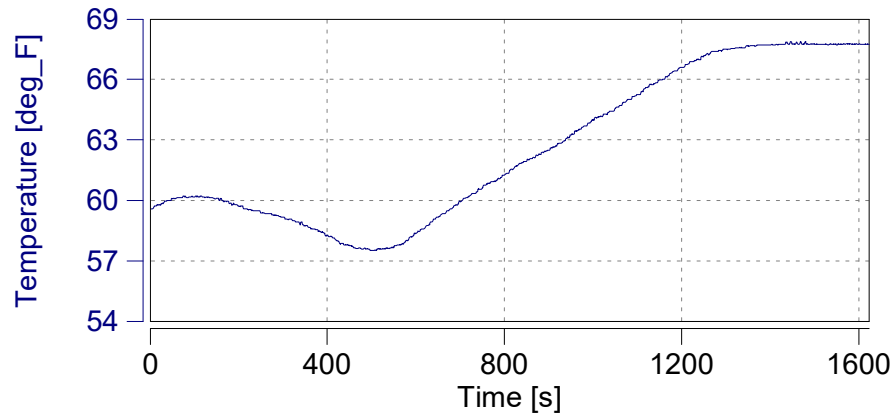


Absolute Time Shifts

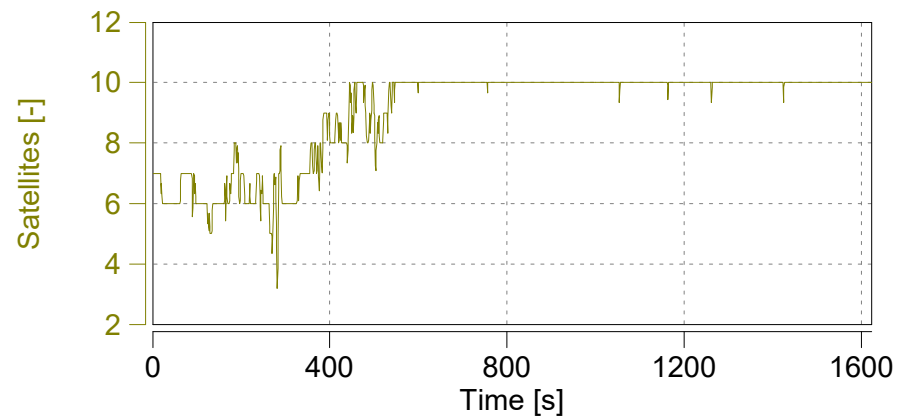
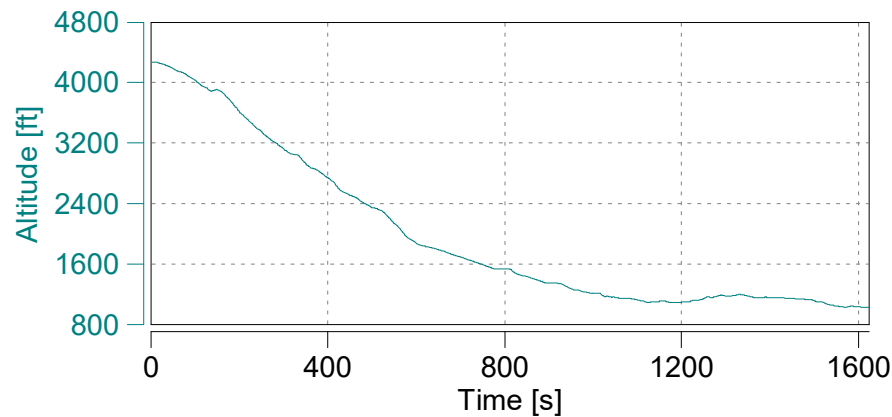
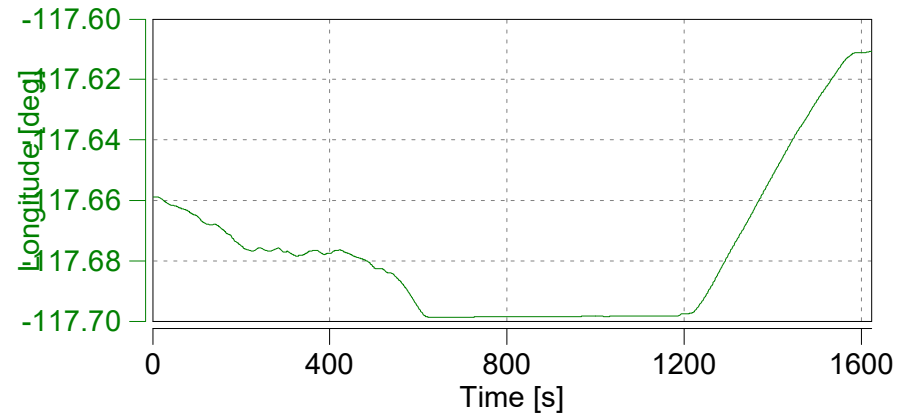
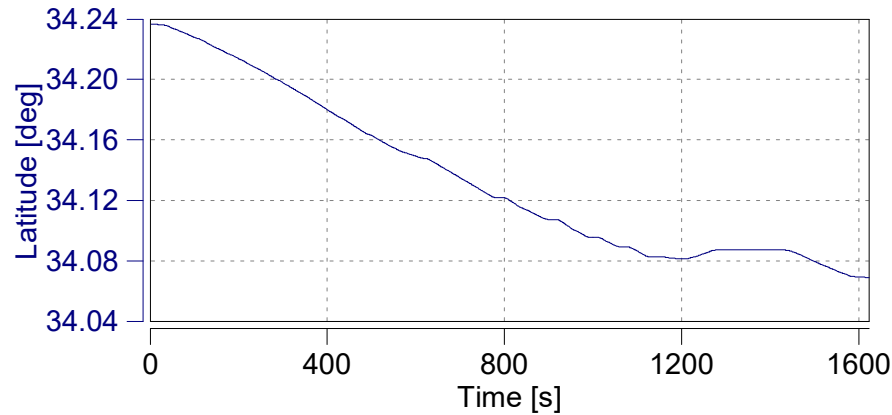
y_THC	s	-5.2
y_CH4	s	-7.2

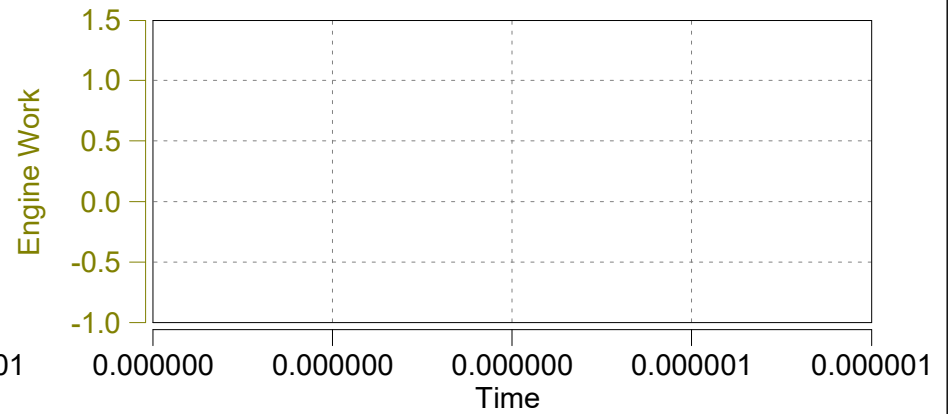
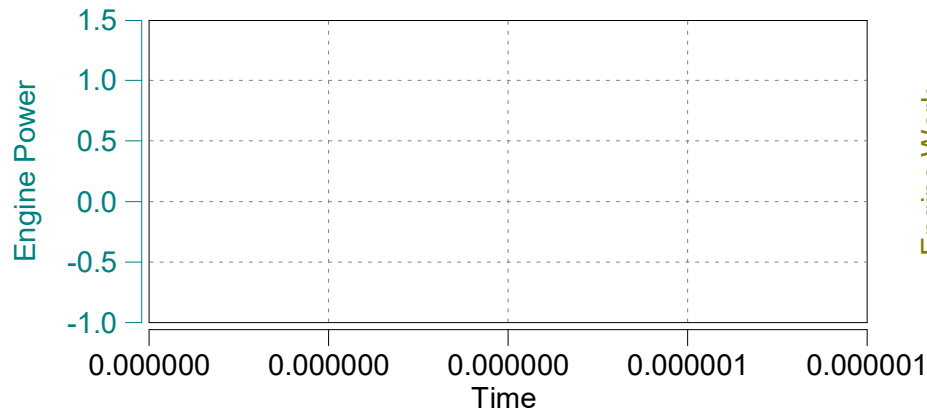
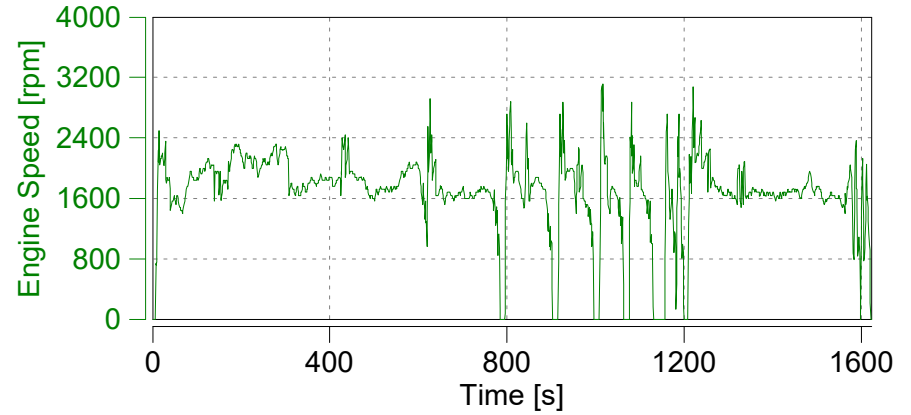
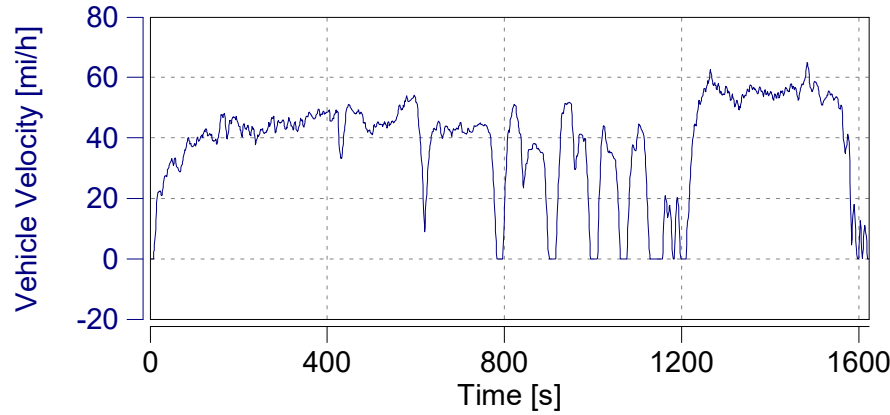
Reset Time Shifts in Plot

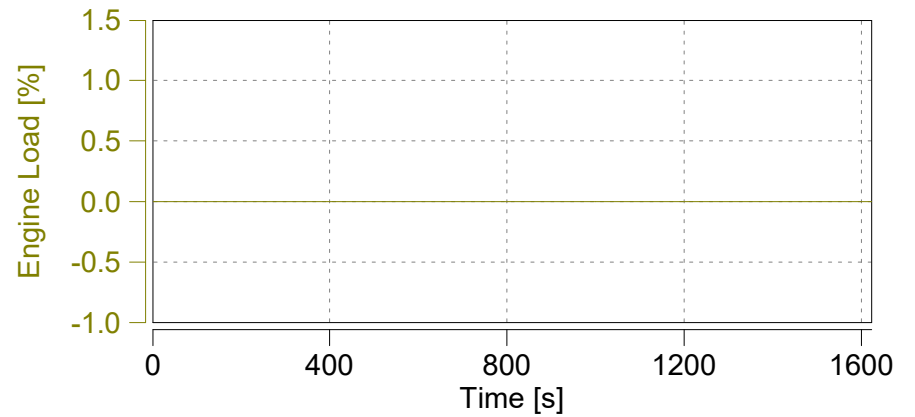
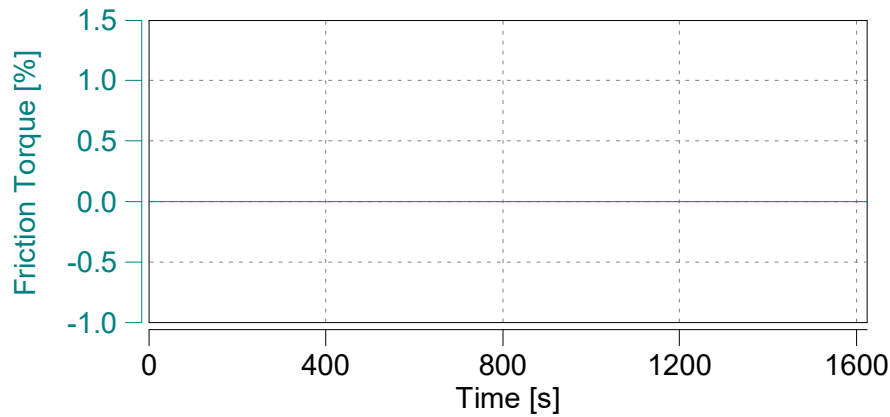
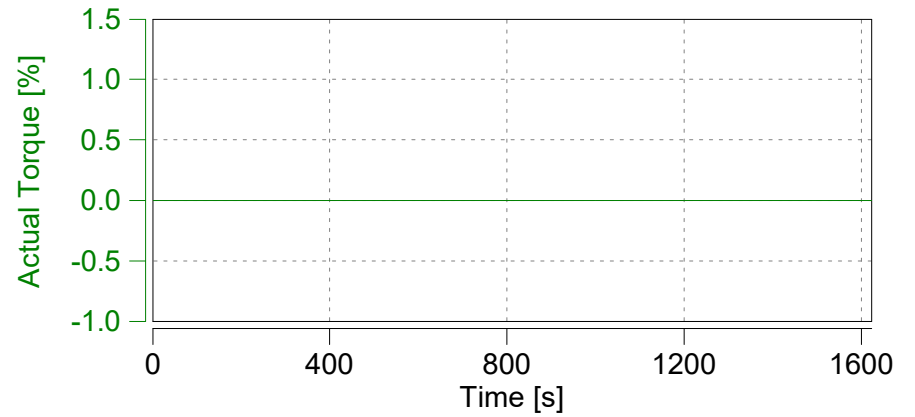
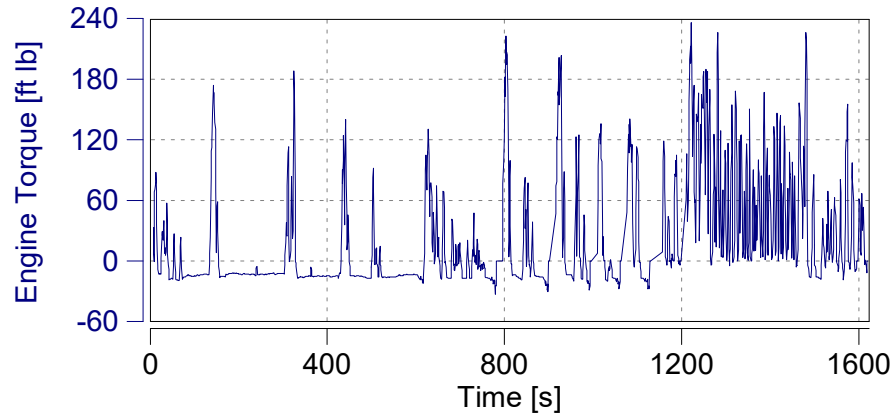
Apply Current Values











Case: X247-1267

Page: Engine (3)

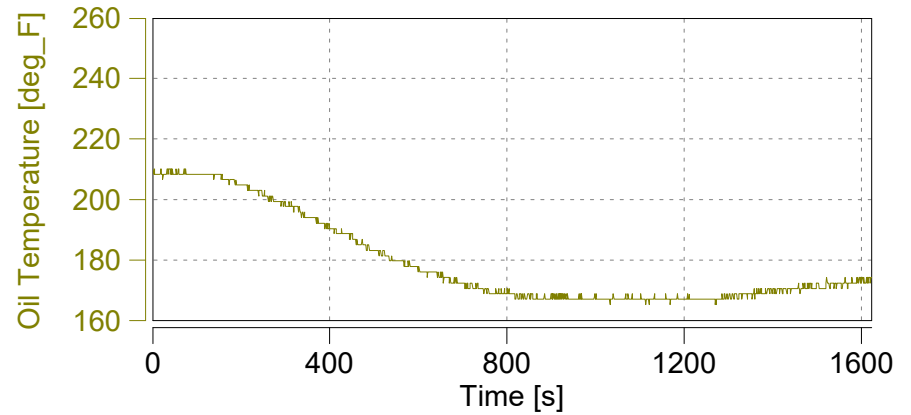
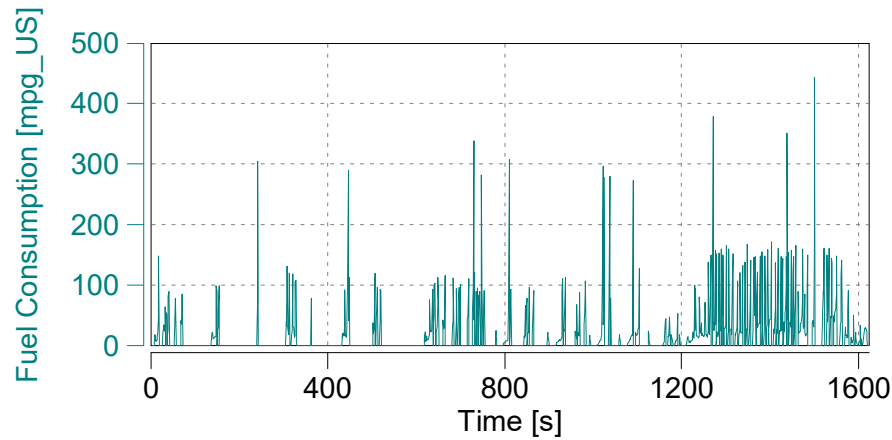
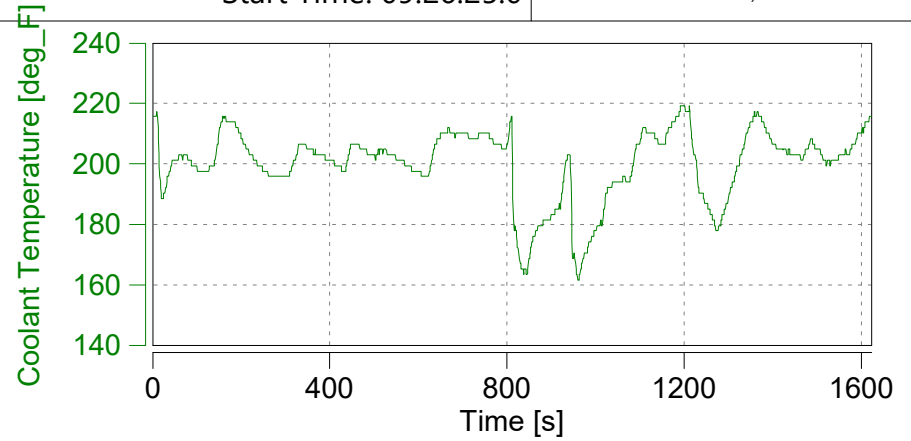
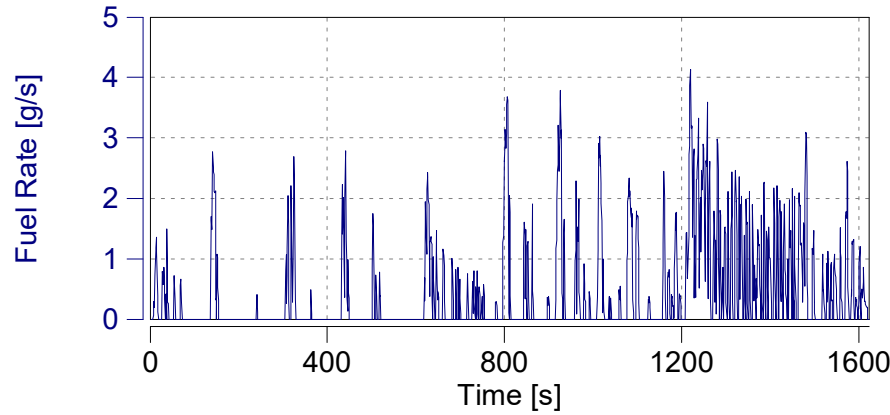
'X247-1267 B1 Mountain Downhill'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Exhaust Flow (1)

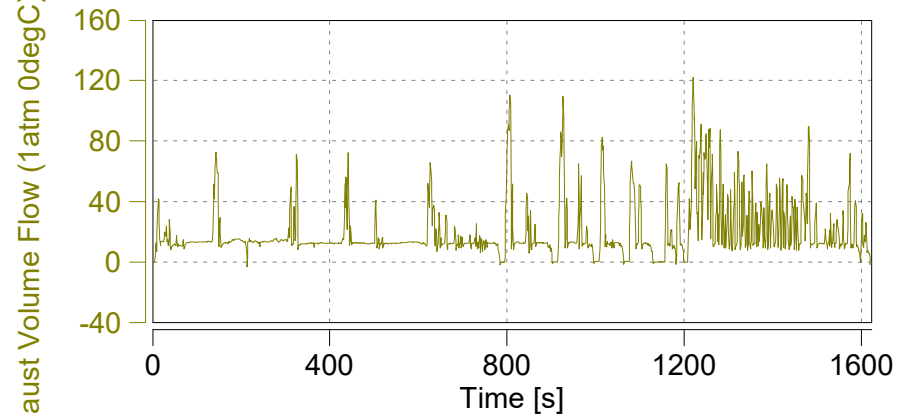
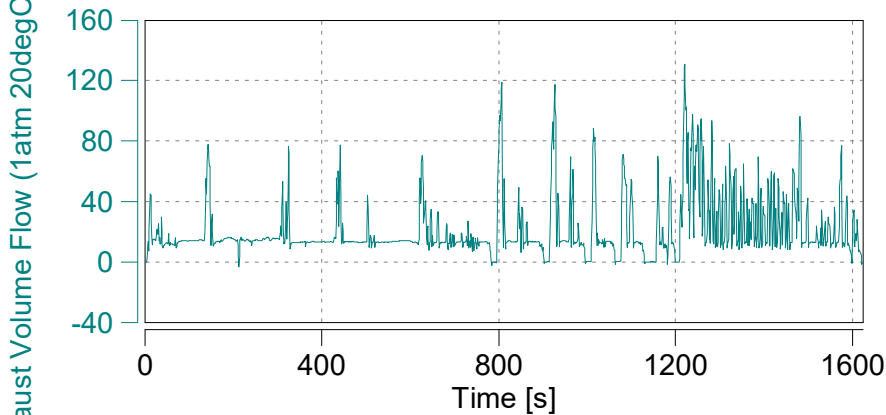
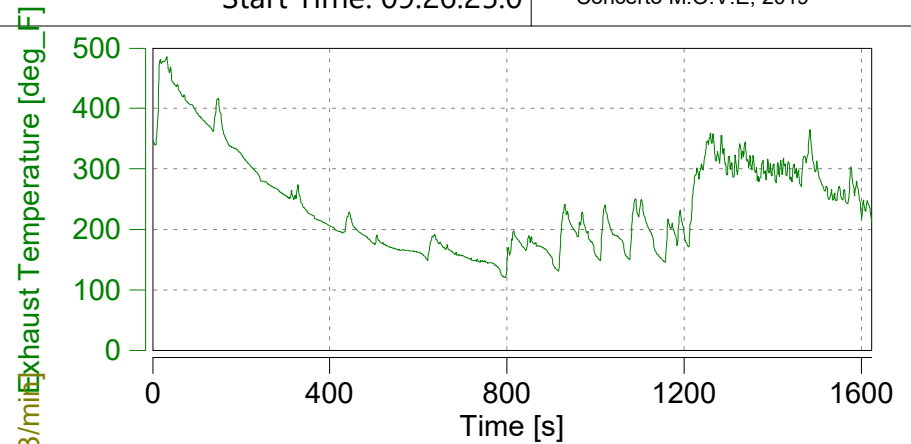
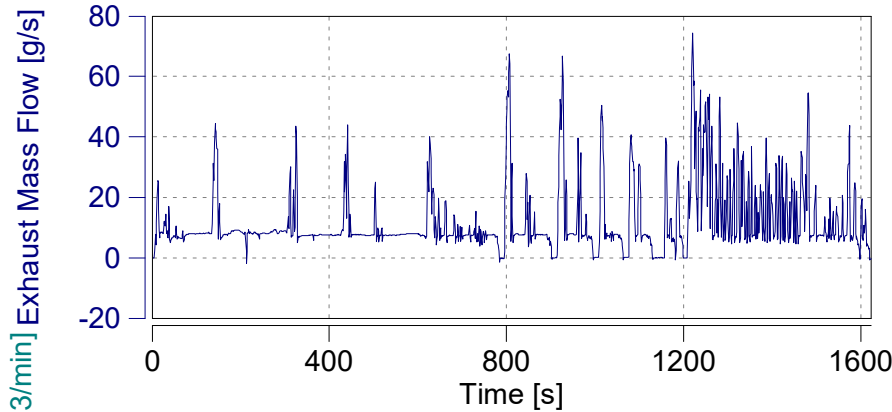
'X247-1267 B1 Mountain Downhill'

Start Date: 12/05/2019

Start Time: 09:26:25.0

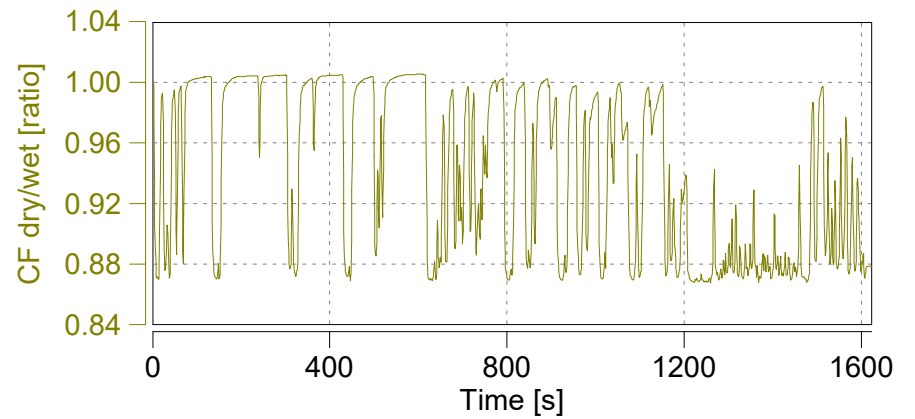
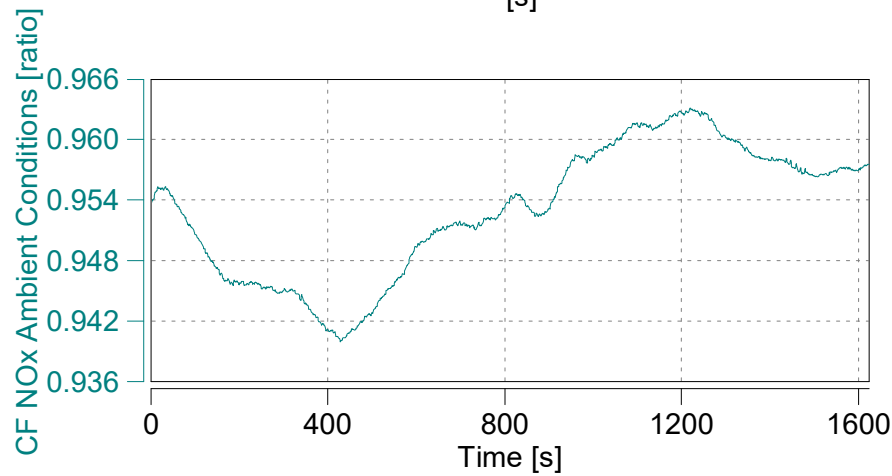
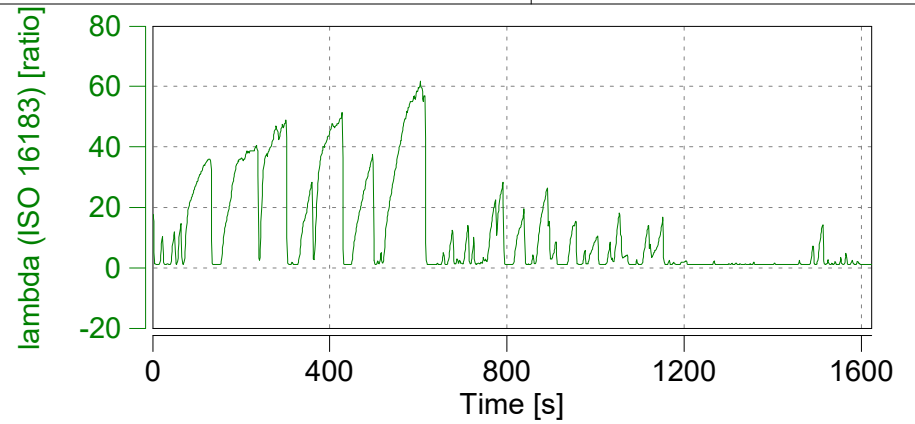
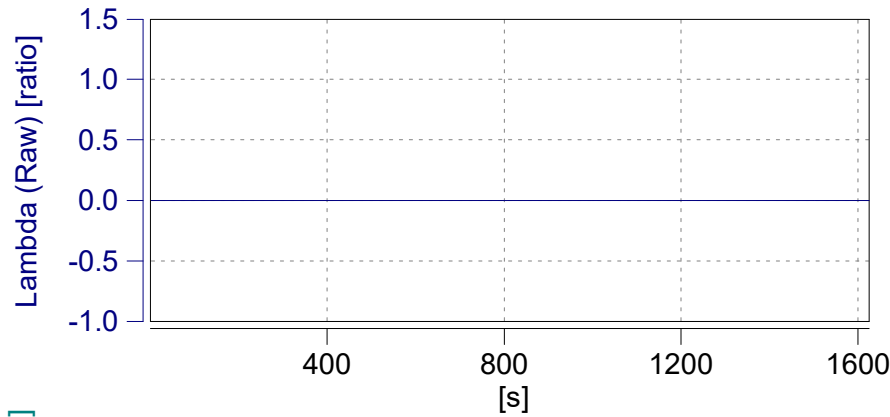


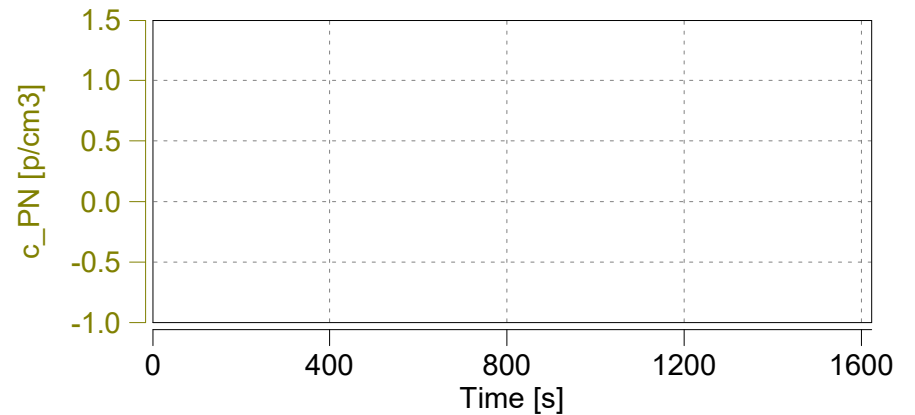
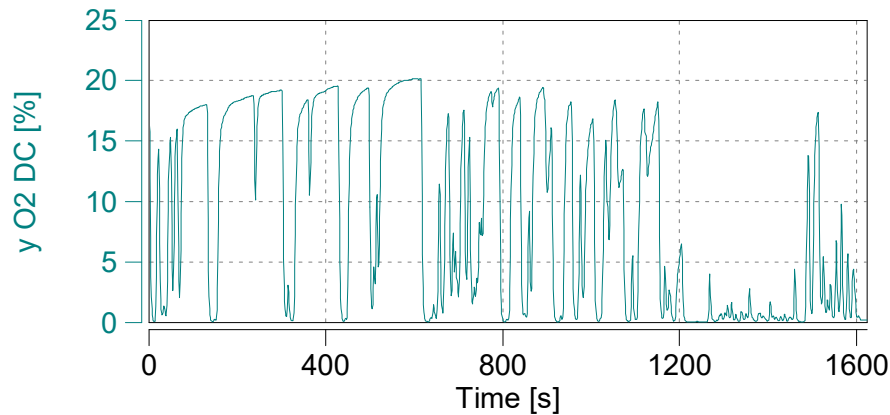
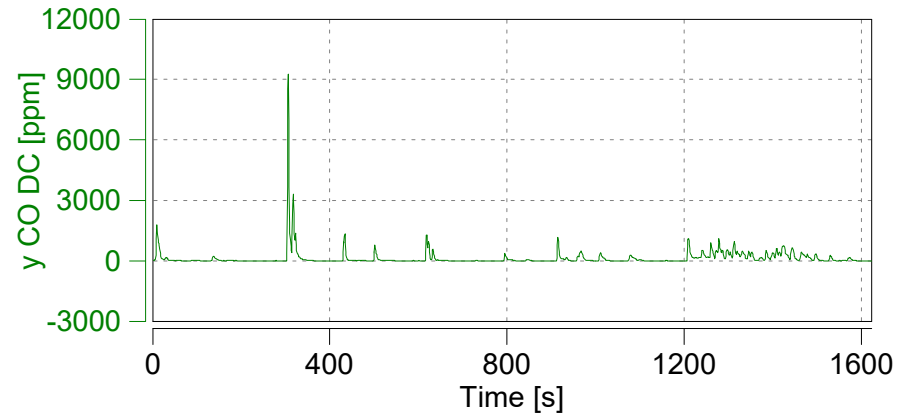
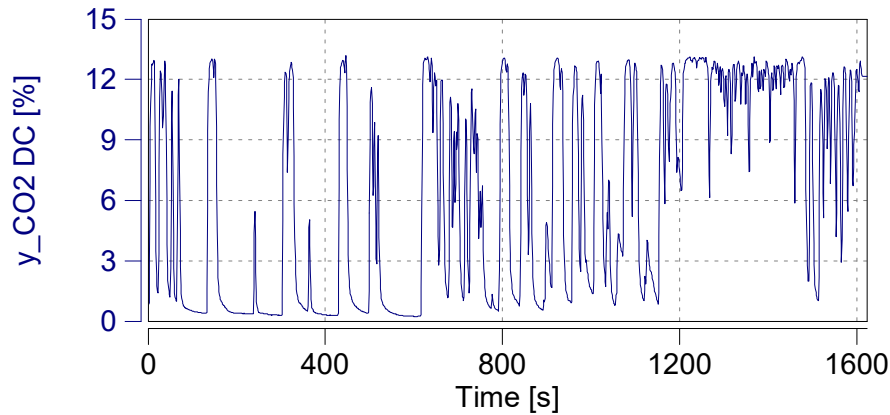
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

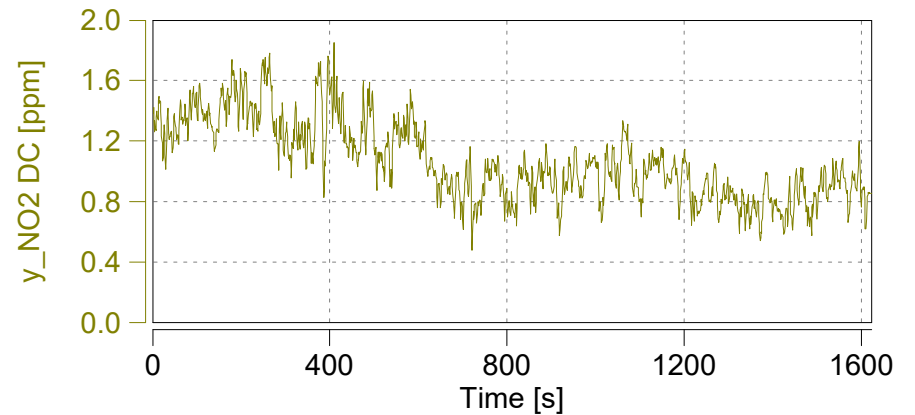
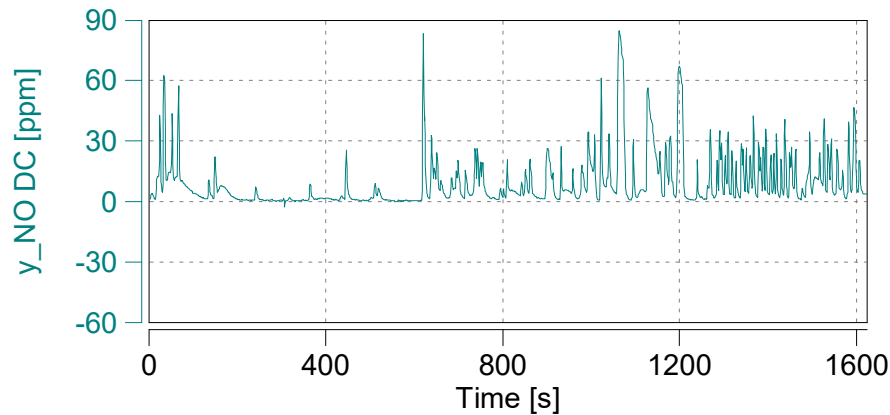
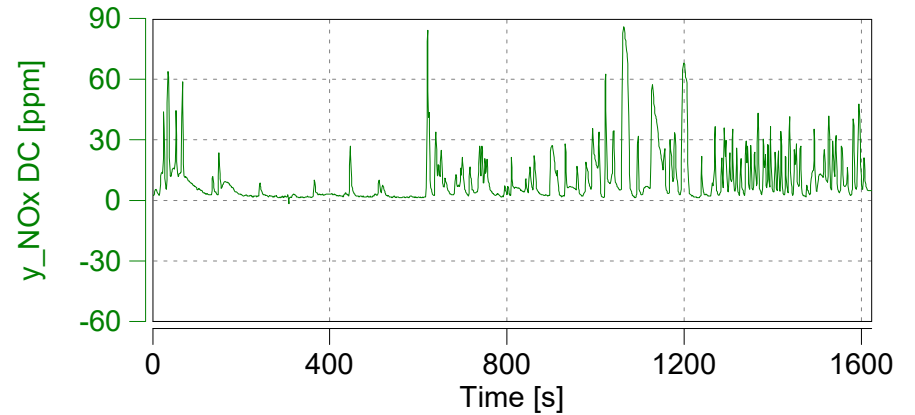
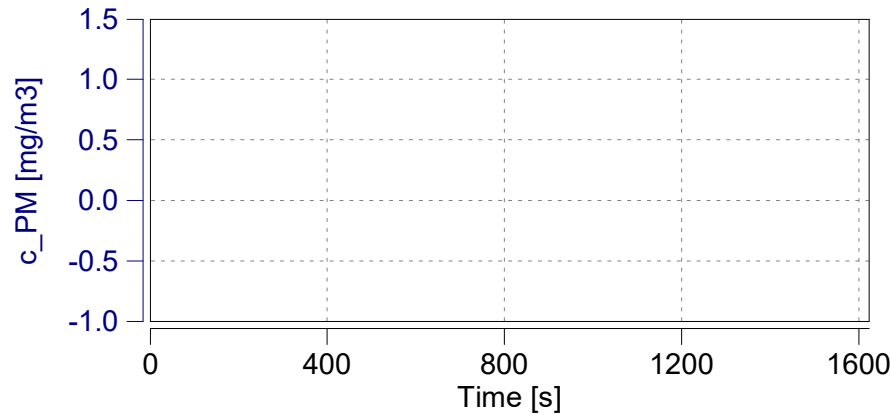
Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90





Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

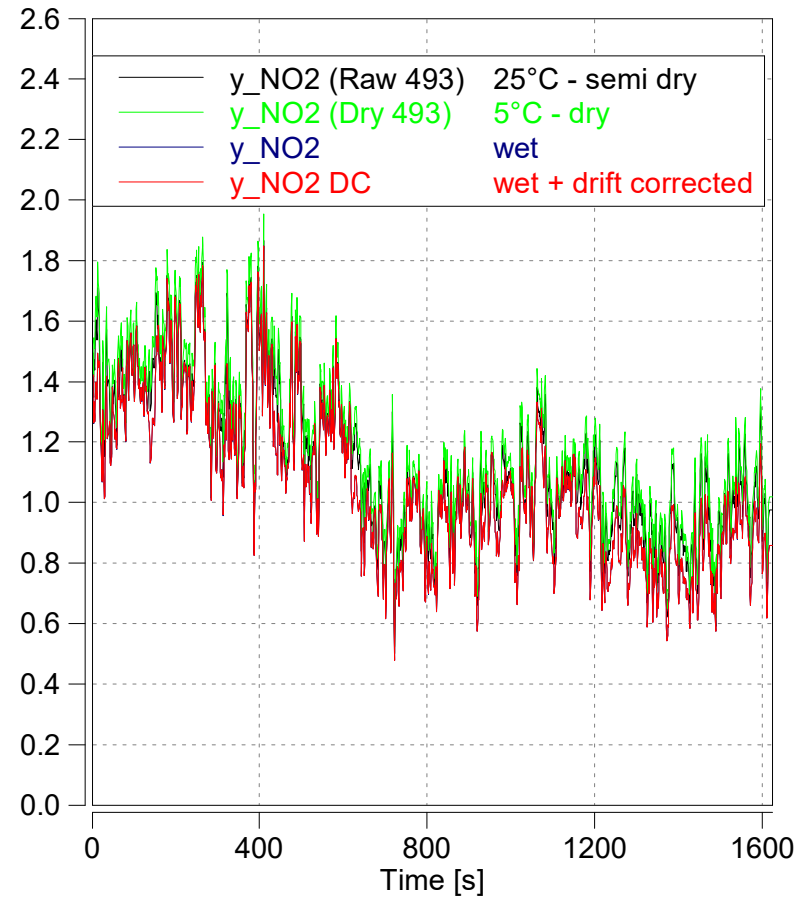
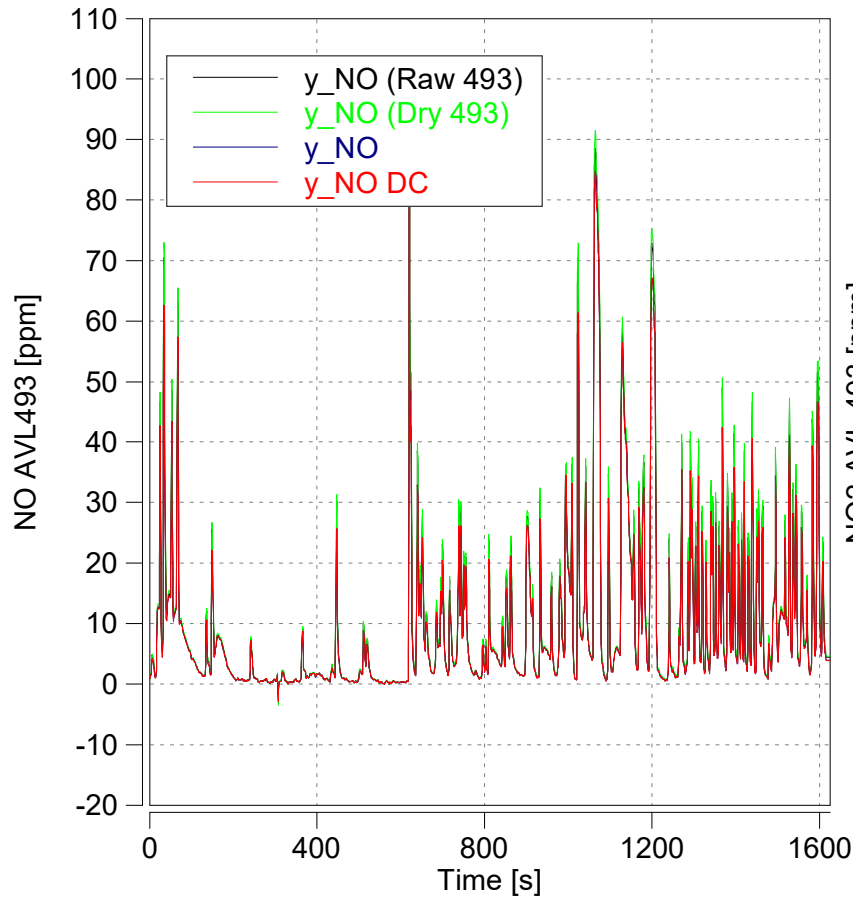
Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



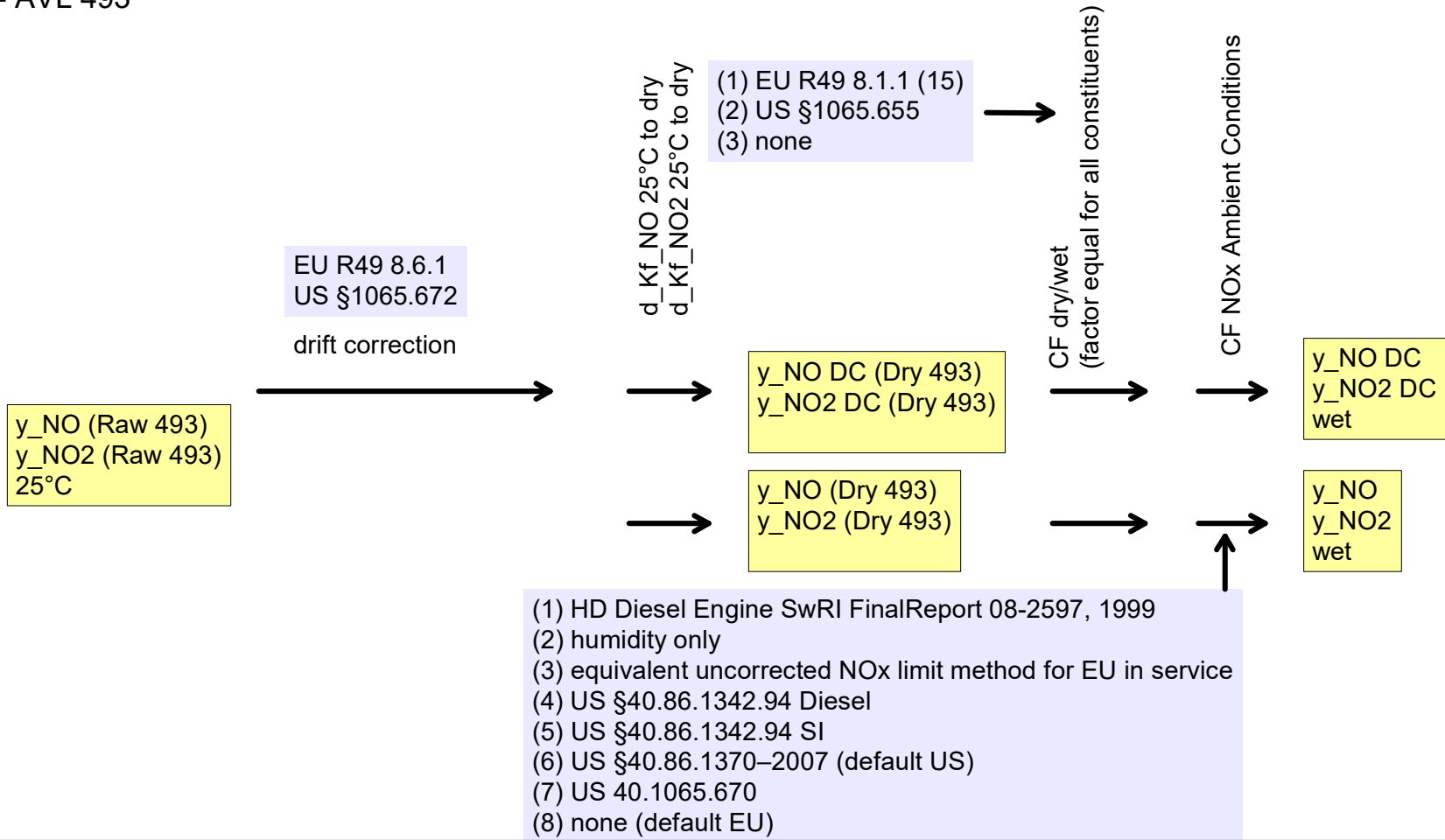


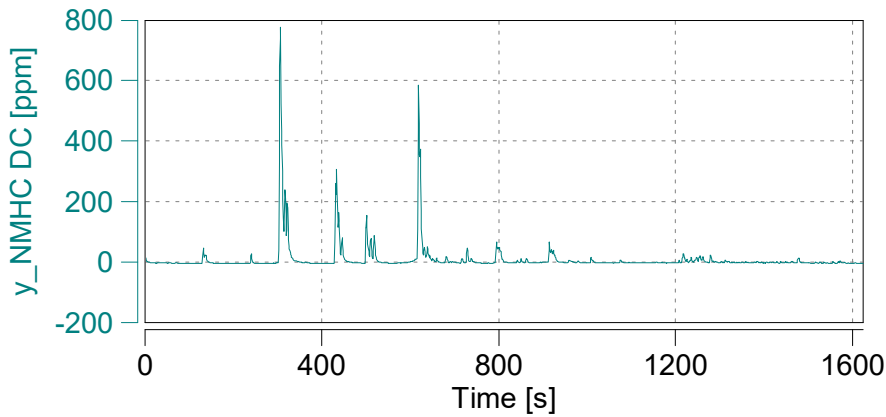
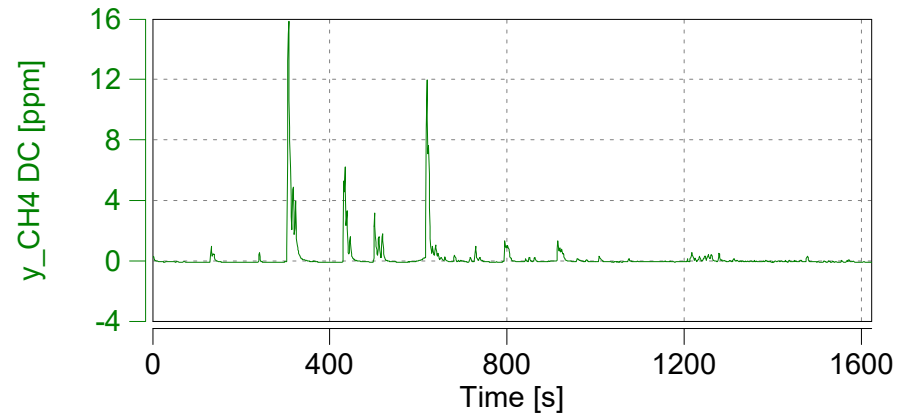
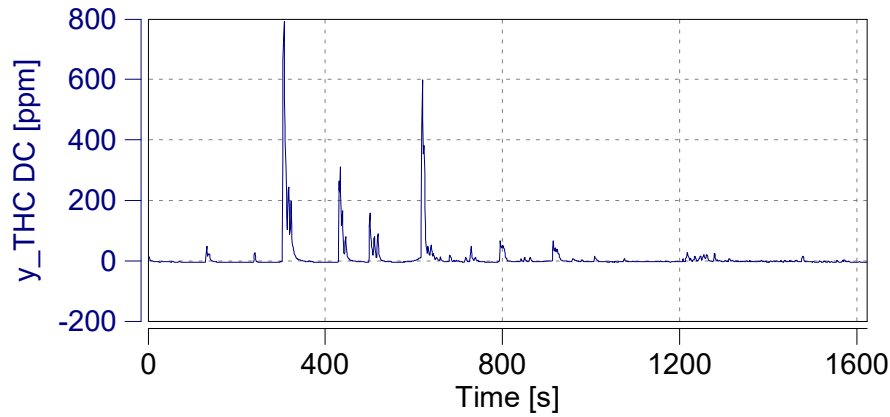
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493

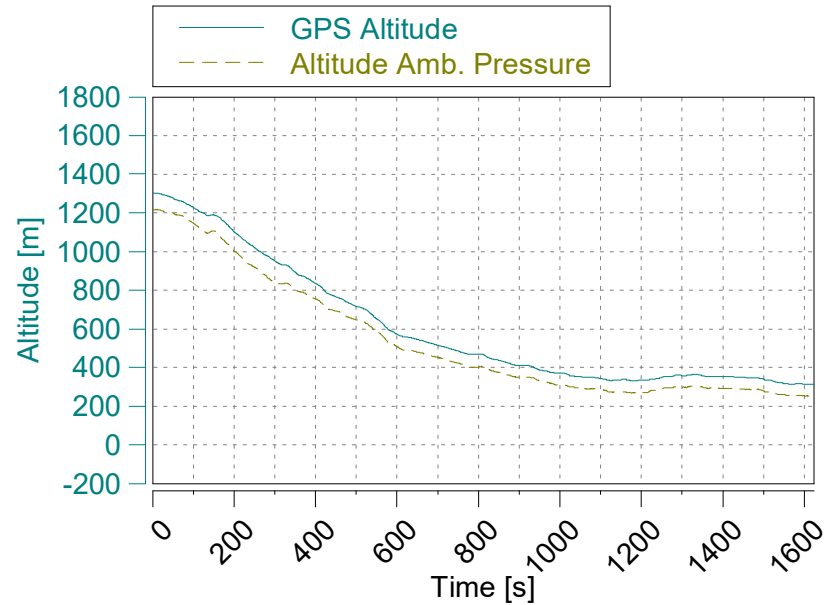
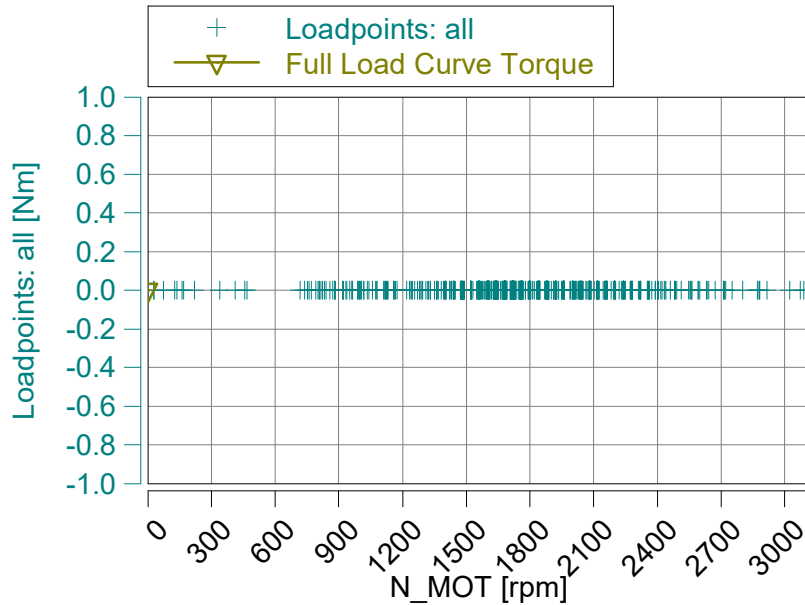




Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR X247-1267						
Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)				#ERROR		
Vehicle description (e.g. vehicle model, prototype)				PEMS		
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information		Urban	Rural	Motorway		
Shares of time of the trip in % characterised by urban, rural and motorway operation		30.9	62.3	6.8		
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating				46.7	%	
Decelerating				44.5	%	
Cruising				1.4	%	
Stop				7.5	%	
		Minimum		Maximum		
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio		m = 1.02				
		r <sup>2</sup> = 0.93				



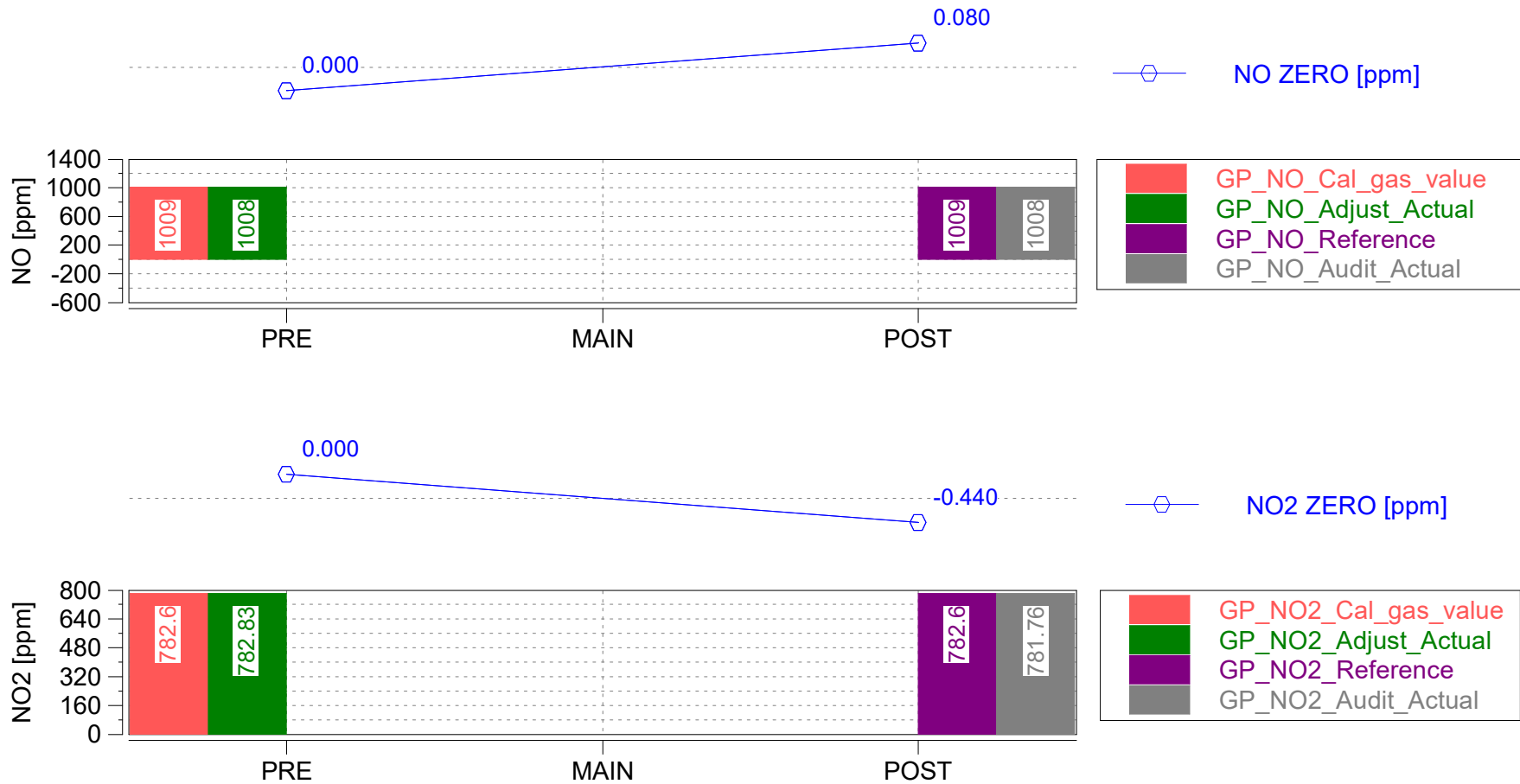
Trip Duration (a)	1624.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	294.1	g/kWh
avg BSFC ISO16183	360.1	g/kWh
Distance ECU	27.9	km
Distance GPS	27.858	km

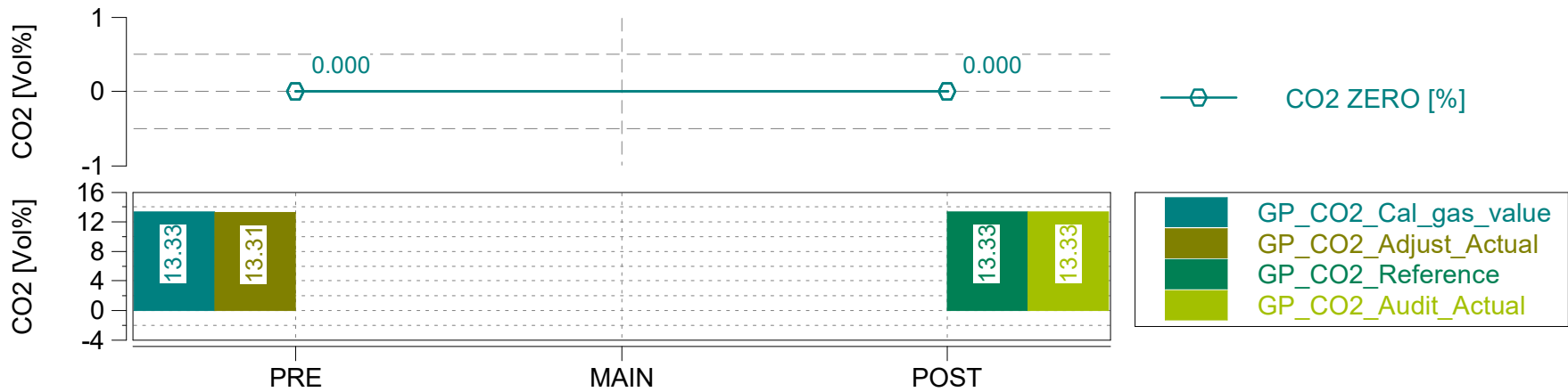
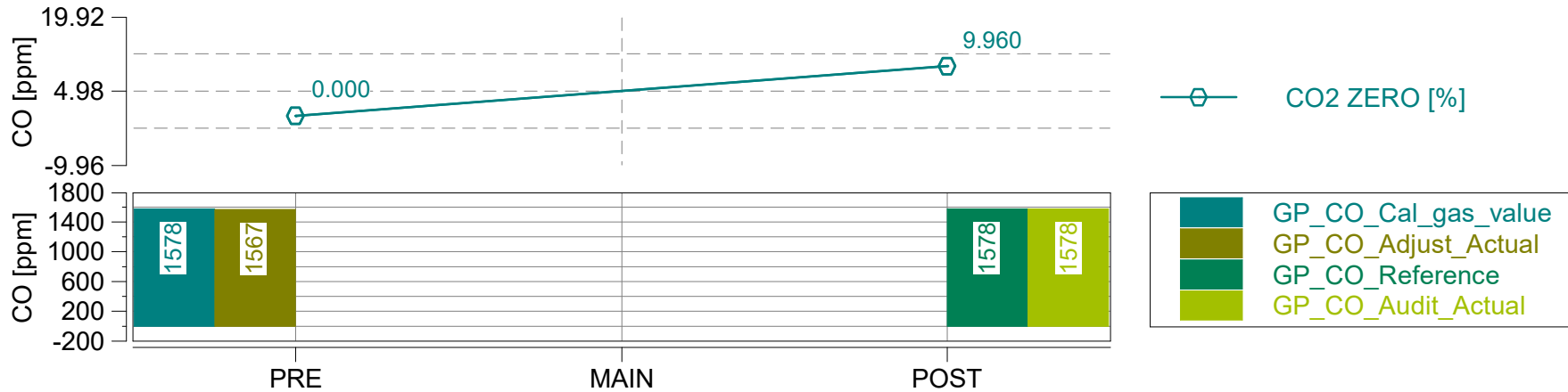
GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-05	yyyy-mm-dd
GAS PEMS Leak Check Time	11:52:38	hh:mm:ss
GAS PEMS Leak Check External	0.11	%

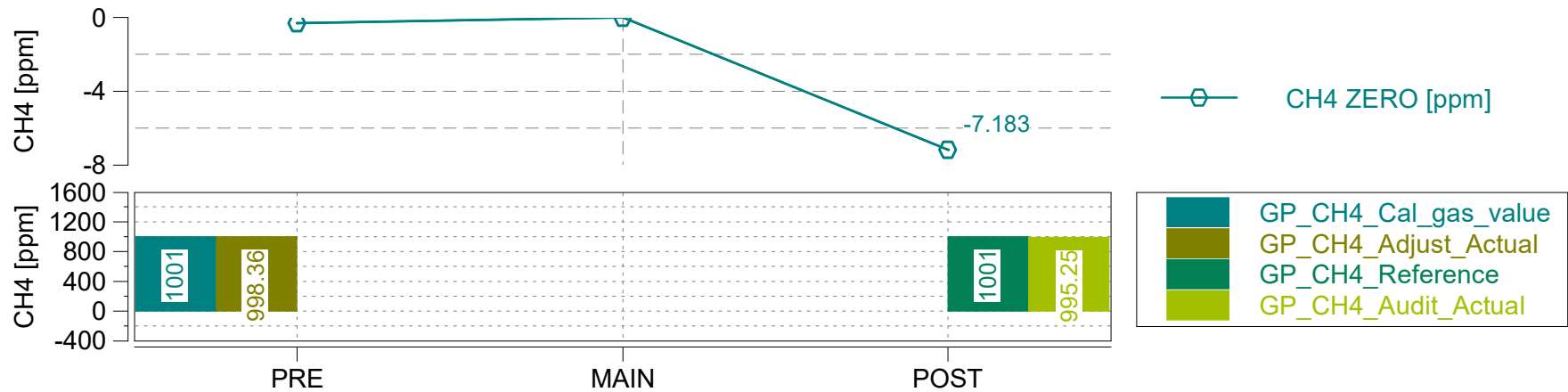
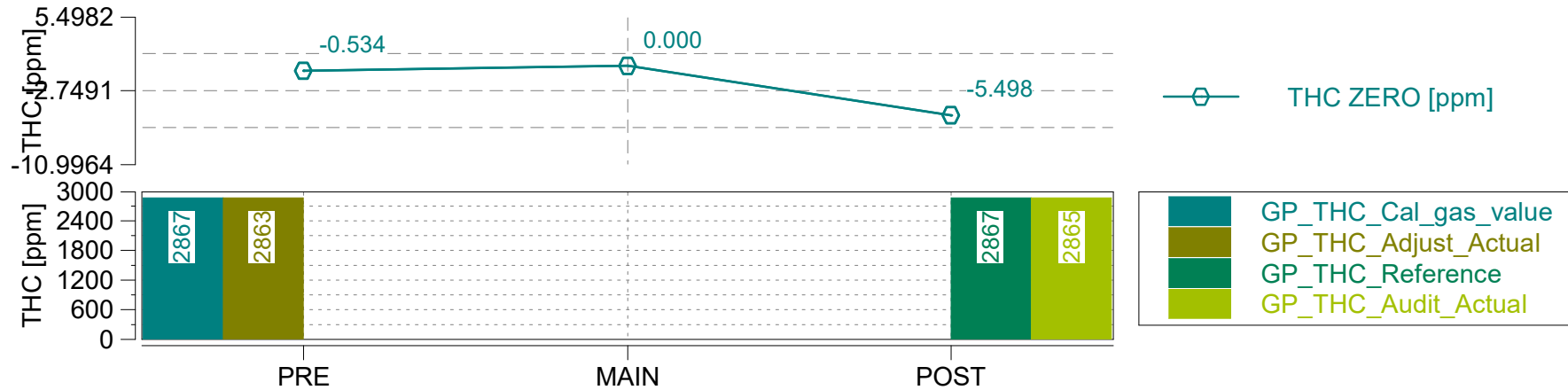
- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90







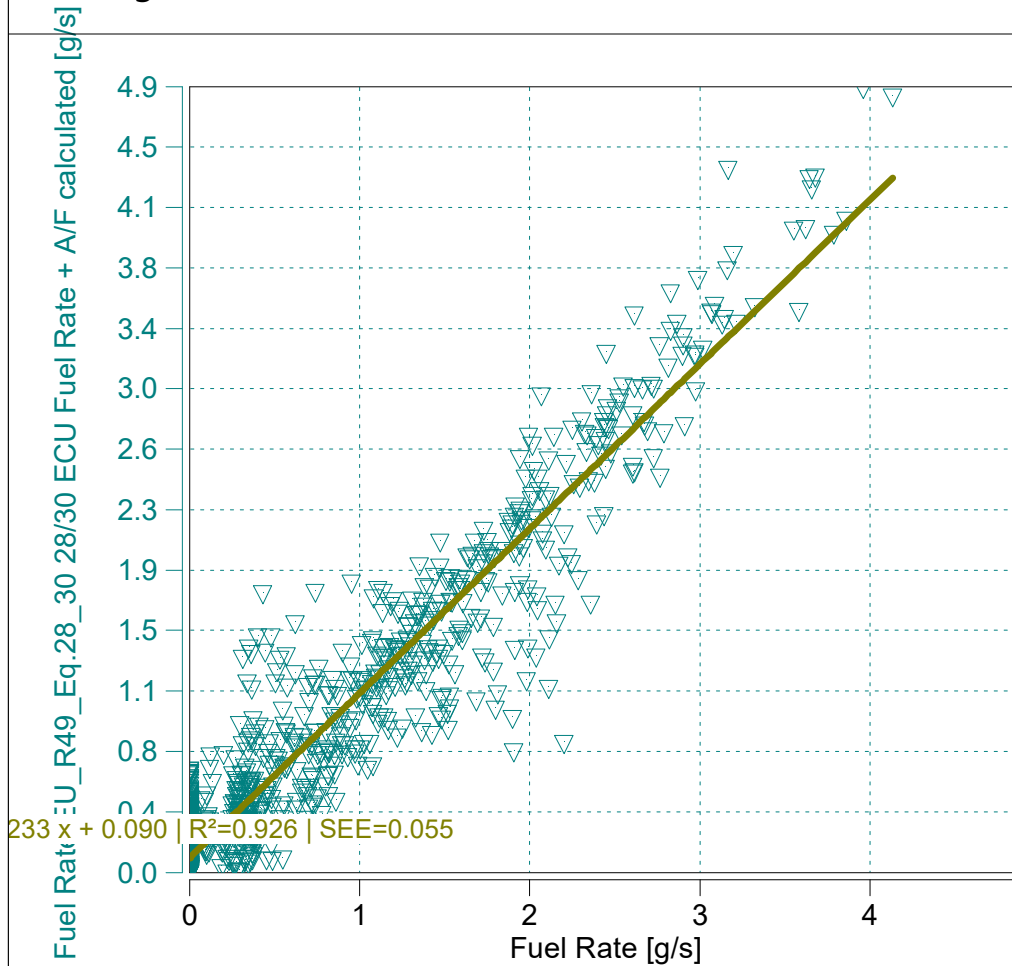
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
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Vehicle: X247 / PEMS  
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 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
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EU 582/2011/Appendix I/3.2.1 | Fuel Rate ECU and calculated



$y = 1.0233 x + 0.090 \mid R^2=0.926 \mid SEE=0.055$   
 $m = 1.02 \text{ (0.9 - 1.1 recommended)}$   
 $R^2 = 0.93 \text{ (min 0.9 mandatory)}$

Data from - to [% of Maximum]



Trip Duration	2128.00	s	ave THC	35.53843	ppm	BS CO2	555.55997	g/hphr
Trip Duration (a)	2128.00	s	ave NMHC	34.82766	ppm	BS CO	0.91114	g/hphr
Trip Distance	23.91	mi	ave CH4	0.71077	ppm	BS THC	0.04238	g/hphr
Trip Distance (a)	23.91	mi	ave CO	287.85041	ppm	BS NMHC	0.03921	g/hphr
Trip Fuel Cons. (b)	2.20	kg	ave CO2	10.91043	%	BS CH4	0.00094	g/hphr
Trip Fuel Cons. (ab)	2.20	kg	ave NOx	12.93980	ppm	BS NO (d)	0.03693	g/hphr
Trip Fuel Cons. EU (ac)	2.61	kg	ave PM	n/a	mg/m3	BS NO2	0.00741	g/hphr
Trip Fuel Cons. US (ac)	2.59	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.04434	g/hphr
Trip Fuel Economy (b)	30.79	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	30.79	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	25.90	mpg_US	tot THC	0.60008	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	26.08	mpg_US	tot NMHC	0.55508	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	30.79	mpg_US	tot CH4	0.01330	g	DS CO2	329.00343	g/mi
Trip Fuel Economy GGE (ab)	30.79	mpg_US	tot CO	12.89993	g	DS CO	0.53958	g/mi
Trip Fuel Economy EU GGE (ac)	25.90	mpg_US	tot CO2	7865.66631	g	DS THC	0.02510	g/mi
Trip Fuel Economy US GGE (ac)	26.08	mpg_US	tot NO (d)	0.52282	g	DS NMHC	0.02322	g/mi
Trip Av. Eng. Speed	1665.17	rpm	tot NO2	0.10489	g	DS CH4	0.00056	g/mi
Trip Av. Torque	67.35	lbft	tot NOx	0.62771	g	DS NO (d)	0.02187	g/mi
Trip Av. Power	23.95	hp	tot Soot	n/a	g	DS NO2	0.00439	g/mi
Trip Work			tot Soot meas	n/a	g	DS NOx	0.02626	g/mi
Trip Work (a)	14.16	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	42.23	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	34.42	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	34.72	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	67.63	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3579.48761	g/kg
Trip Av. Humidity	59.29	%	Trip Av. Veh. Speed	40.44511	mi/hr	FS CO	5.87047	g/kg
Trip Av. GPS Altitude	54.79	m	Trip Distance Share Urban	16.99486	% distance	FS THC	0.27308	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	24.21279	% distance	FS NMHC	0.25260	g/kg
			Trip Distance Share Motorway	58.79235	% distance	FS CH4	0.00605	g/kg
						FS NO (d)	0.23792	g/kg
						FS NO2	0.04773	g/kg
						FS NOx	0.28566	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Trip Summary Drift Corrected

'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



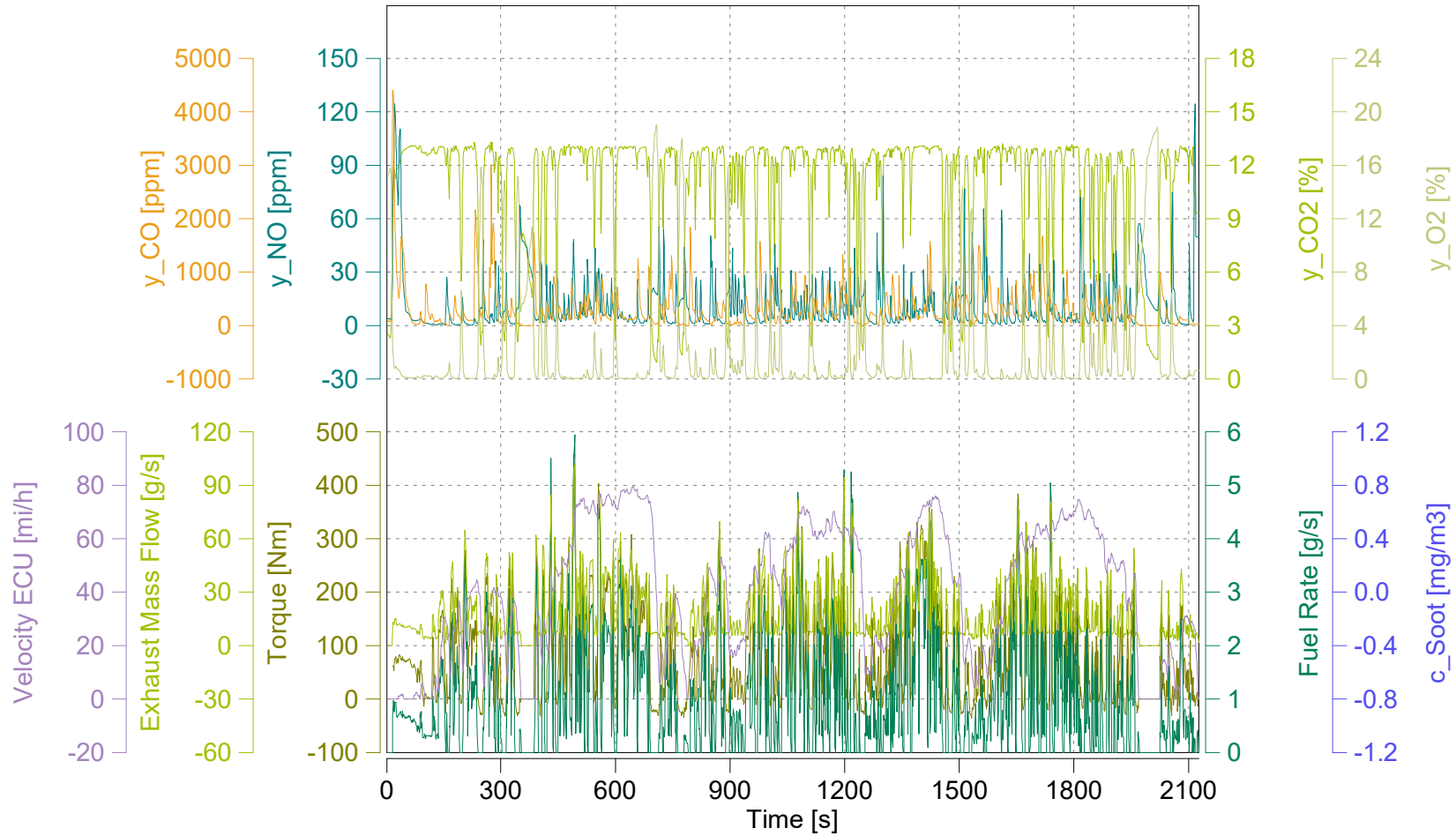
Concerto M.O.V.E, 2019

Trip Duration	2128.00	s	ave THC DC	35.84196	ppm	BS CO2 DC	555.97706	g/hphr
Trip Duration (a)	2128.00	s	ave NMHC DC	35.12512	ppm	BS CO DC	0.91389	g/hphr
Trip Distance	23.91	mi	ave CH4 DC	0.71684	ppm	BS THC DC	0.04282	g/hphr
Trip Distance (a)	23.91	mi	ave CO DC	288.71051	ppm	BS NMHC DC	0.03961	g/hphr
			ave CO2 DC	10.91862	%	BS CH4 DC	0.00095	g/hphr
Trip Fuel Cons. (b)	2.20	kg	ave NOx DC	12.94328	ppm	BS NO DC (d)	0.03693	g/hphr
Trip Fuel Cons. (ab)	2.20	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00741	g/hphr
Trip Fuel Cons. EU (ac)	2.61	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.04435	g/hphr
Trip Fuel Cons. US (ac)	2.59	kg	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
			ave PN DC	n/a	#/cm3	BS Soot meas	n/a	g/hphr
						BS PM	n/a	g/hphr
Trip Fuel Economy (b)	30.79	mpg_US				BS PN DC	n/a	#/hpr
Trip Fuel Economy (ab)	30.79	mpg_US	tot THC DC	0.60624	g			
Trip Fuel Economy EU (ac)	25.90	mpg_US	tot NMHC DC	0.56078	g	DS CO2 DC	329.25043	g/mi
Trip Fuel Economy US (ac)	26.08	mpg_US	tot CH4 DC	0.01344	g	DS CO DC	0.54121	g/mi
Trip Fuel Economy GGE (b)	30.79	mpg_US	tot CO DC	12.93892	g	DS THC DC	0.02536	g/mi
Trip Fuel Economy GGE (ab)	30.79	mpg_US	tot CO2 DC	7871.57146	g	DS NMHC DC	0.02346	g/mi
Trip Fuel Economy EU GGE (ac)	25.90	mpg_US	tot NO DC (d)	0.52293	g	DS CH4 DC	0.00056	g/mi
Trip Fuel Economy US GGE (ac)	26.08	mpg_US	tot NO2 DC	0.10494	g	DS NO DC (d)	0.02187	g/mi
			tot NOx DC	0.62787	g	DS NO2 DC	0.00439	g/mi
Trip Av. Eng. Speed	1665.17	rpm	tot Soot	n/a	g	DS NOx DC	0.02626	g/mi
Trip Av. Torque	67.35	lbft	tot Soot meas	n/a	g	DS Soot	n/a	g/mi
Trip Av. Power	23.95	hp	tot PM	n/a	g	DS Soot meas	n/a	g/mi
Trip Work			tot PN DC	n/a	#	DS PM	n/a	g/mi
Trip Work (a)	14.16	hphr				DS PN DC	n/a	#/mi
			PM measurement type	0.00000	-			
Trip Exhaust Mass	42.23	kg	tot Soot on PM filter (estim.)	0.00000	mg	FS CO2 DC	3582.17492	g/kg
Trip Exhaust Mass EU (ac)	34.42	kg	Soot --> PM simple scaling factor	1.00000	-	FS CO DC	5.88821	g/kg
Trip Exhaust Mass US (ac)	34.72	kg				FS THC DC	0.27589	g/kg
			Trip Av. Veh. Speed	40.44511	mi/hr	FS NMHC DC	0.25520	g/kg
Trip Av. Amb. Temperature	67.63	deg_F				FS CH4 DC	0.00611	g/kg
Trip Av. Humidity	59.29	%	Trip Distance Share Urban	16.99486	% distance	FS NO DC (d)	0.23797	g/kg
Trip Av. GPS Altitude	54.79	m	Trip Distance Share Rural	24.21279	% distance	FS NO2 DC	0.04776	g/kg
			Trip Distance Share Motorway	58.79235	% distance	FS NOx DC	0.28573	g/kg
Fuel Type	Petrol (E10)					FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	n/a	#/kg

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

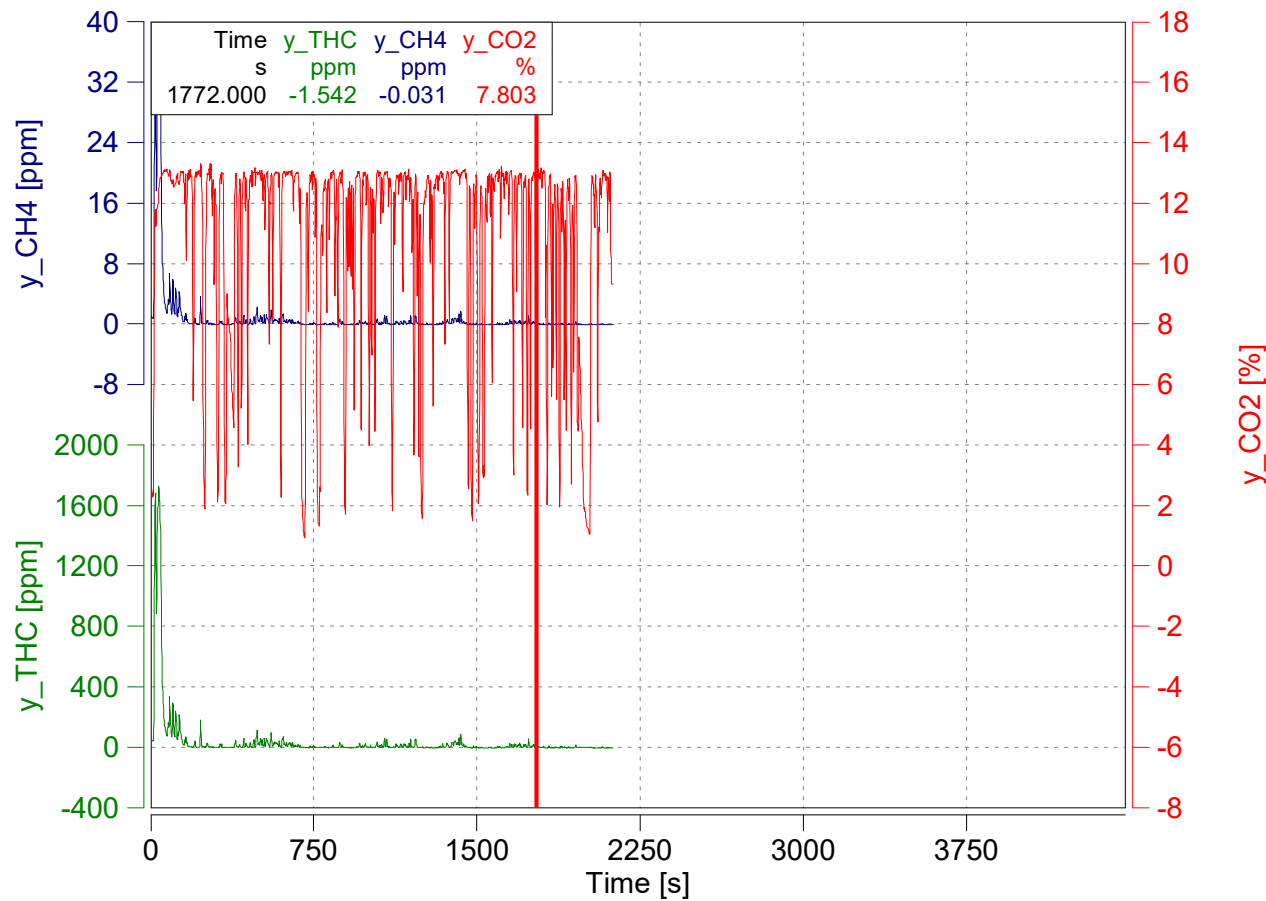
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
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Absolute Time Shifts

y_THC	s	-5.2
y_CH4	s	-7.2

Reset Time Shifts in Plot

Apply Current Values

Case: X247-1267

Page: Ambient Conditions

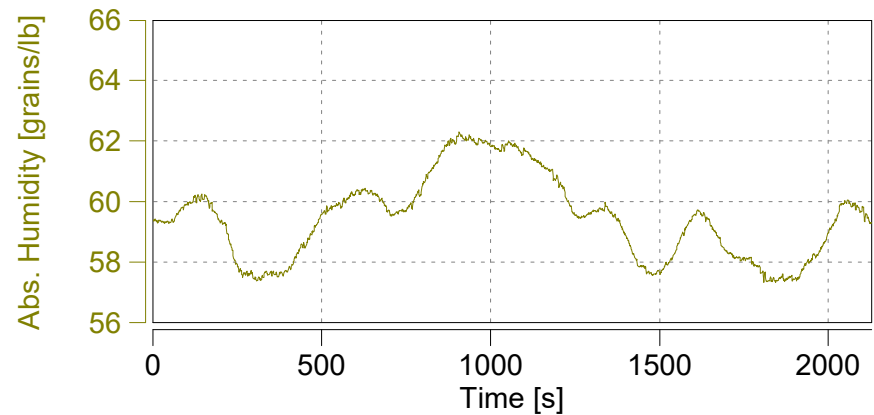
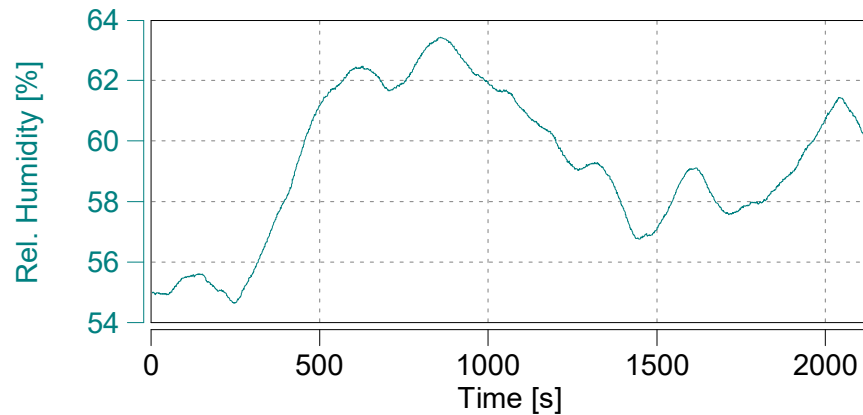
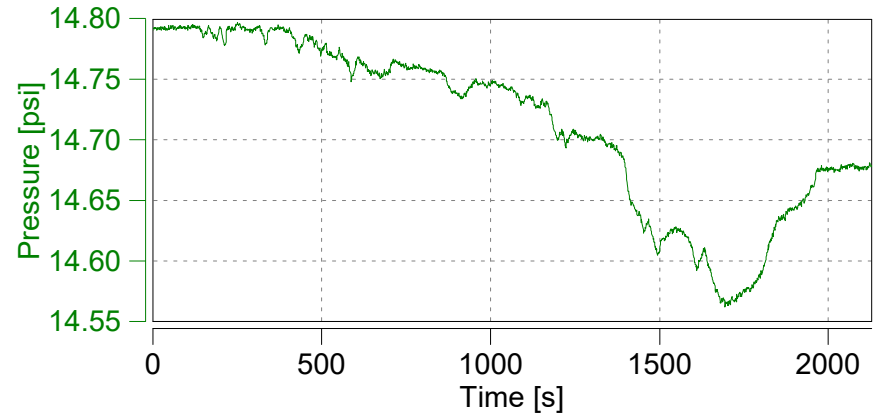
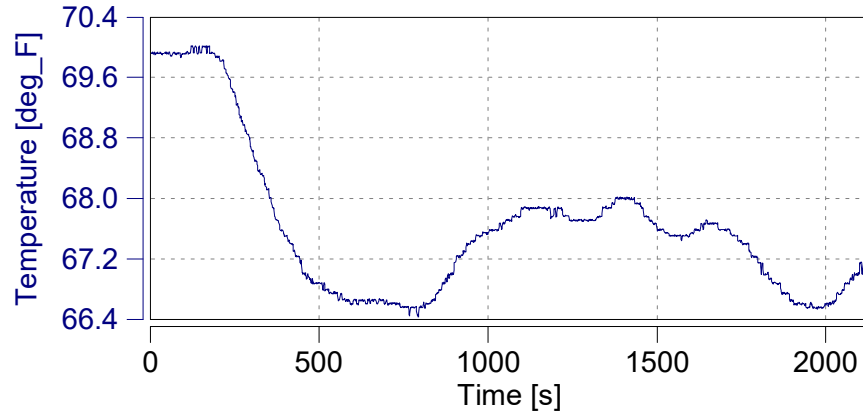
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
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NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
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Case: X247-1267

Page: GPS

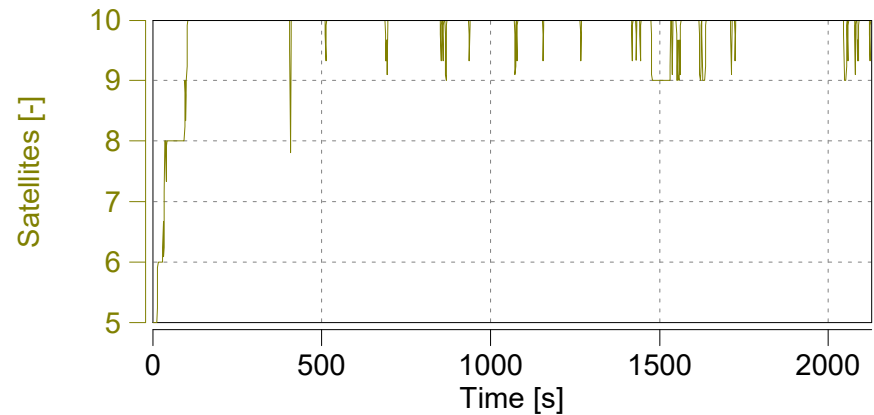
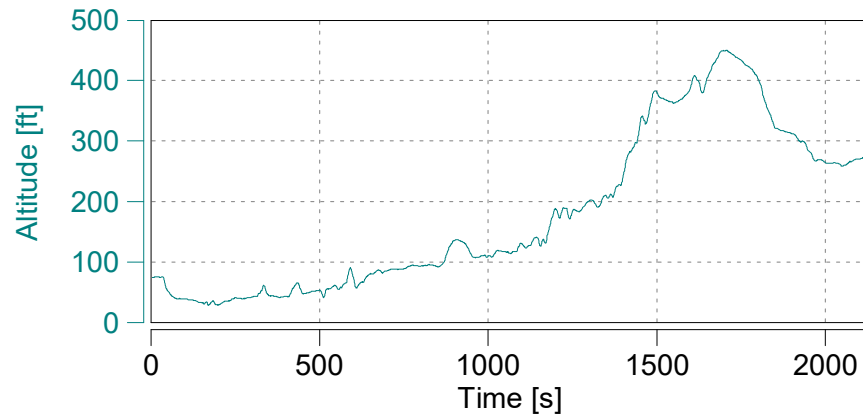
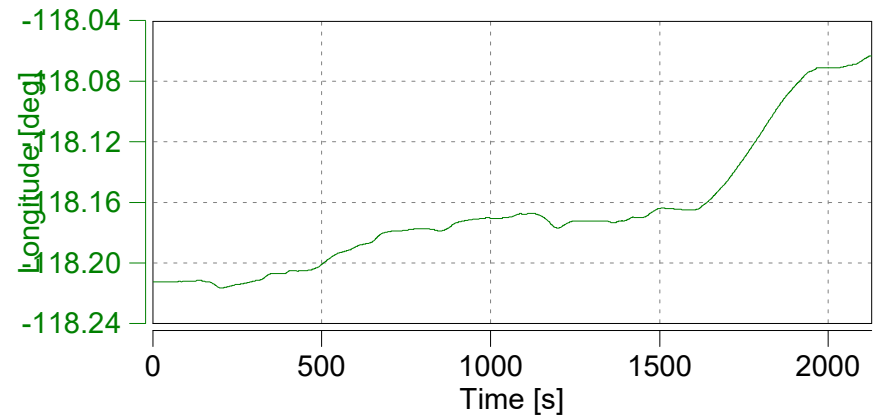
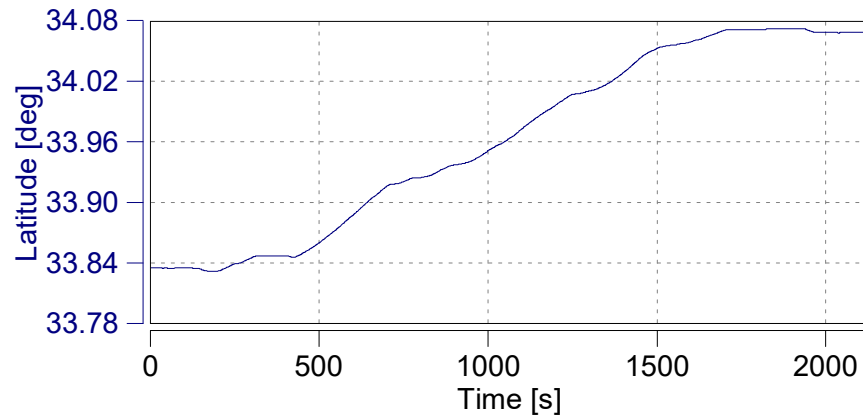
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0

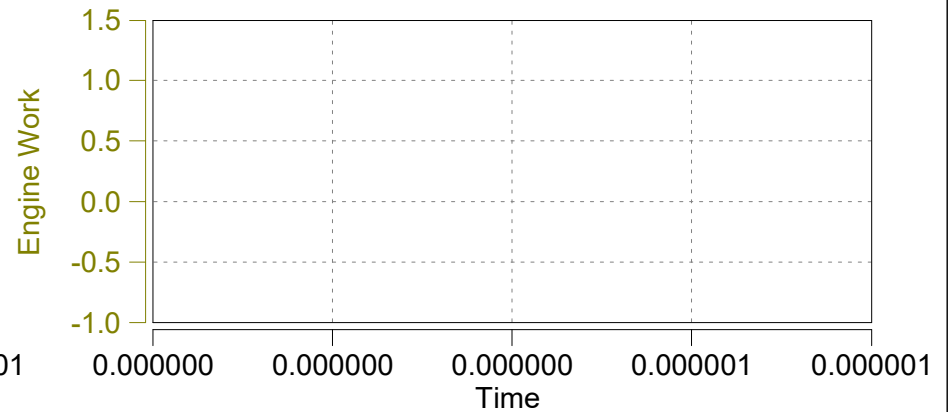
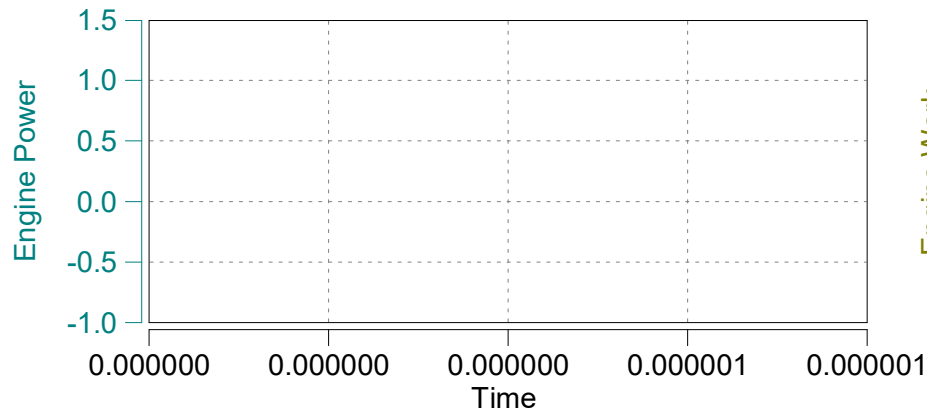
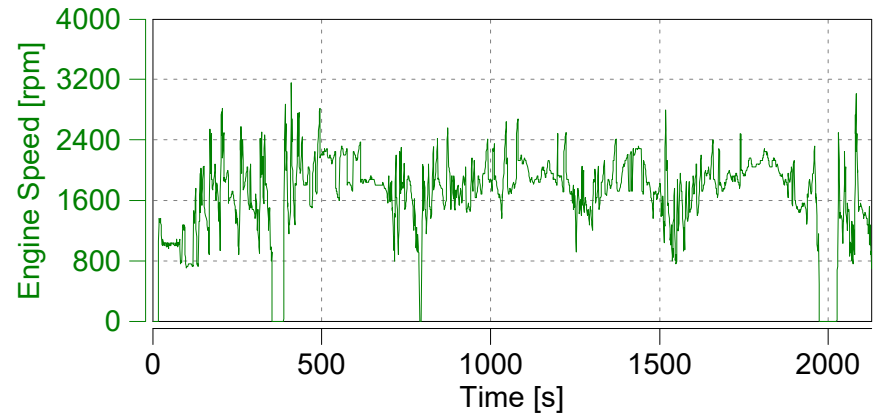
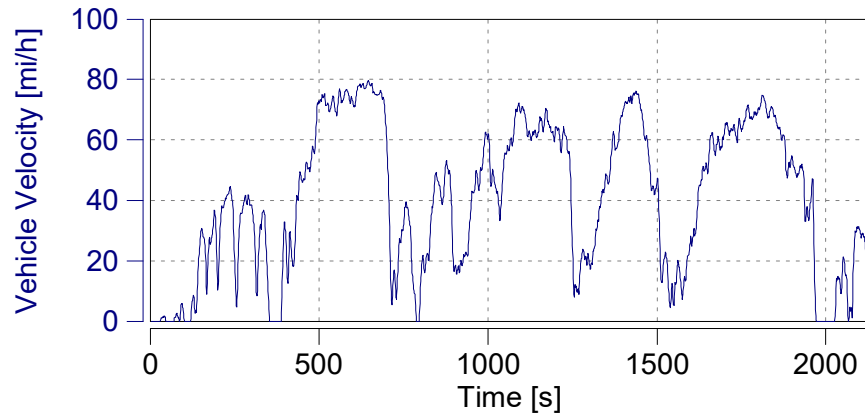


Concerto M.O.V.E, 2019

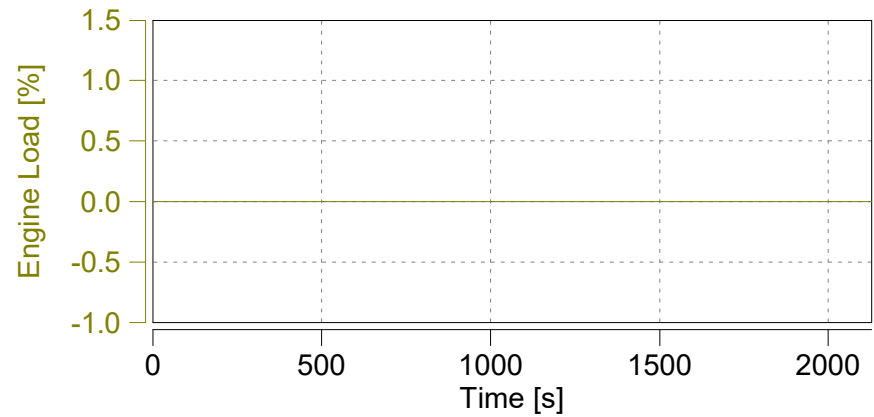
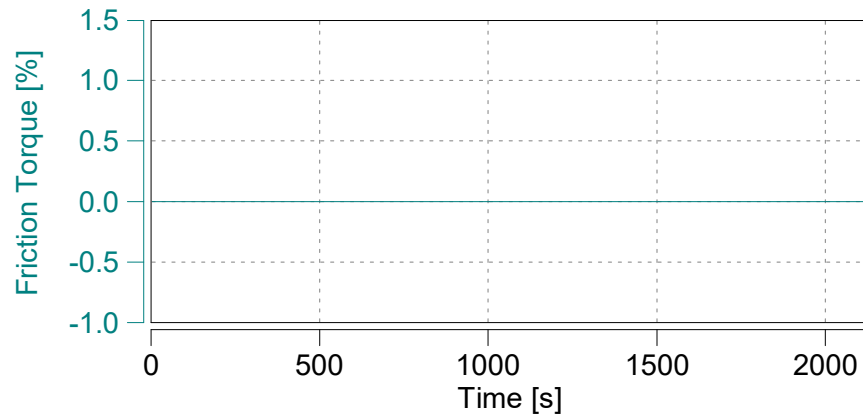
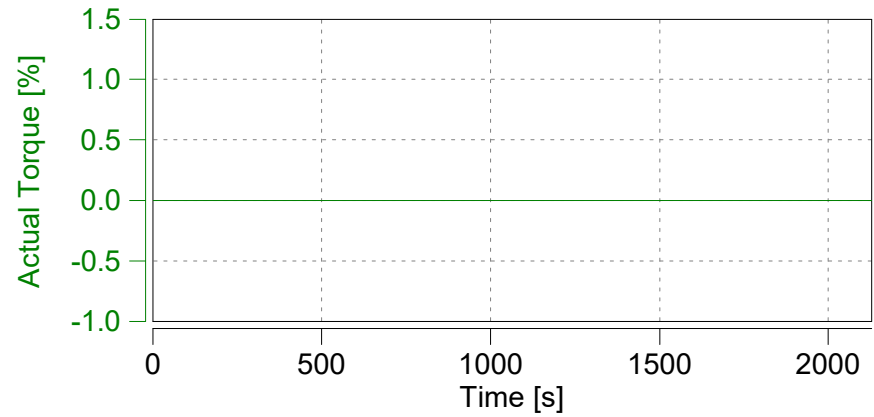
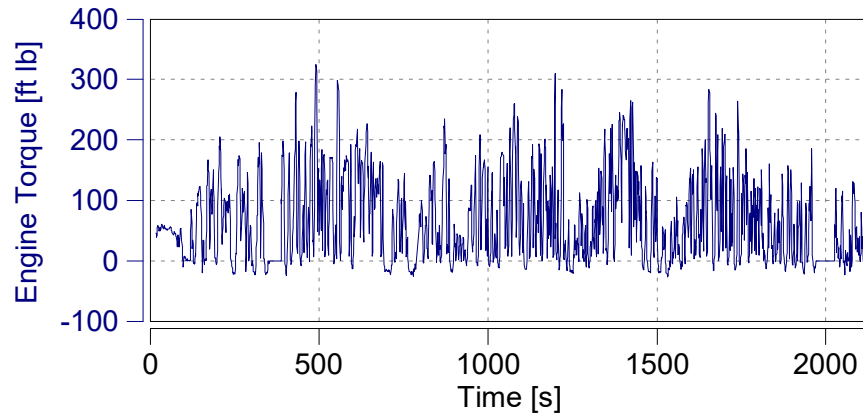


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
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Case: X247-1267

Page: Engine (3)

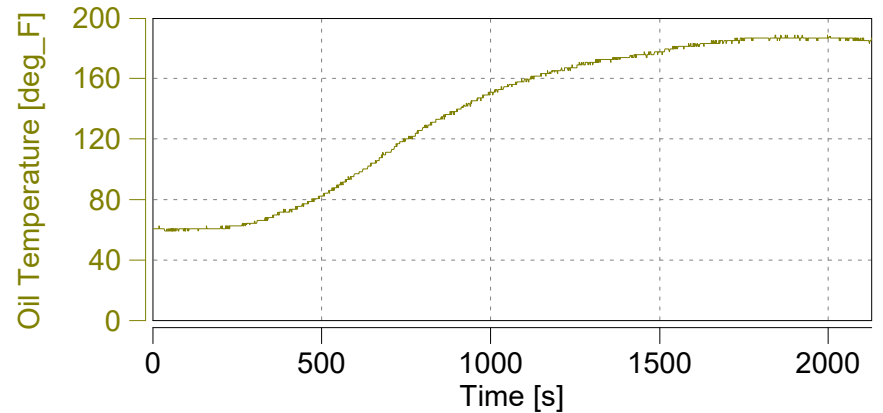
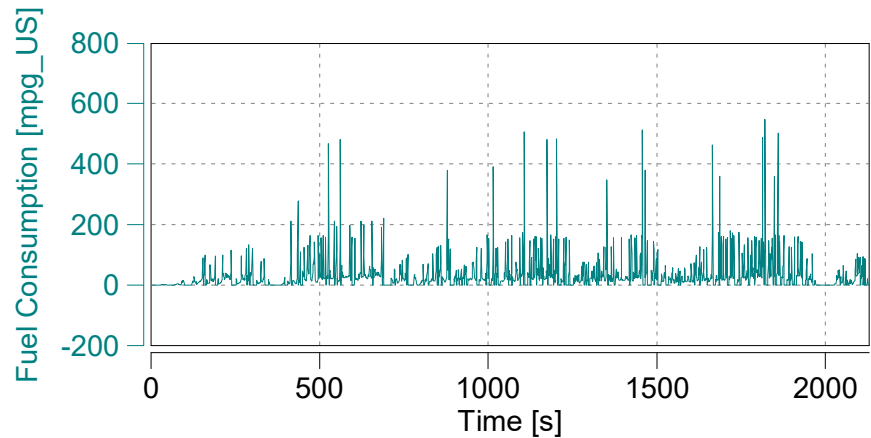
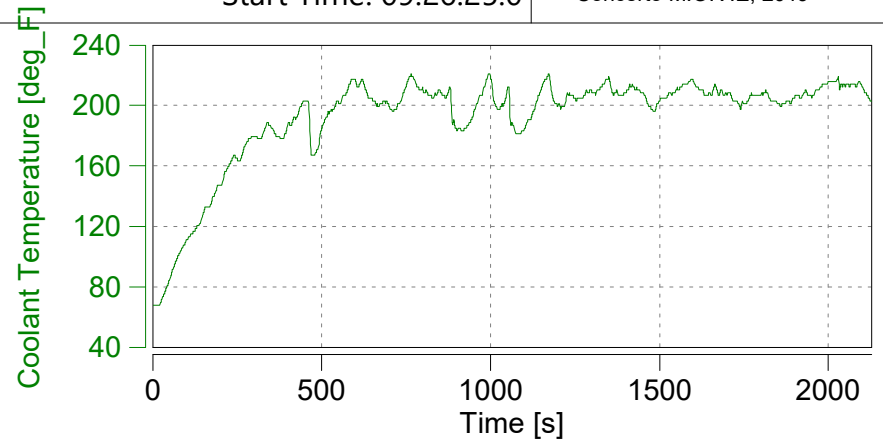
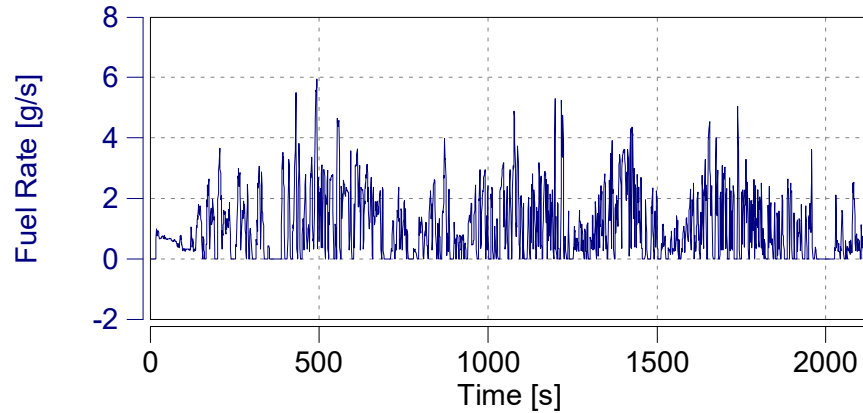
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Exhaust Flow (1)

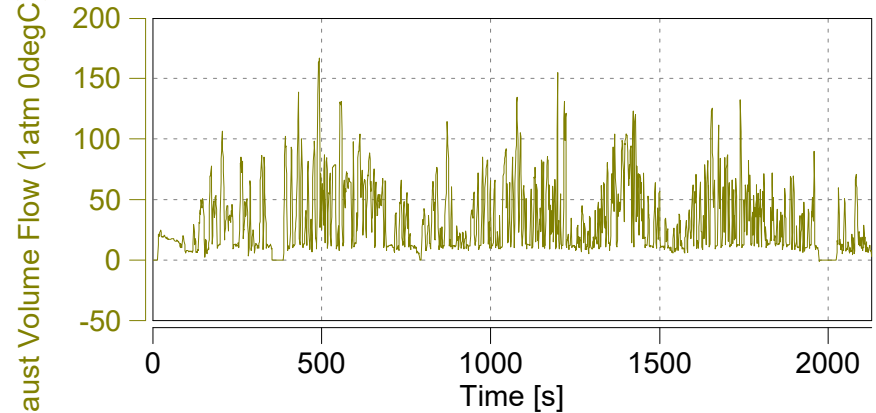
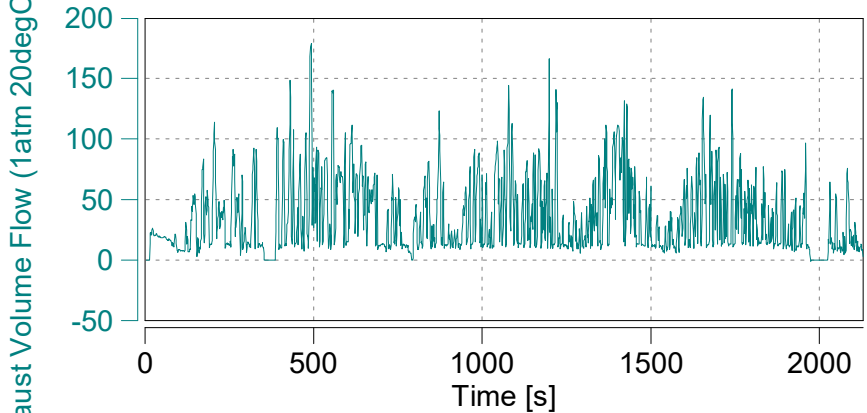
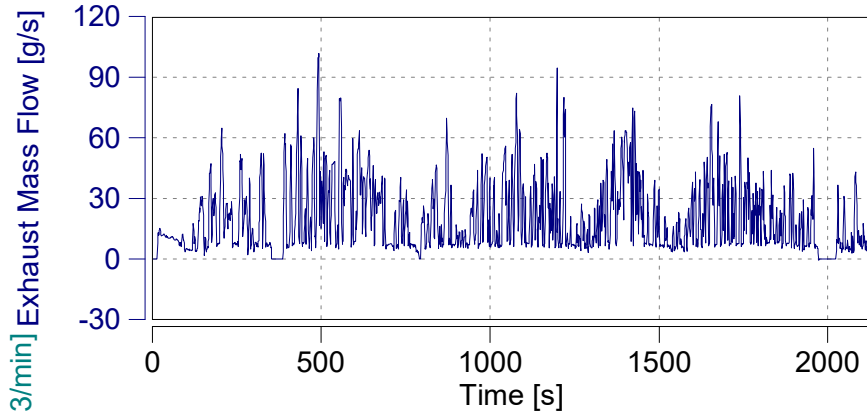
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Exhaust Flow (2)

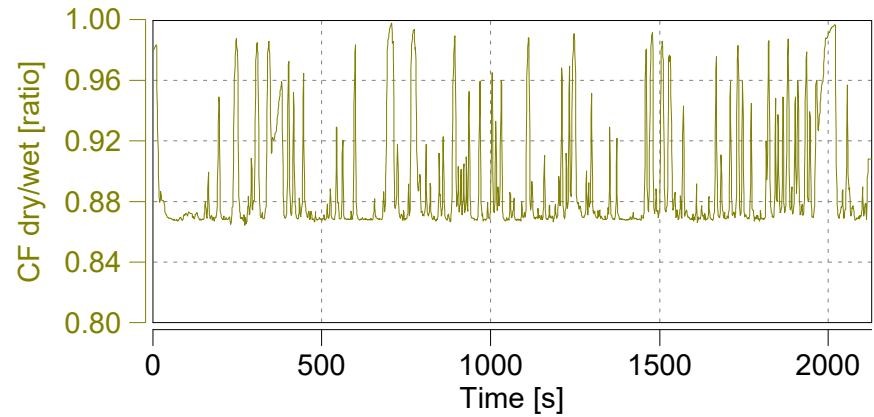
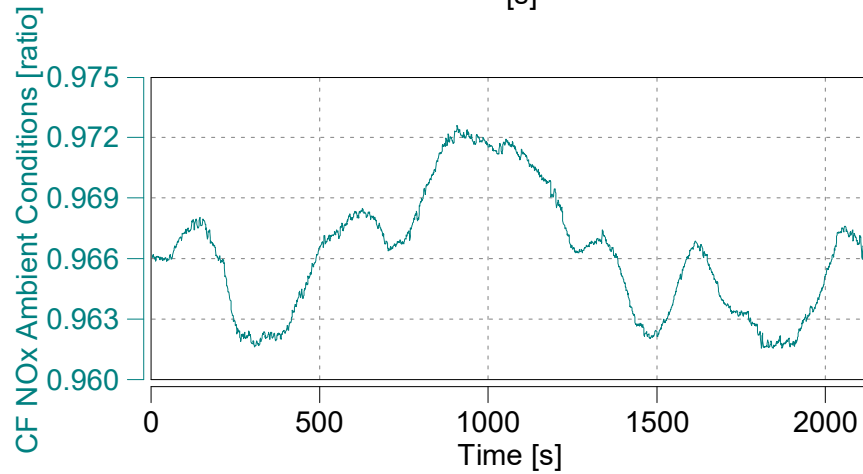
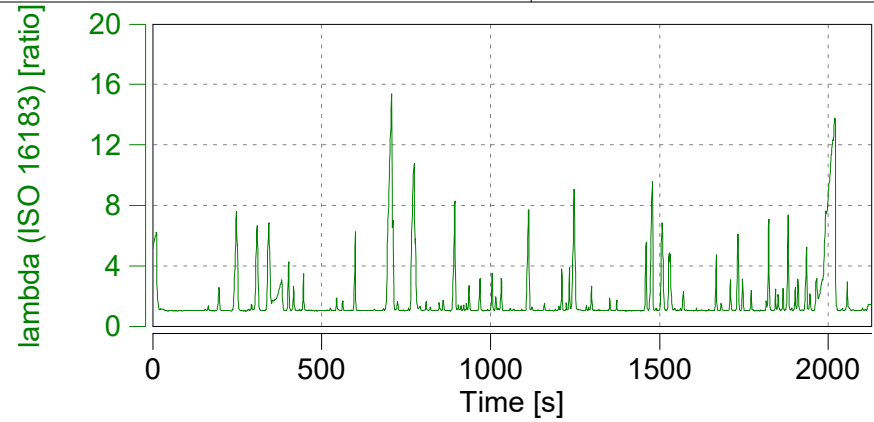
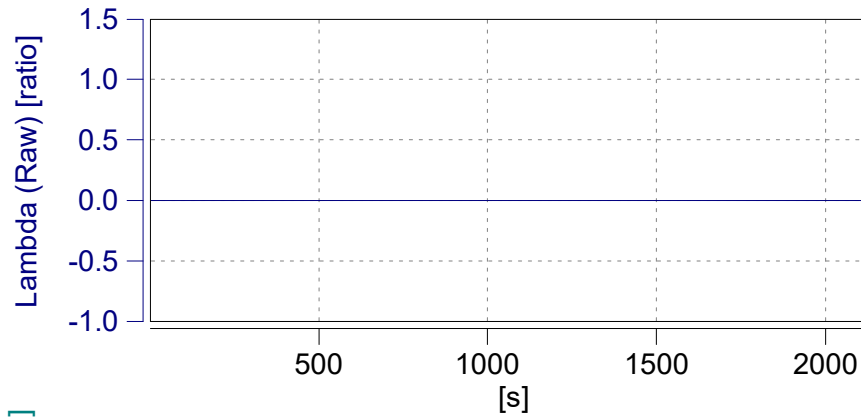
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Corrected Emissions (1)

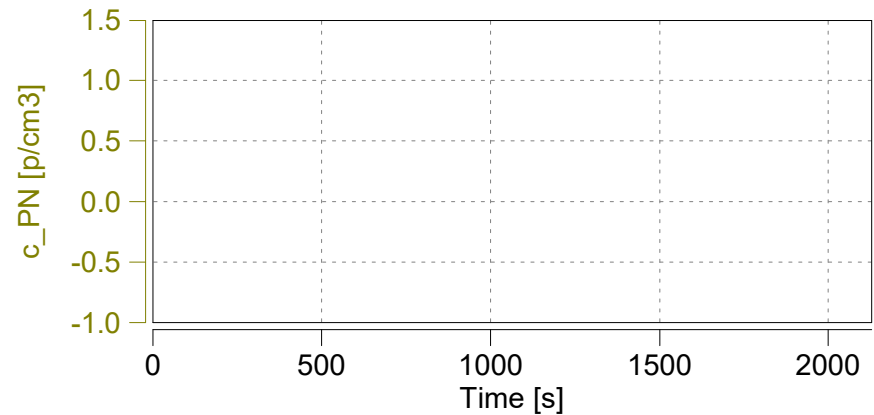
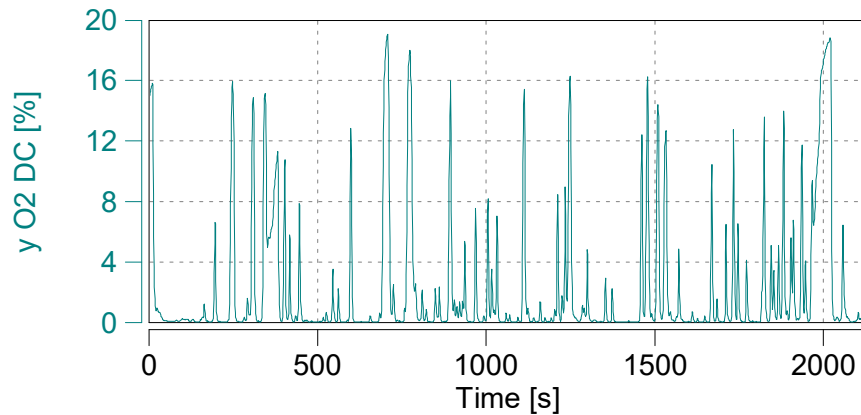
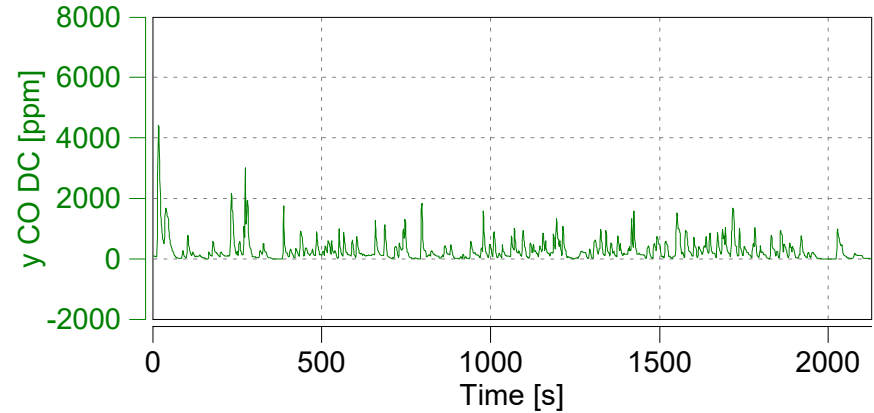
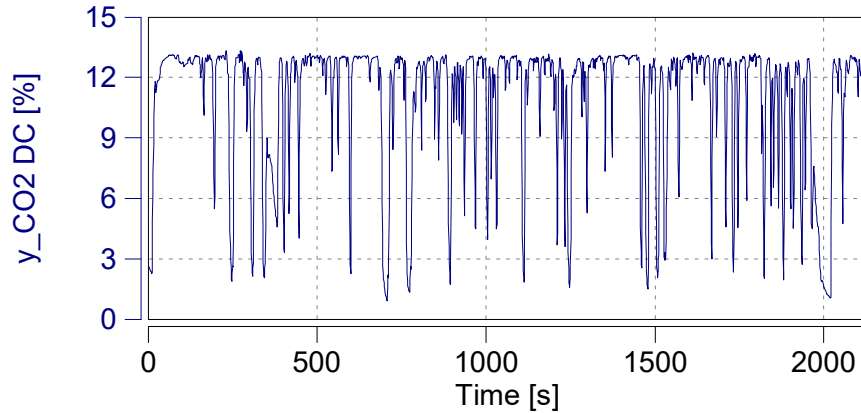
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Corrected Emissions (2)

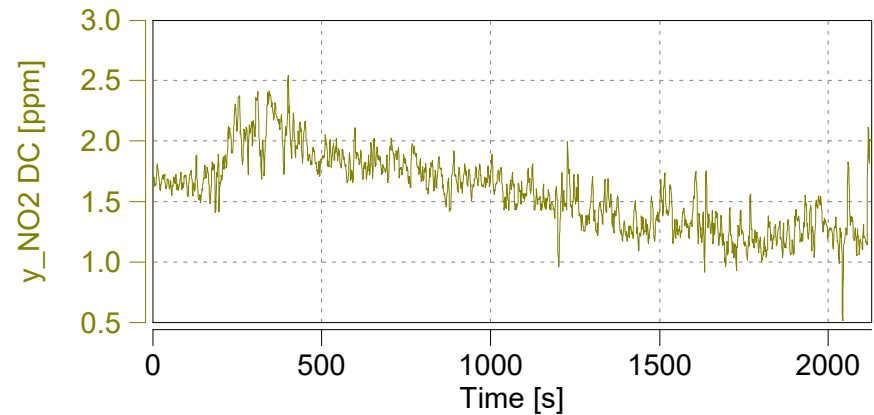
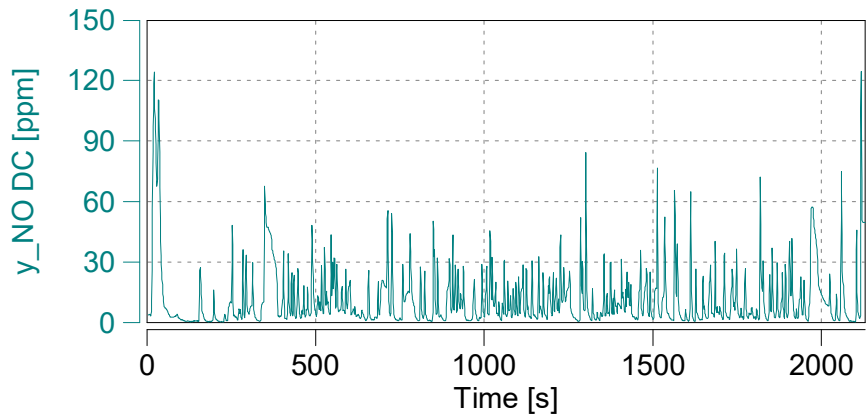
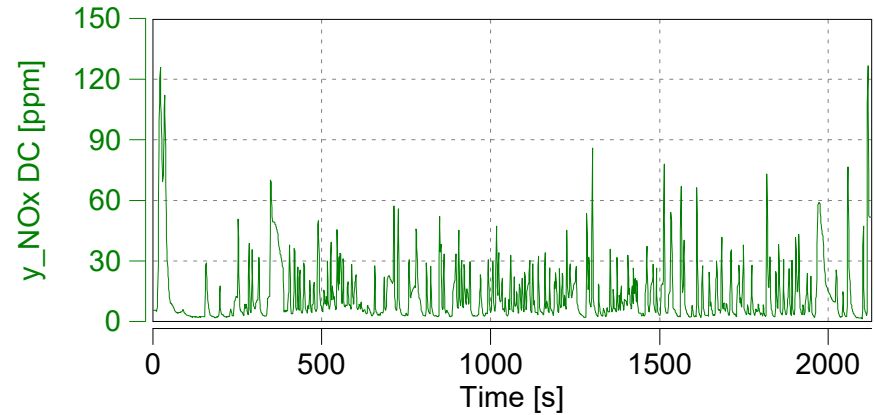
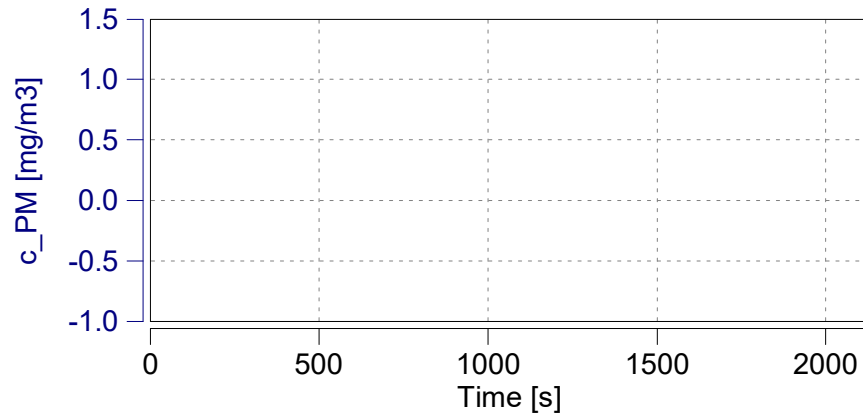
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0

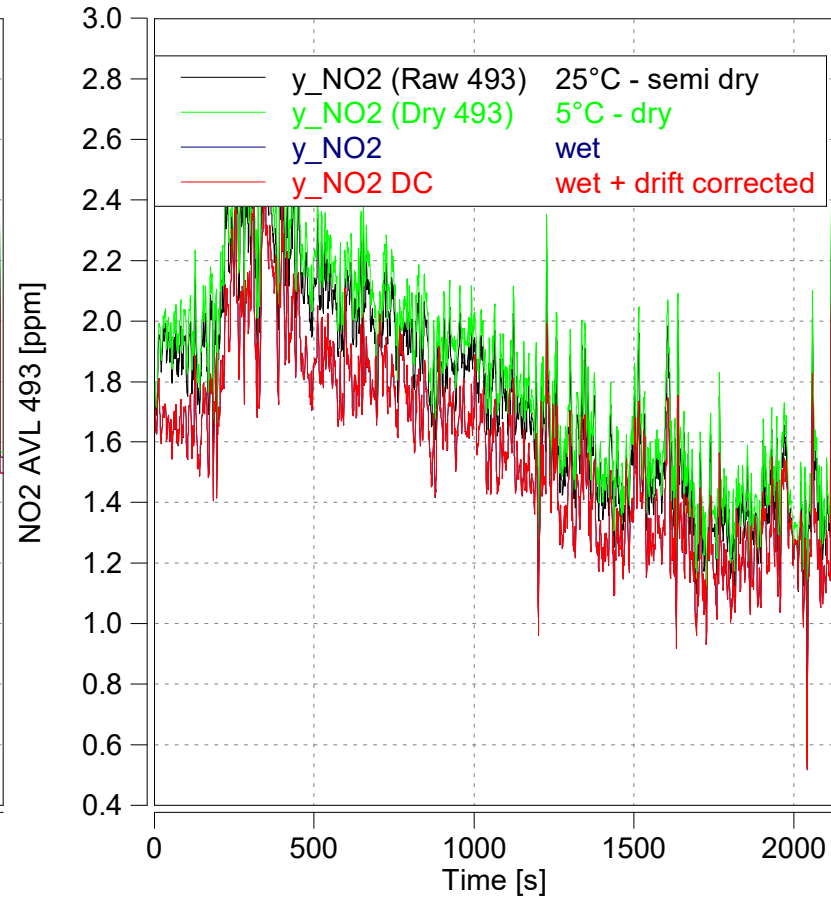
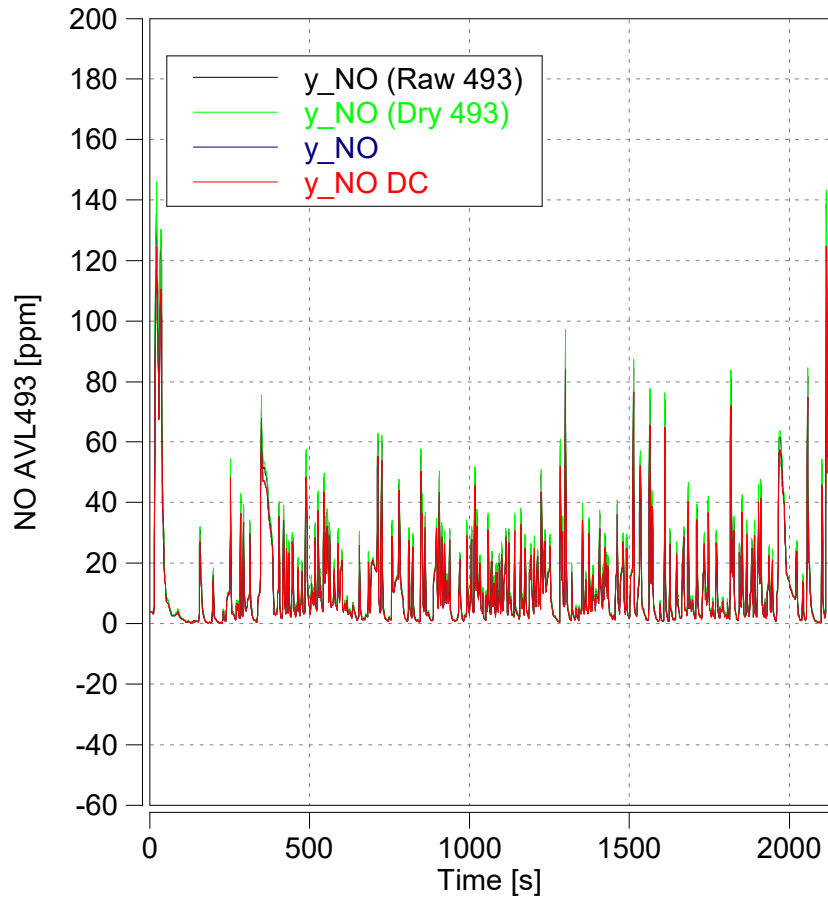


Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

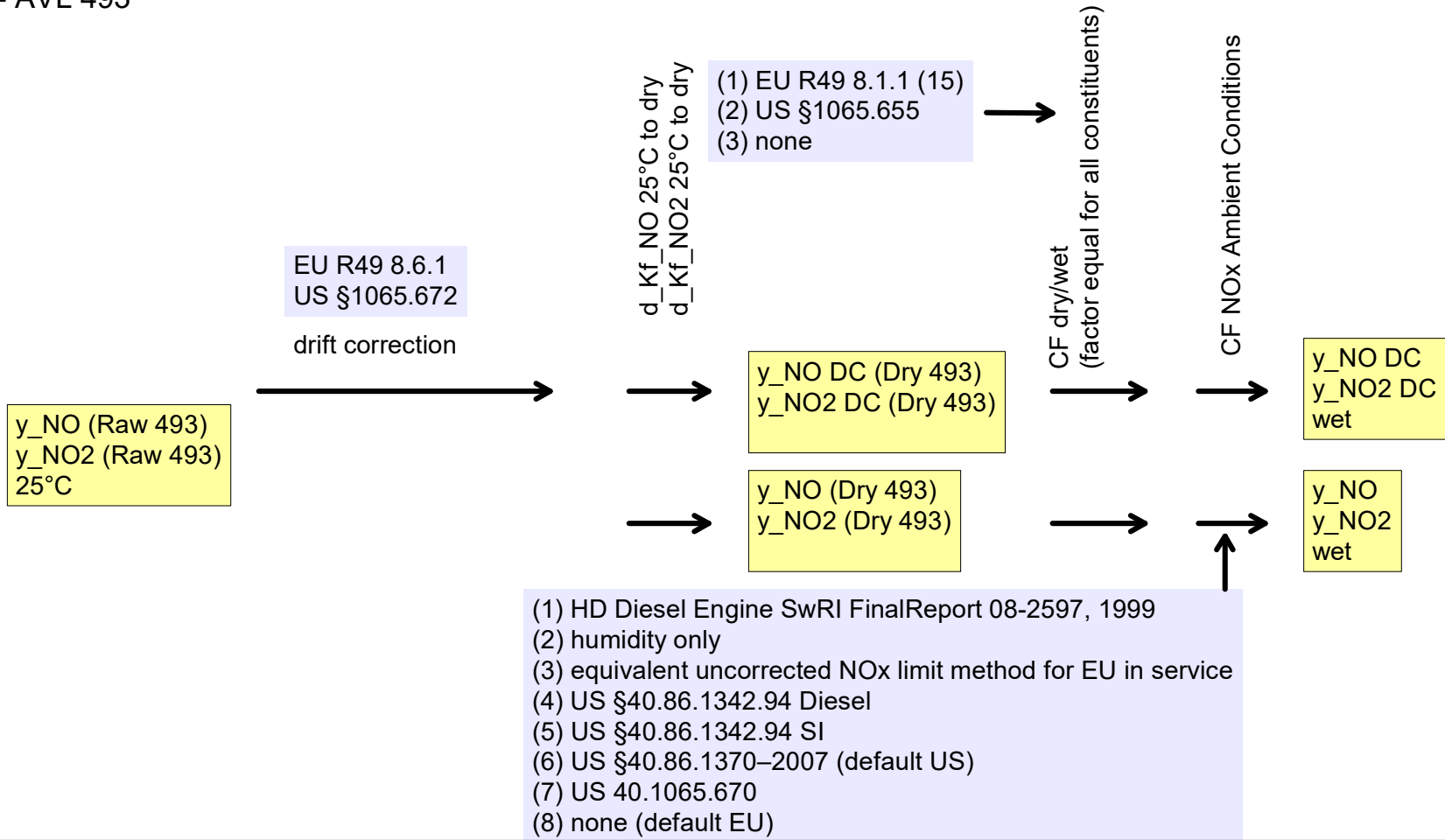


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

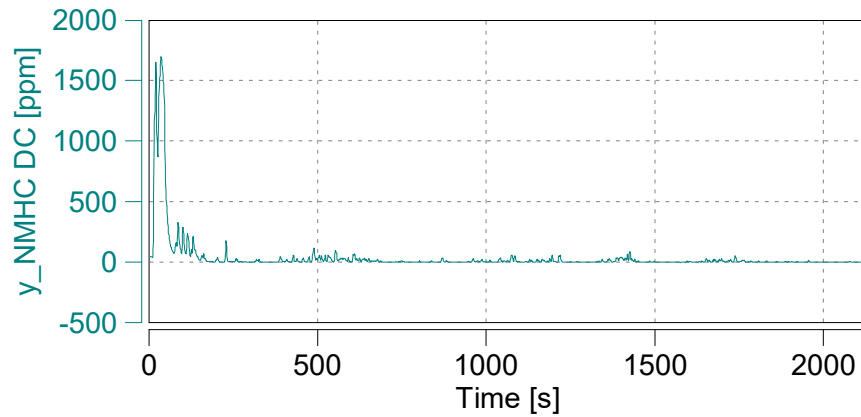
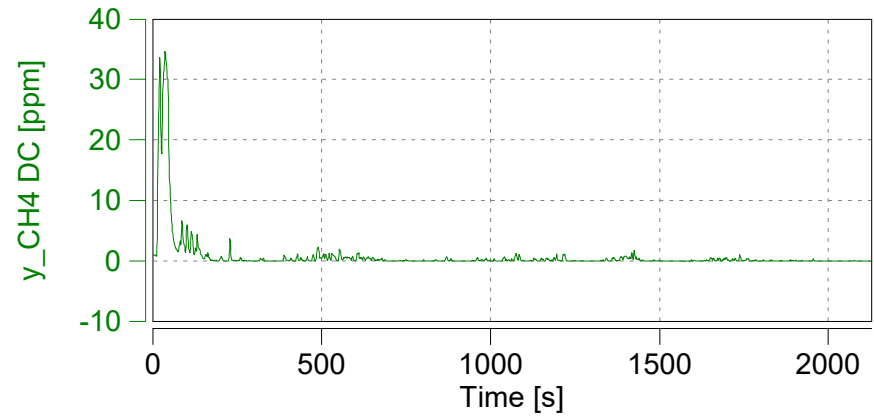
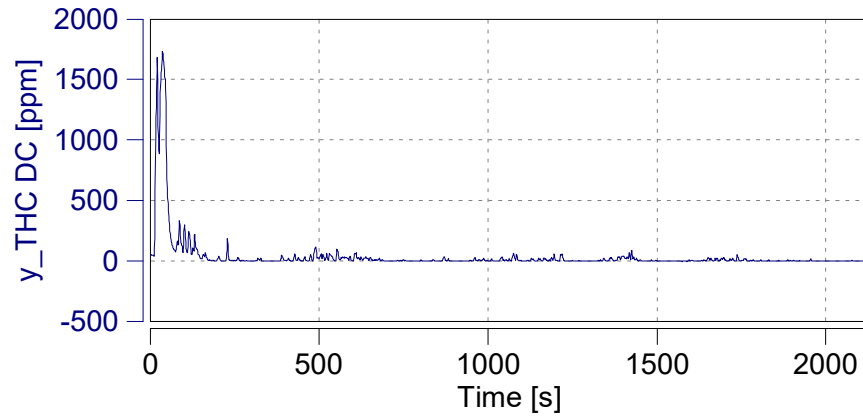
Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493





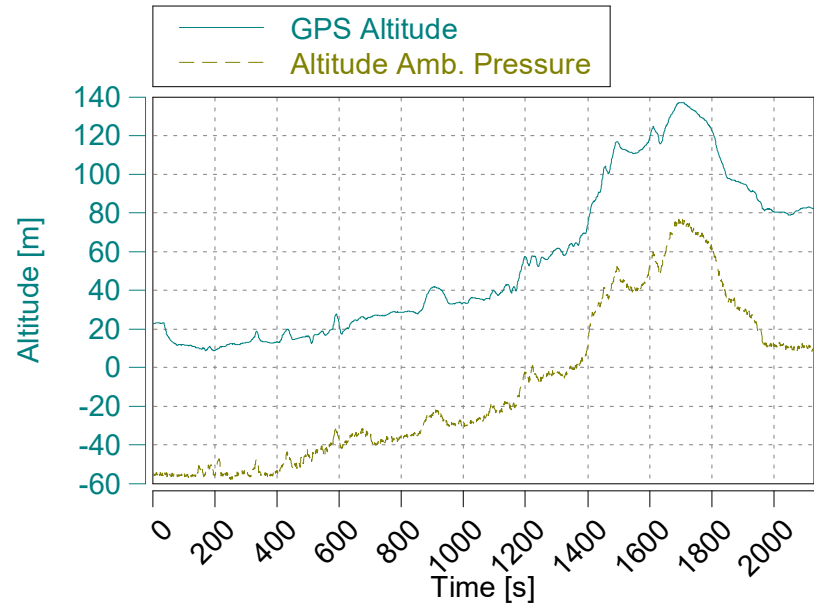
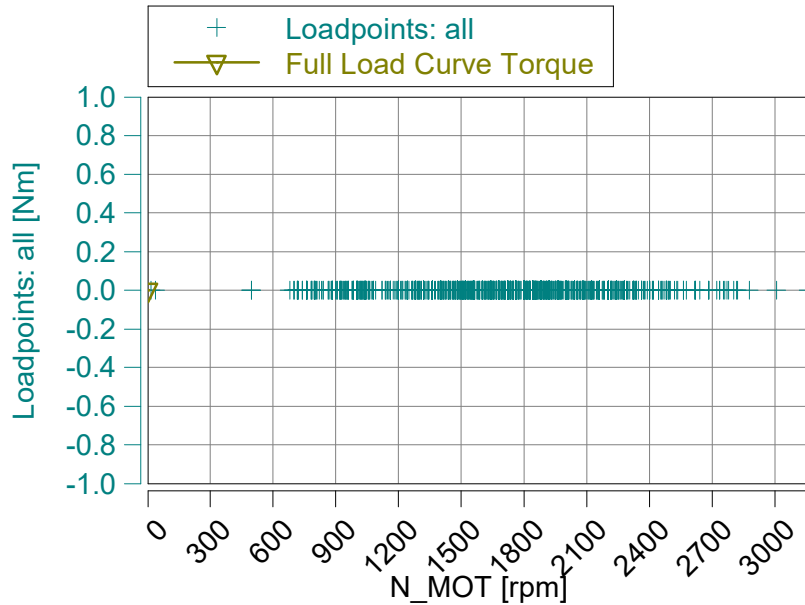


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR  
X247-1267

Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)	#ERROR					
Vehicle description (e.g. vehicle model, prototype)	PEMS					
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information	Urban		Rural		Motorway	
Shares of time of the trip in % characterised by urban, rural and motorway operation	43.5		21.2		35.2	
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating					46.8	%
Decelerating					43.8	%
Cruising					0.9	%
Stop					8.5	%
			Minimum		Maximum	
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio			m = 1.04			
			r <sup>2</sup> = 0.95			



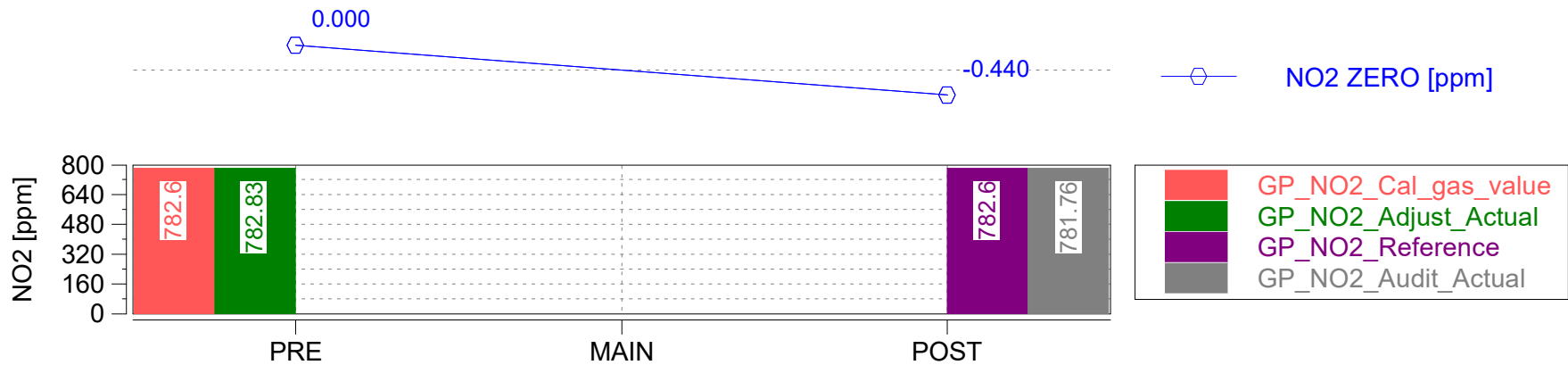
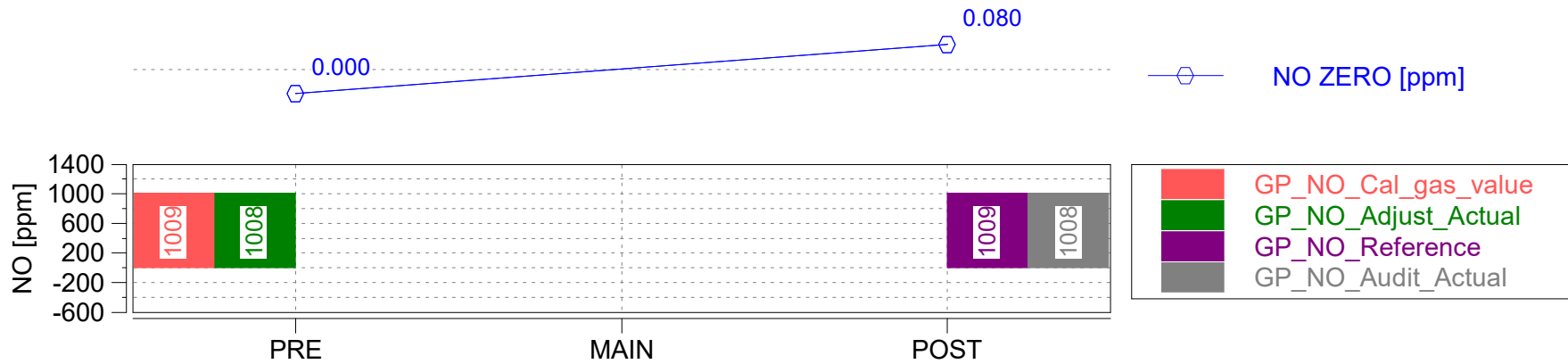
Trip Duration (a)	2128.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	208.1	g/kWh
avg BSFC ISO16183	247.4	g/kWh
Distance ECU	38.5	km
Distance GPS	38.434	km

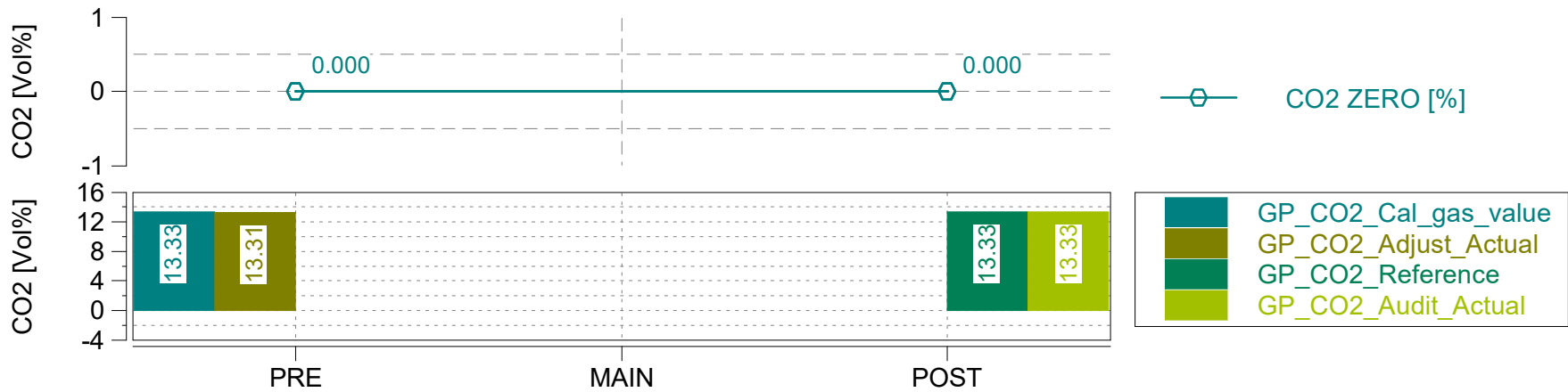
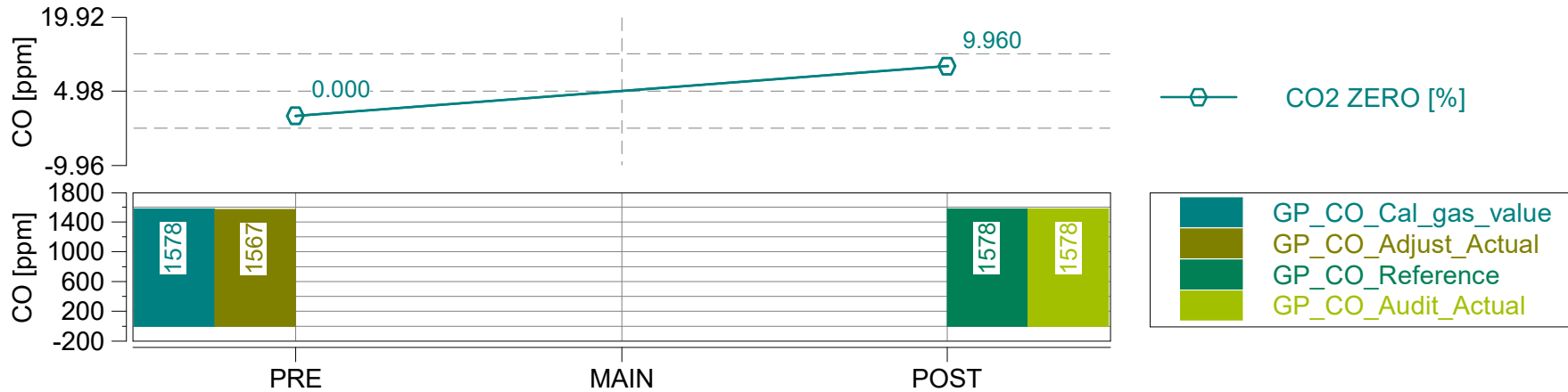
GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-05	yyyy-mm-dd
GAS PEMS Leak Check Time	11:52:38	hh:mm:ss
GAS PEMS Leak Check External	0.11	%

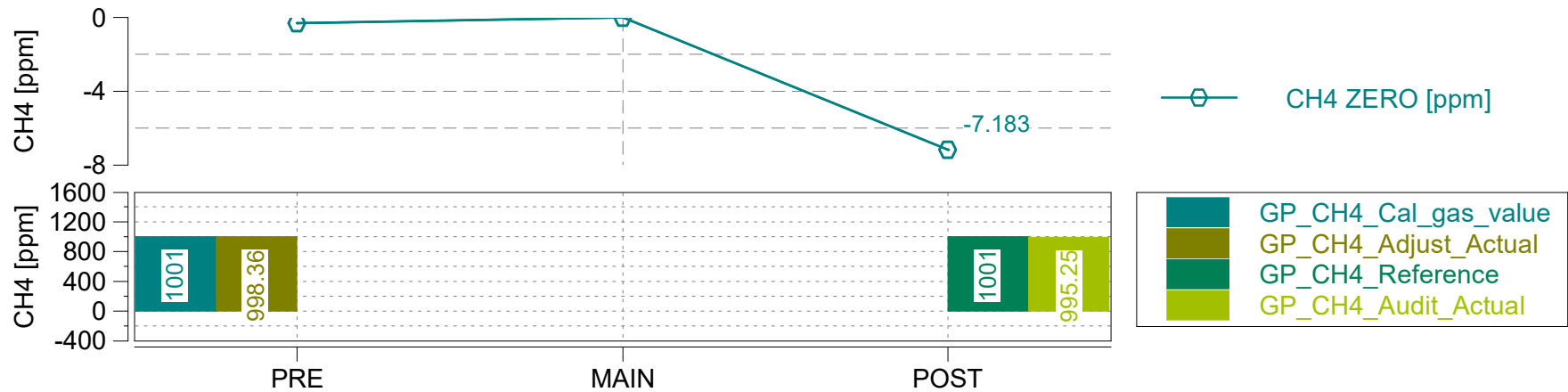
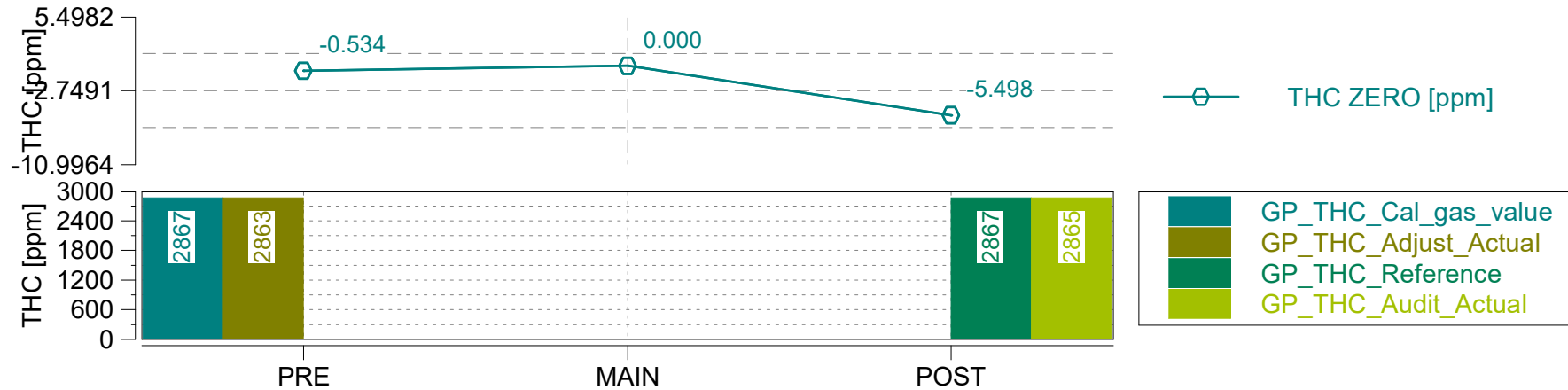
- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90







Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Fuel Rate ECU vs. Calculated

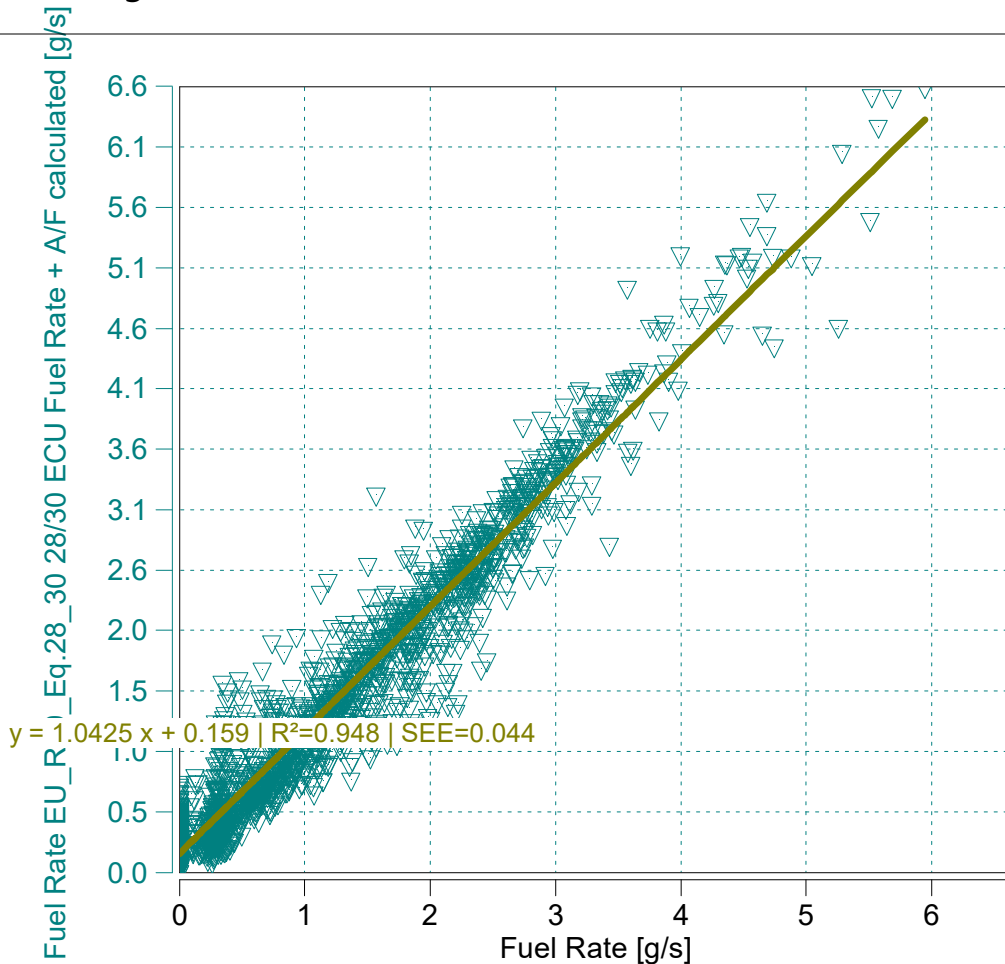
'X247-1267 A0 LATC->CARB'

Start Date: 12/05/2019

Start Time: 09:26:25.0



Concerto M.O.V.E, 2019



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

$y = 1.0425 x + 0.159$  |  $R^2=0.948$  |  $SEE=0.044$   
 $m = 1.04$  (0.9 - 1.1 recommended)  
 $R^2 = 0.95$  (min 0.9 mandatory)

Data from - to [% of Maximum]

Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Trip Duration	4169.00	s	ave THC	3.30357	ppm	BS CO2	704.32564	g/hphr
Trip Duration (a)	4148.00	s	ave NMHC	3.23750	ppm	BS CO	0.94665	g/hphr
Trip Distance	16.27	mi	ave CH4	0.06607	ppm	BS THC	0.00537	g/hphr
Trip Distance (a)	15.82	mi	ave CO	151.28096	ppm	BS NMHC	0.00497	g/hphr
Trip Fuel Cons. (b)	1.92	kg	ave CO2	9.07430	%	BS CH4	0.00012	g/hphr
Trip Fuel Cons. (ab)	1.91	kg	ave NOx	15.32920	ppm	BS NO (d)	0.03546	g/hphr
Trip Fuel Cons. EU (ac)	2.04	kg	ave PM	n/a	mg/m3	BS NO2	0.00598	g/hphr
Trip Fuel Cons. US (ac)	2.03	kg	ave Soot meas	n/a	mg/m3	BS NOx	0.04144	g/hphr
Trip Fuel Economy (b)	24.03	mpg_US	ave Soot	n/a	mg/m3	BS Soot	n/a	g/hphr
Trip Fuel Economy (ab)	23.45	mpg_US	ave PN	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	22.00	mpg_US	tot THC	0.04694	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	22.05	mpg_US	tot NMHC	0.04342	g	BS PN	n/a	#/hpr
Trip Fuel Economy GGE (b)	24.03	mpg_US	tot CH4	0.00104	g	DS CO2	388.91169	g/mi
Trip Fuel Economy GGE (ab)	23.45	mpg_US	tot CO	8.27194	g	DS CO	0.52272	g/mi
Trip Fuel Economy EU GGE (ac)	22.00	mpg_US	tot CO2	6154.50356	g	DS THC	0.00297	g/mi
Trip Fuel Economy US GGE (ac)	22.05	mpg_US	tot NO (d)	0.30988	g	DS NMHC	0.00274	g/mi
Trip Av. Eng. Speed	1071.69	rpm	tot NO2	0.05227	g	DS CH4	0.00007	g/mi
Trip Av. Torque	25.45	lbft	tot NOx	0.36215	g	DS NO (d)	0.01958	g/mi
Trip Av. Power	7.60	hp	tot Soot	n/a	g	DS NO2	0.00330	g/mi
Trip Work	8.74	hphr	tot Soot meas	n/a	g	DS NOx	0.02288	g/mi
Trip Work (a)	8.74	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	33.90	kg	tot PN	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	32.05	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	31.81	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN	n/a	#/mi
Trip Av. Amb. Temperature	74.68	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2	3222.51409	g/kg
Trip Av. Humidity	28.69	%	Trip Av. Veh. Speed	13.83784	mi/hr	FS CO	4.33121	g/kg
Trip Av. GPS Altitude	71.54	m	Trip Distance Share Urban	73.84311	% distance	FS THC	0.02458	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	22.72075	% distance	FS NMHC	0.02273	g/kg
			Trip Distance Share Motorway	3.43613	% distance	FS CH4	0.00054	g/kg
						FS NO (d)	0.16226	g/kg
						FS NO2	0.02737	g/kg
						FS NOx	0.18962	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN	n/a	#/kg

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

Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



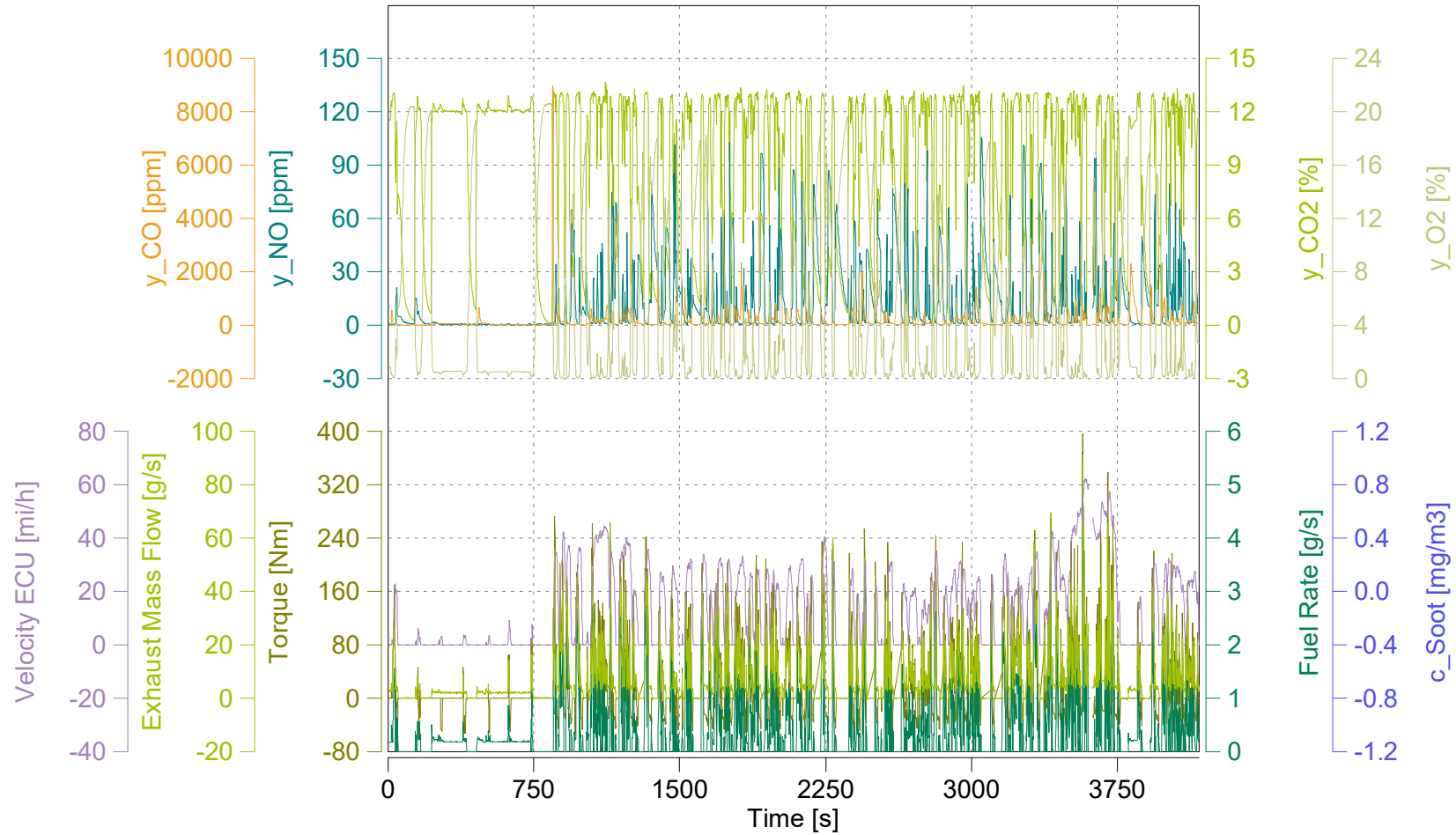


Trip Duration	4169.00	s	ave THC DC	3.47597	ppm	BS CO2 DC	705.91435	g/hphr
Trip Duration (a)	4148.00	s	ave NMHC DC	3.40645	ppm	BS CO DC	0.94796	g/hphr
Trip Distance	16.27	mi	ave CH4 DC	0.06952	ppm	BS THC DC	0.00570	g/hphr
Trip Distance (a)	15.82	mi	ave CO DC	151.49120	ppm	BS NMHC DC	0.00527	g/hphr
Trip Fuel Cons. (b)	1.92	kg	ave CO2 DC	9.09477	%	BS CH4 DC	0.00013	g/hphr
Trip Fuel Cons. (ab)	1.91	kg	ave NOx DC	15.33531	ppm	BS NO DC (d)	0.03548	g/hphr
Trip Fuel Cons. EU (ac)	2.04	kg	ave PM	n/a	mg/m3	BS NO2 DC	0.00598	g/hphr
Trip Fuel Cons. US (ac)	2.03	kg	ave Soot meas	n/a	mg/m3	BS NOx DC	0.04146	g/hphr
Trip Fuel Economy (b)	24.03	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	n/a	#/cm3	BS Soot meas	n/a	g/hphr
Trip Fuel Economy EU (ac)	22.00	mpg_US	tot THC DC	0.04981	g	BS PM	n/a	g/hphr
Trip Fuel Economy US (ac)	22.05	mpg_US	tot NMHC DC	0.04607	g	BS PN DC	n/a	#/hpr
Trip Fuel Economy GGE (b)	24.03	mpg_US	tot CH4 DC	0.00110	g	DS CO2 DC	389.78893	g/mi
Trip Fuel Economy GGE (ab)	23.45	mpg_US	tot CO DC	8.28344	g	DS CO DC	0.52344	g/mi
Trip Fuel Economy EU GGE (ac)	22.00	mpg_US	tot CO2 DC	6168.38590	g	DS THC DC	0.00315	g/mi
Trip Fuel Economy US GGE (ac)	22.05	mpg_US	tot NO DC (d)	0.31002	g	DS NMHC DC	0.00291	g/mi
Trip Av. Eng. Speed	1071.69	rpm	tot NO2 DC	0.05226	g	DS CH4 DC	0.00007	g/mi
Trip Av. Torque	25.45	lbft	tot NOx DC	0.36228	g	DS NO DC (d)	0.01959	g/mi
Trip Av. Power	7.60	hp	tot Soot	n/a	g	DS NO2 DC	0.00330	g/mi
Trip Work	8.74	hphr	tot Soot meas	n/a	g	DS NOx DC	0.02289	g/mi
Trip Work (a)	8.74	hphr	tot PM	n/a	g	DS Soot	n/a	g/mi
Trip Exhaust Mass	33.90	kg	tot PN DC	n/a	#	DS Soot meas	n/a	g/mi
Trip Exhaust Mass EU (ac)	32.05	kg	PM measurement type	0.00000	-	DS PM	n/a	g/mi
Trip Exhaust Mass US (ac)	31.81	kg	tot Soot on PM filter (estim.)	0.00000	mg	DS PN DC	n/a	#/mi
Trip Av. Amb. Temperature	74.68	deg_F	Soot --> PM simple scaling factor	1.00000	-	FS CO2 DC	3229.78292	g/kg
Trip Av. Humidity	28.69	%	Trip Av. Veh. Speed	13.83784	mi/hr	FS CO DC	4.33723	g/kg
Trip Av. GPS Altitude	71.54	m	Trip Distance Share Urban	73.84311	% distance	FS THC DC	0.02608	g/kg
Fuel Type	Petrol (E10)		Trip Distance Share Rural	22.72075	% distance	FS NMHC DC	0.02412	g/kg
			Trip Distance Share Motorway	3.43613	% distance	FS CH4 DC	0.00058	g/kg
						FS NO DC (d)	0.16233	g/kg
						FS NO2 DC	0.02736	g/kg
						FS NOx DC	0.18969	g/kg
						FS Soot	n/a	g/kg
						FS Soot meas	n/a	g/kg
						FS PM	n/a	g/kg
						FS PN DC	n/a	#/kg

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

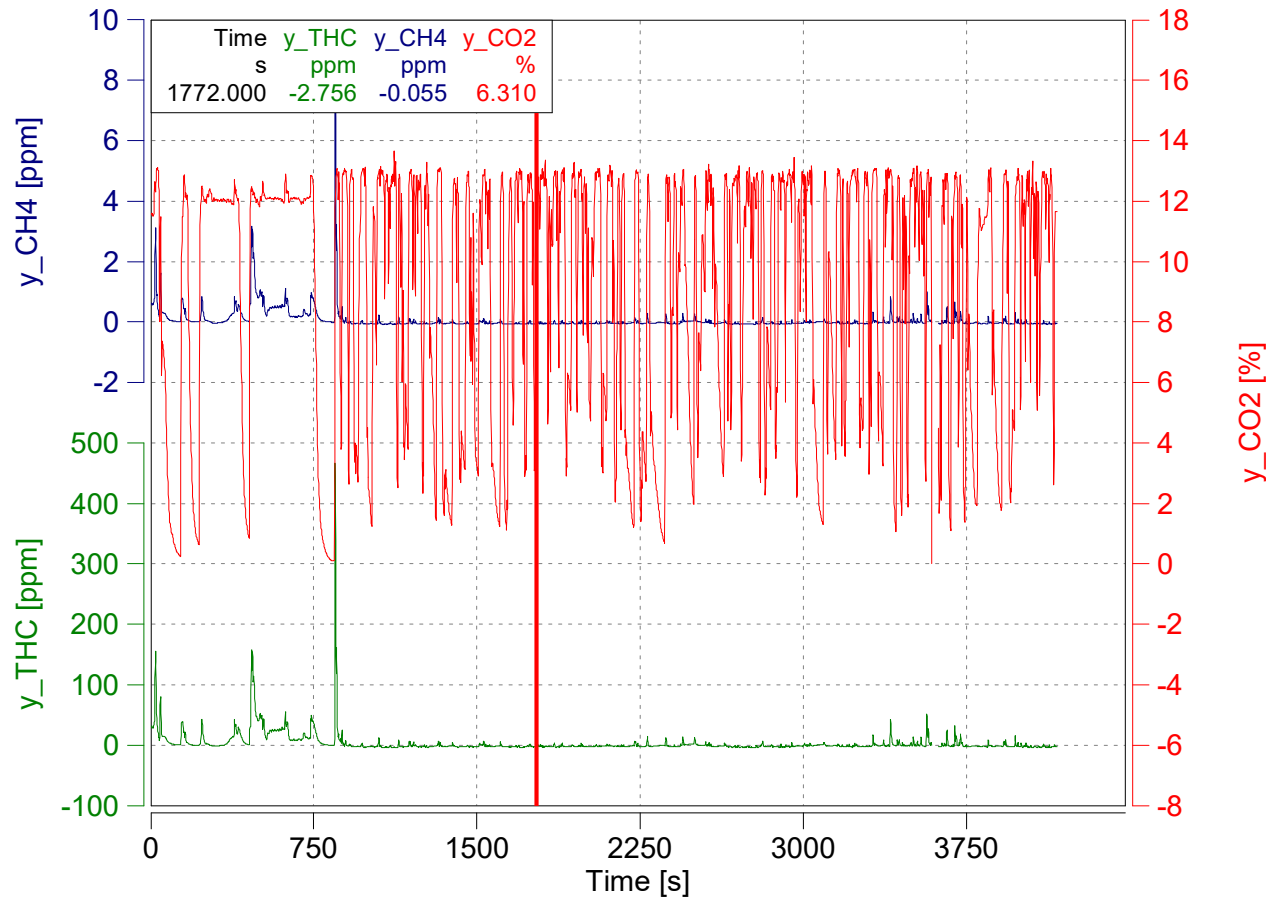
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
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Vehicle: X247 / PEMS  
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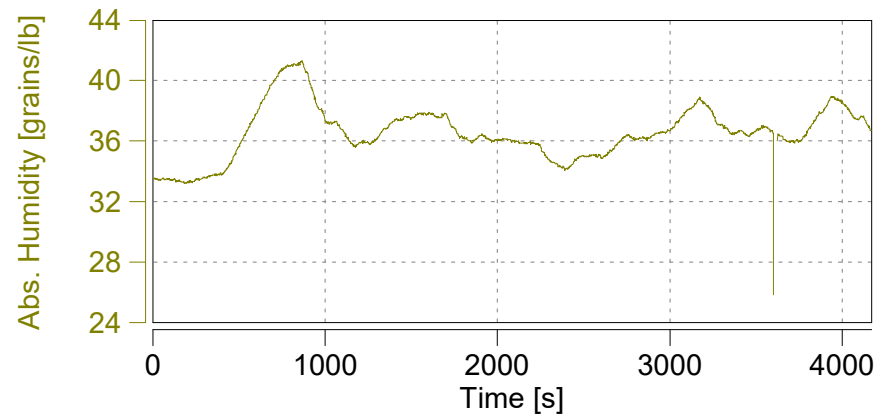
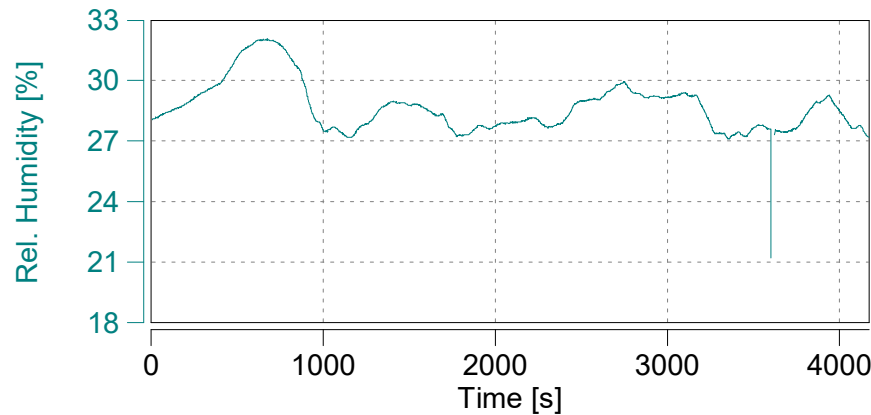
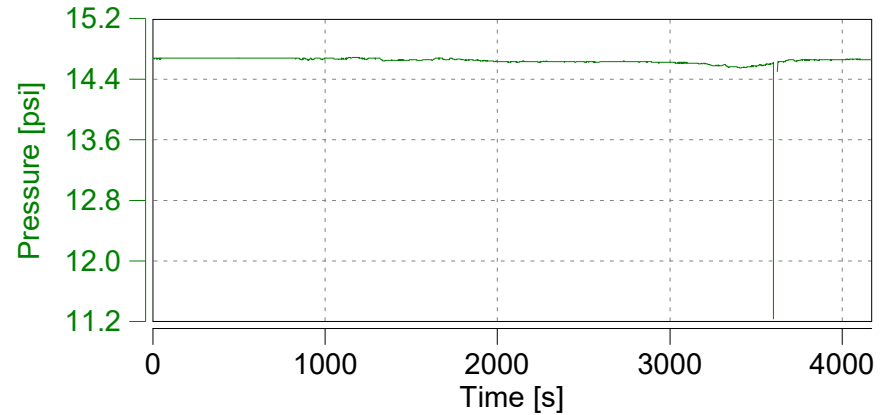
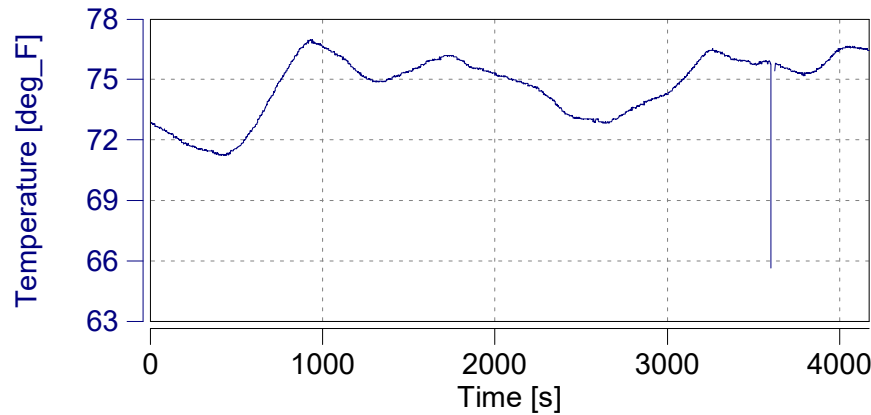


Absolute Time Shifts

y_THC	s	-5.2
y_CH4	s	-7.2

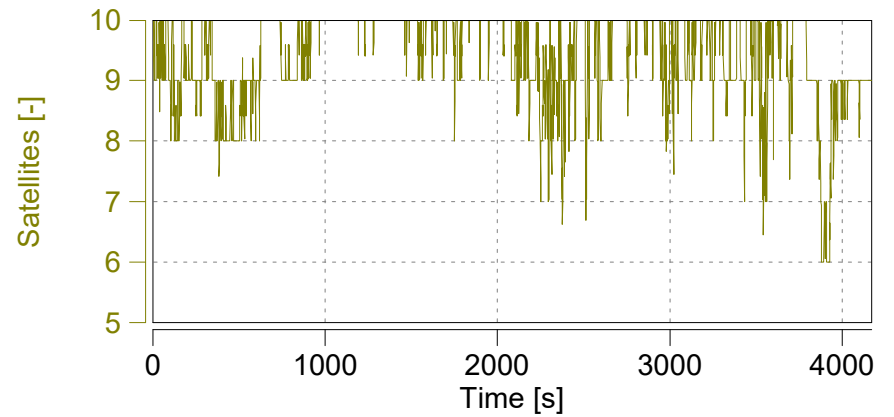
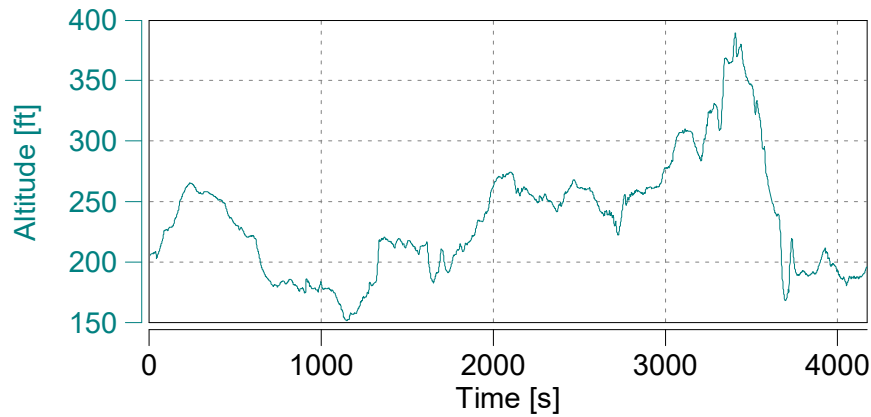
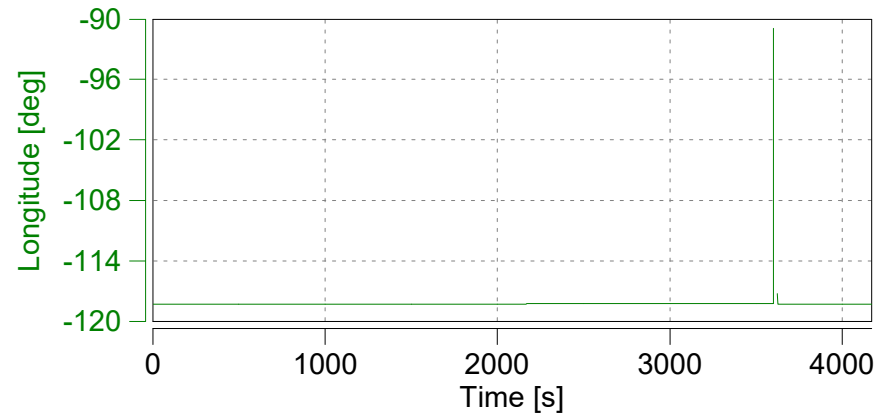
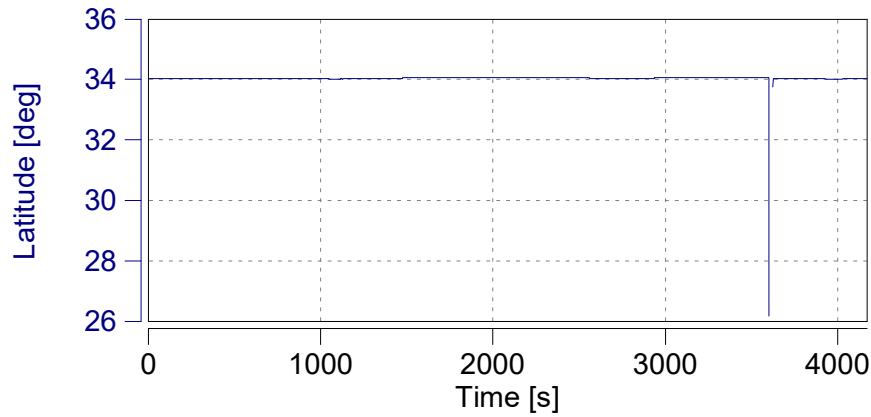
Reset Time Shifts in Plot

Apply Current Values



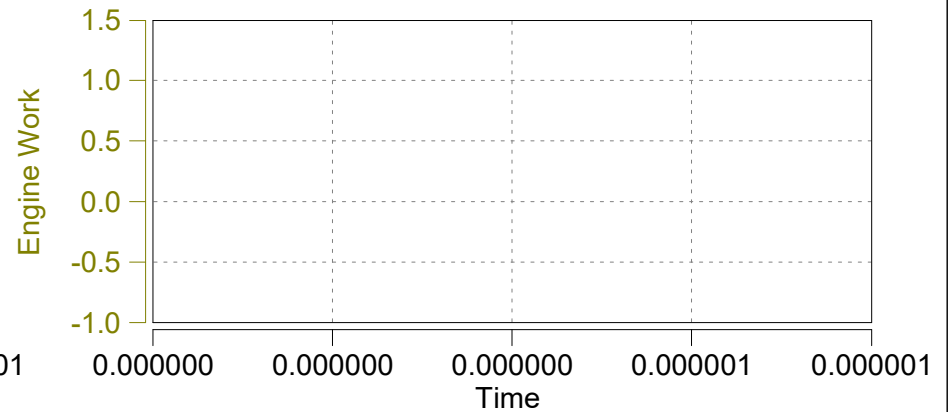
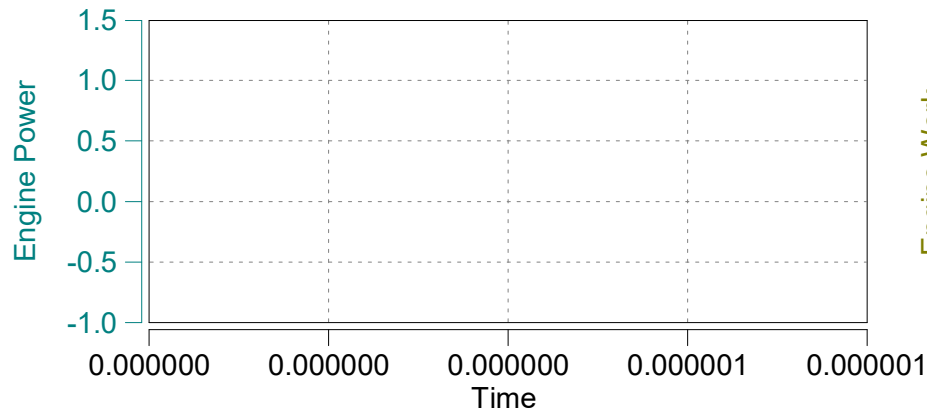
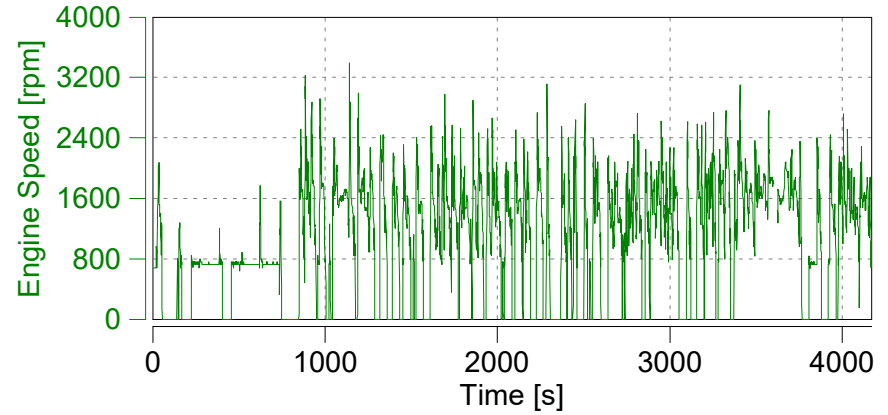
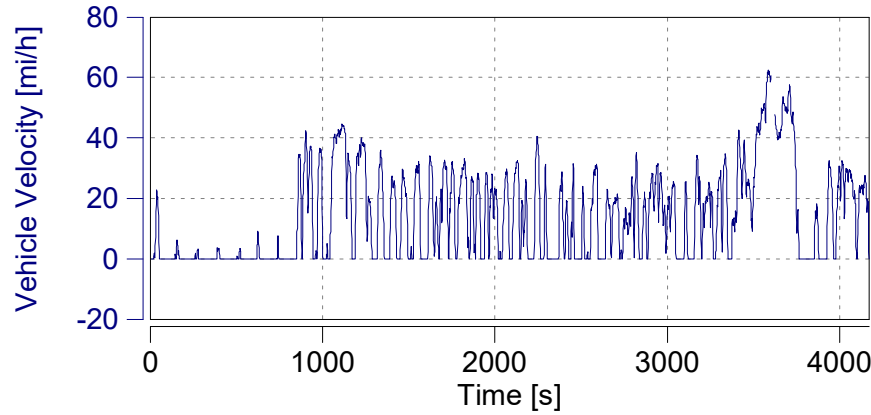
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

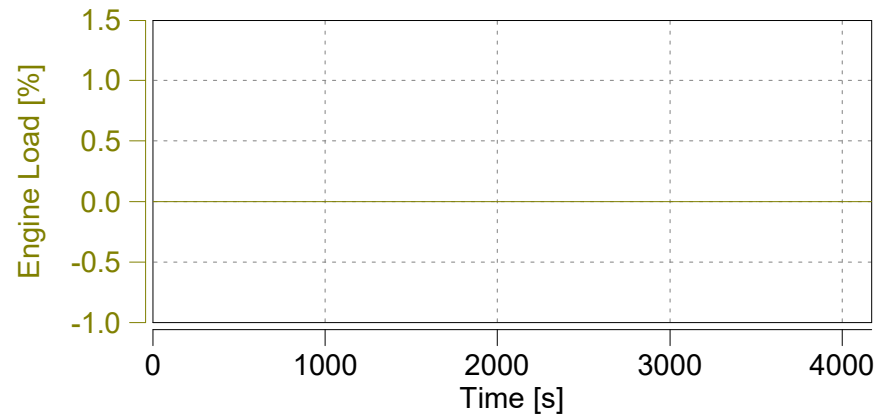
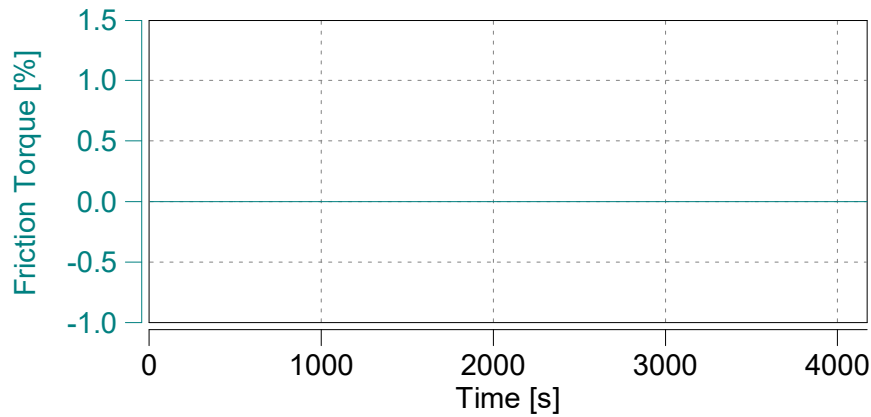
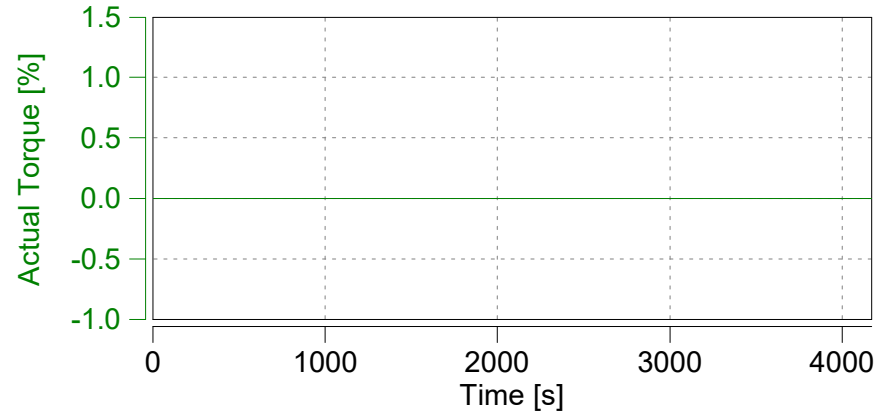
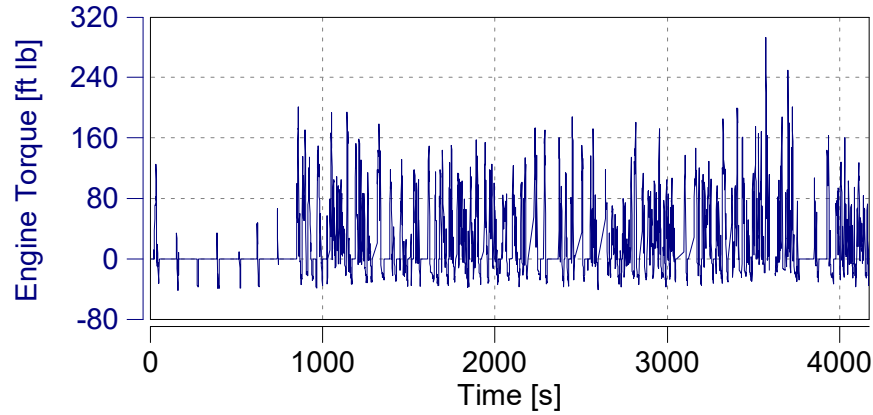
Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90





Case: X247-1267

Page: Engine (3)

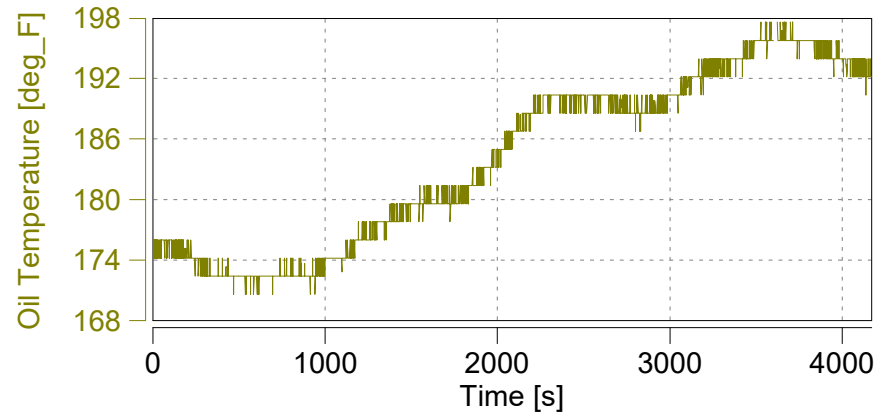
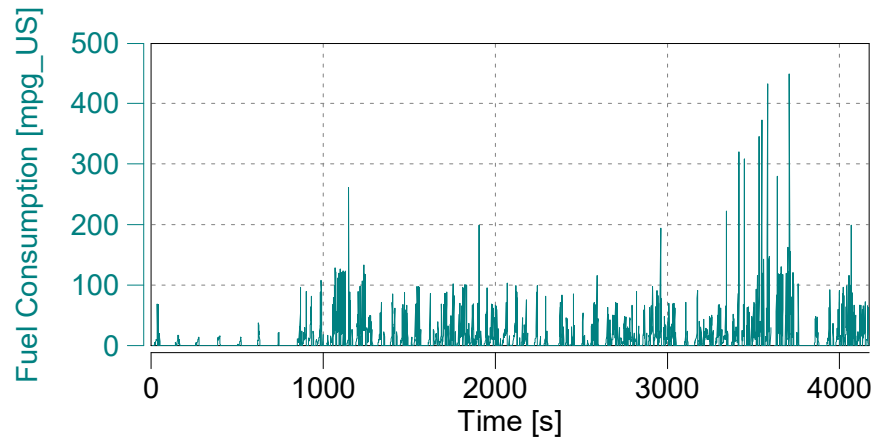
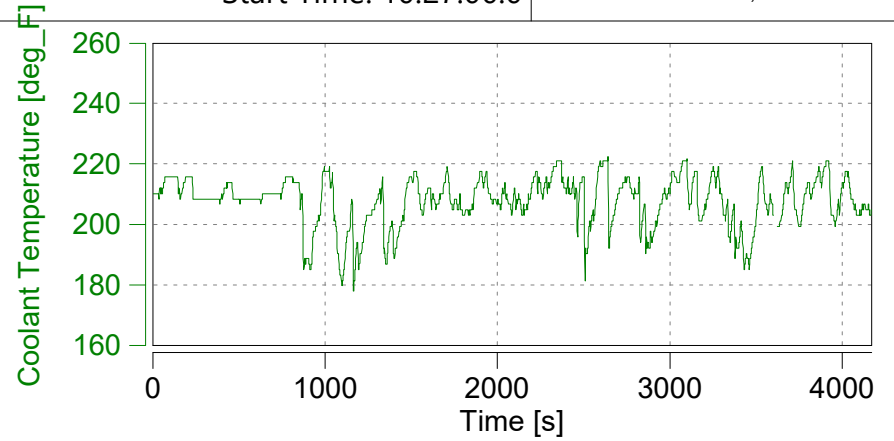
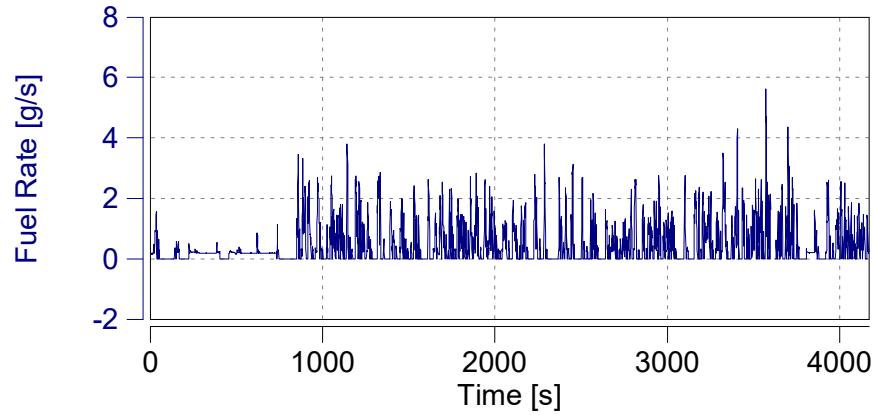
'X247-1267 LA City Default'

Start Date: 12/02/2019

Start Time: 10:27:00.0



Concerto M.O.V.E, 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Case: X247-1267

Page: Exhaust Flow (1)

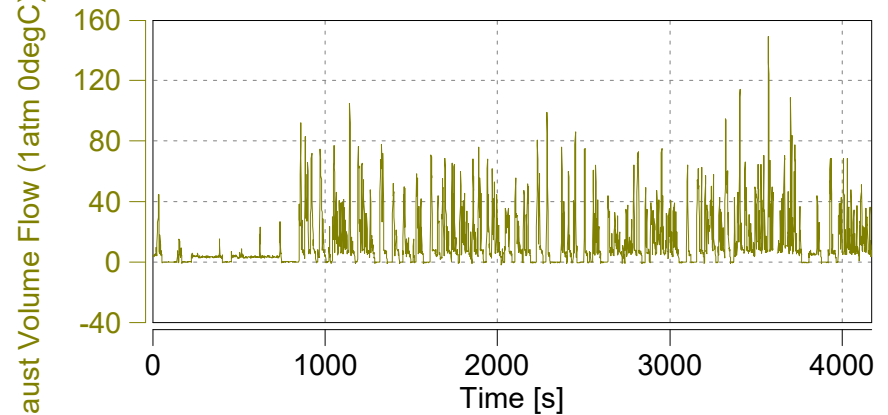
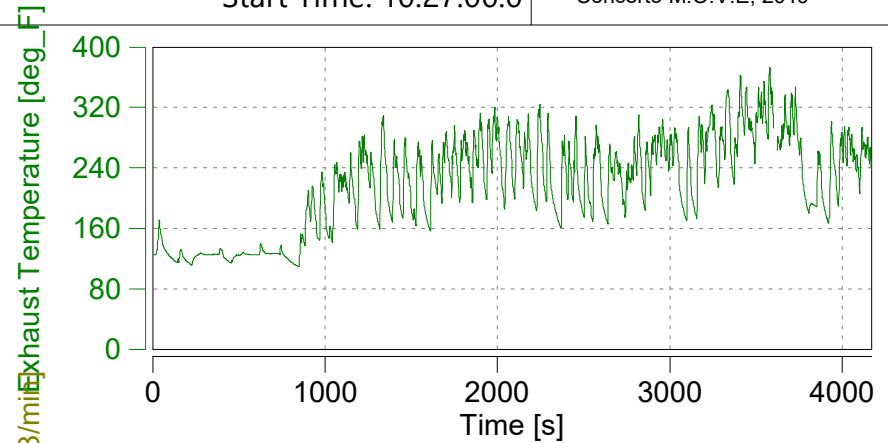
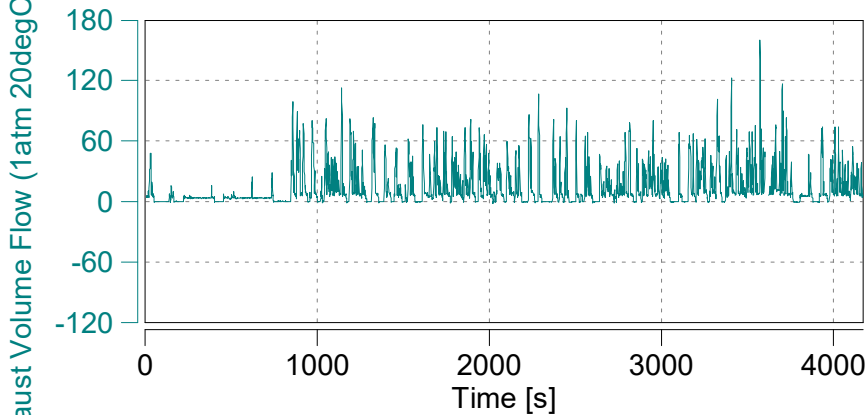
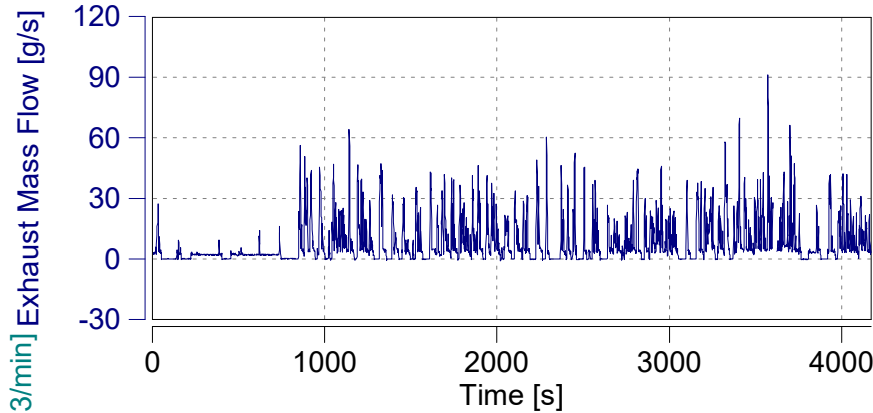
'X247-1267 LA City Default'

Start Date: 12/02/2019

Start Time: 10:27:00.0

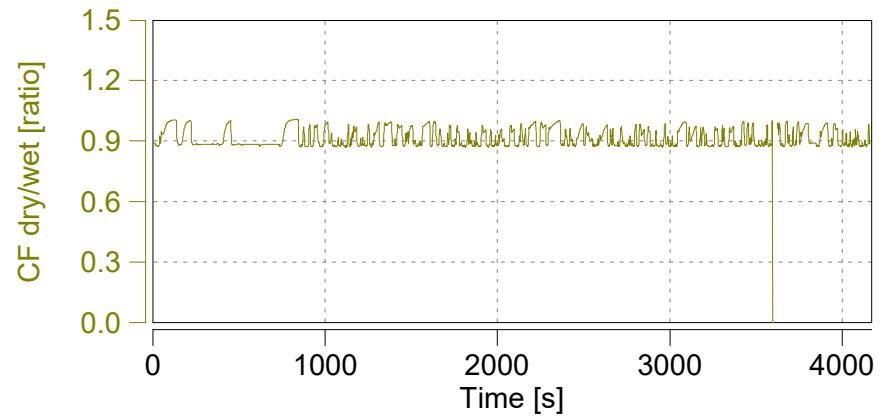
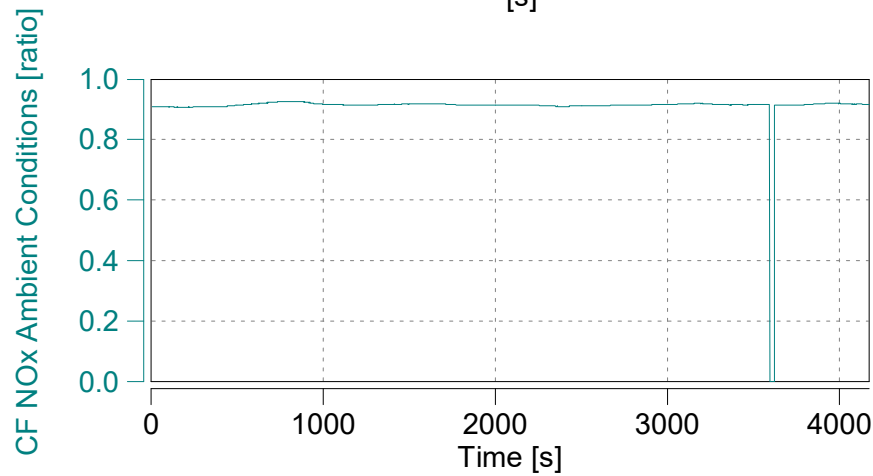
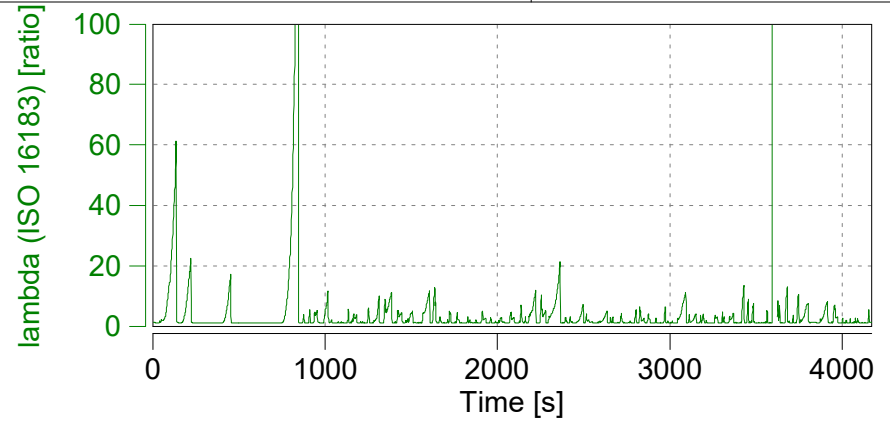
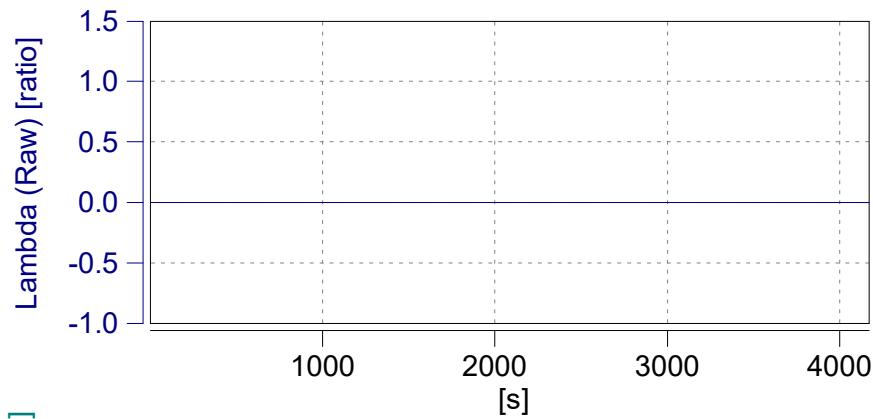


Concerto M.O.V.E., 2019



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Corrected Emissions (1)

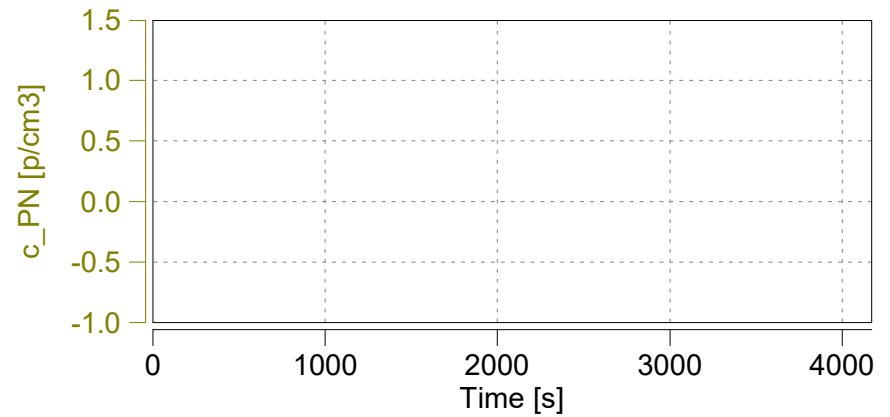
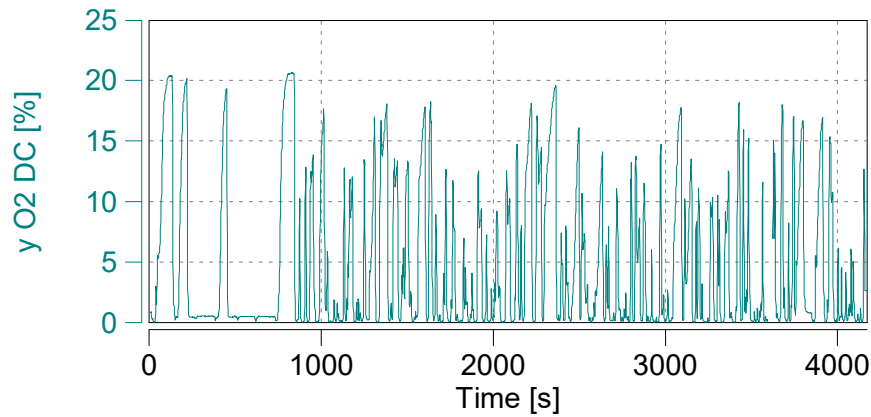
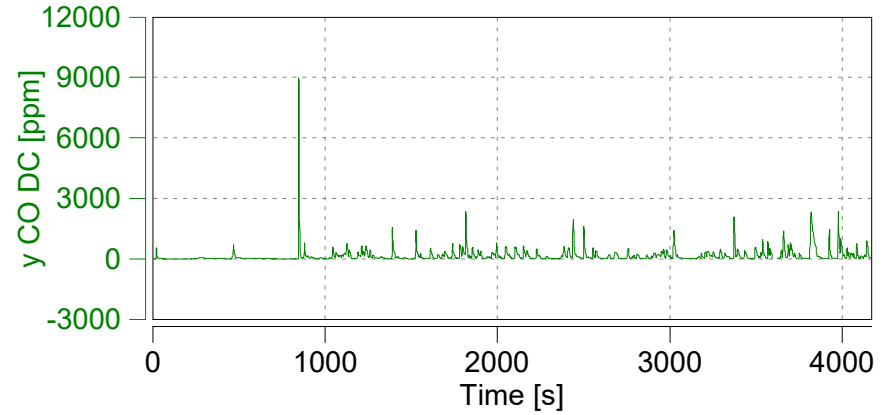
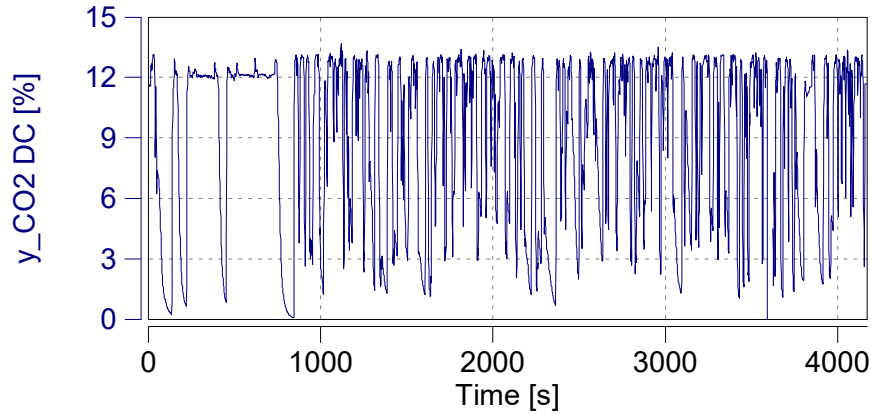
'X247-1267 LA City Default'

Start Date: 12/02/2019

Start Time: 10:27:00.0

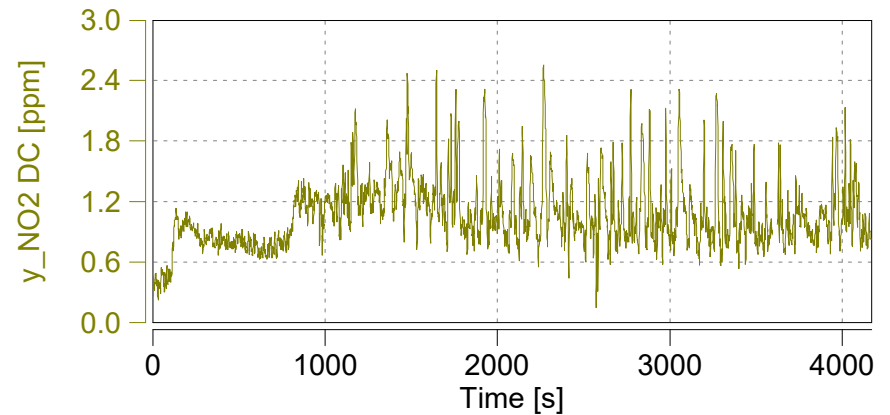
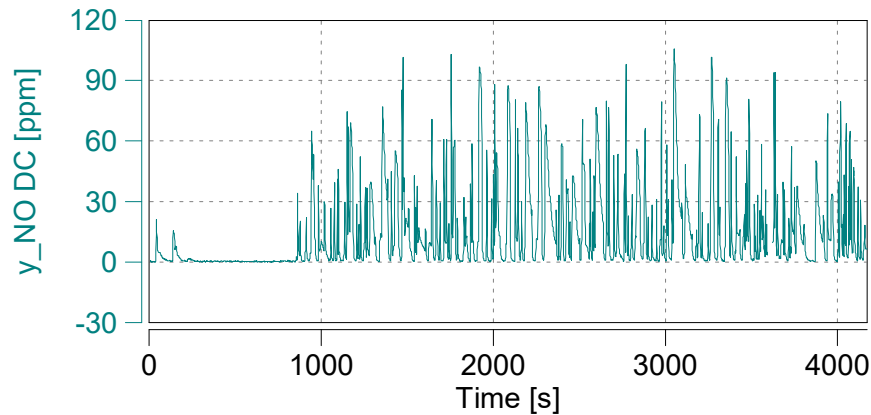
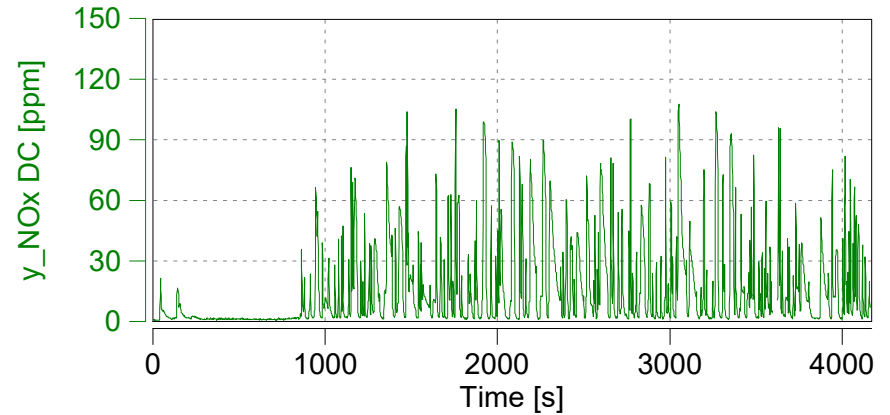
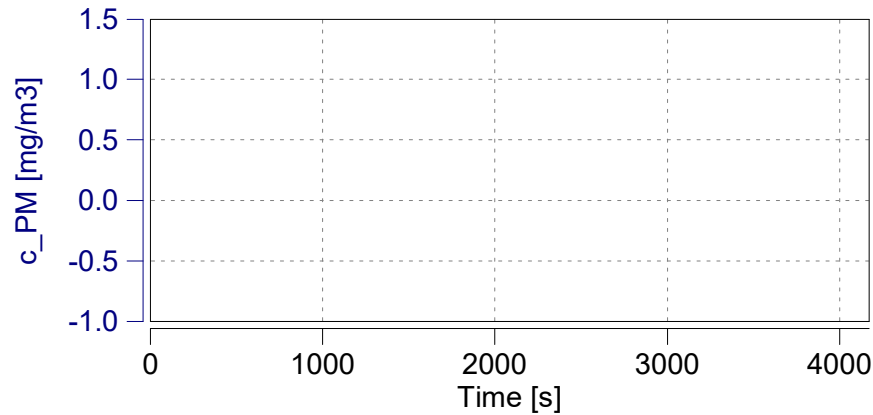


Concerto M.O.V.E., 2019



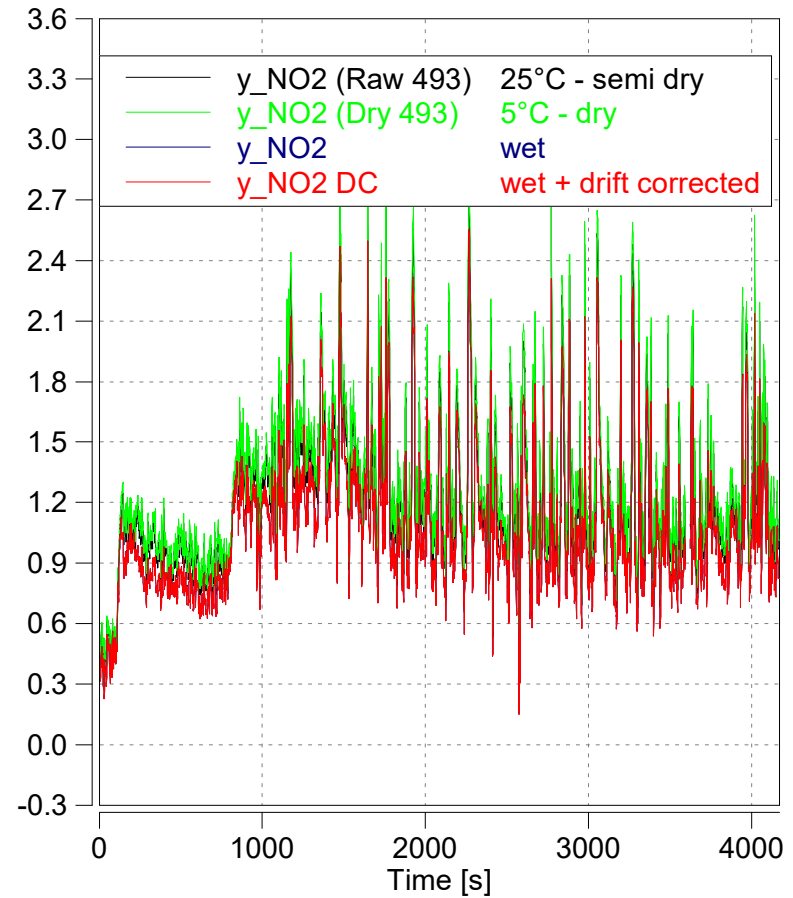
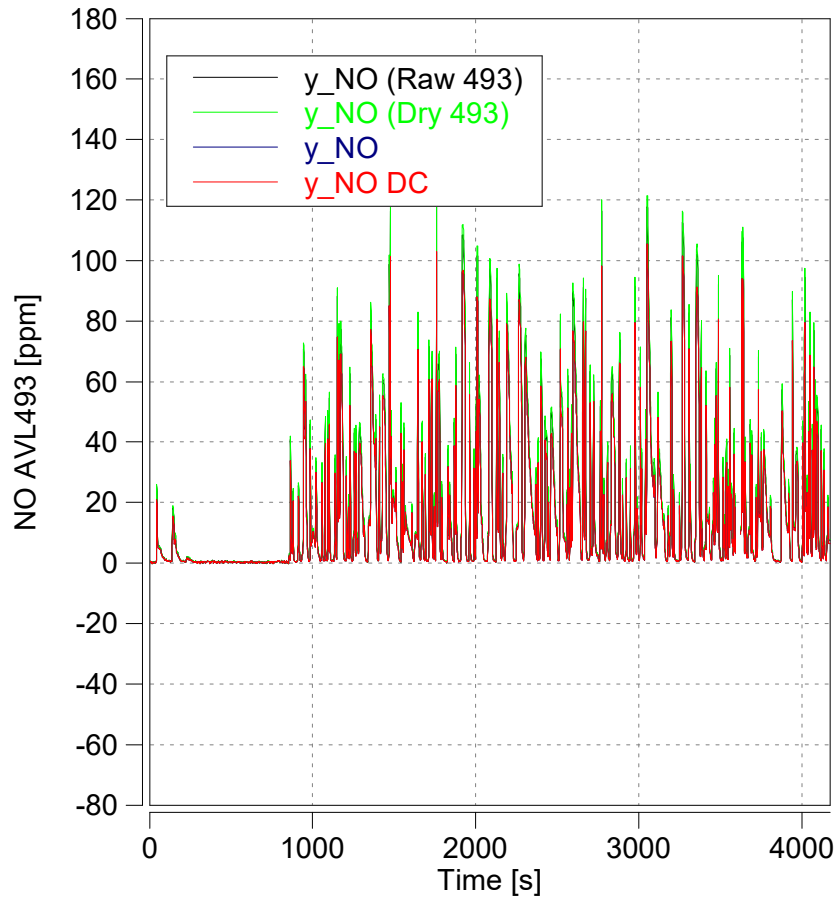
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

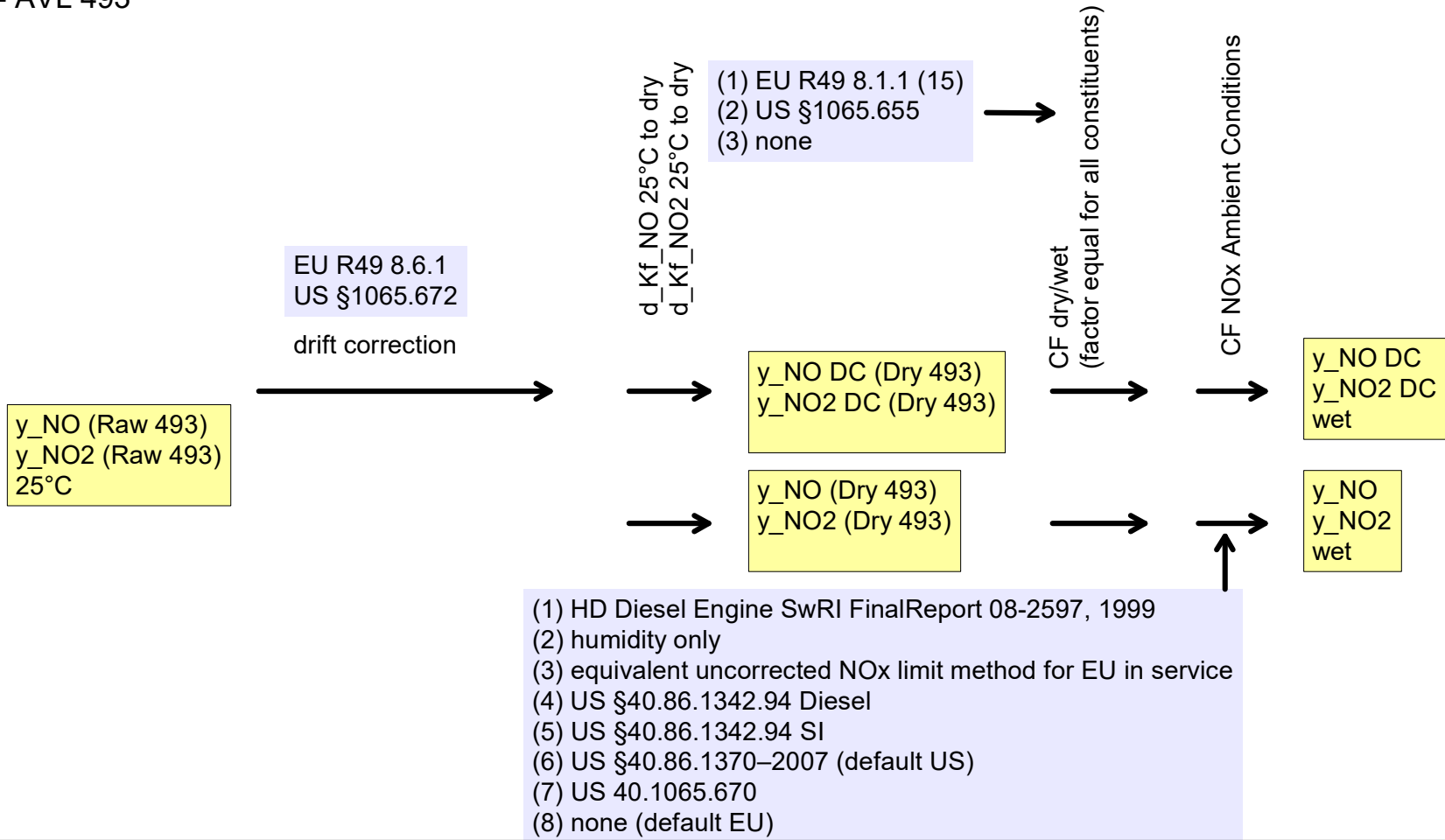


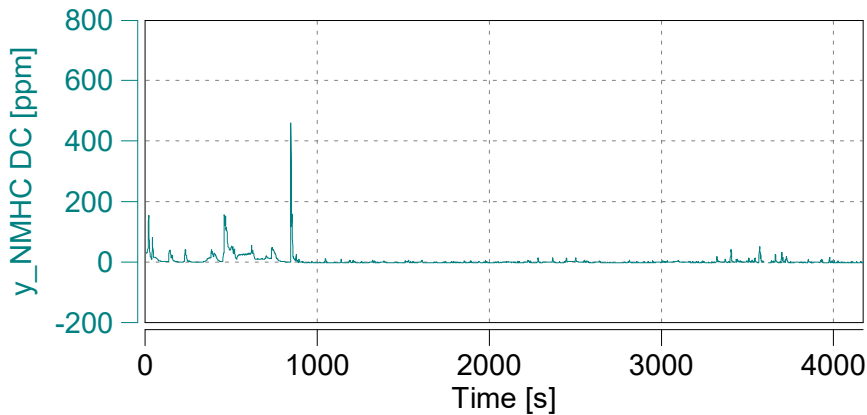
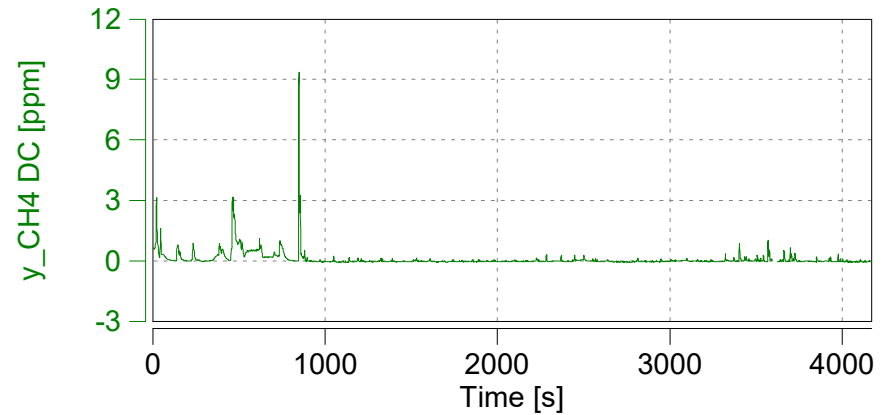
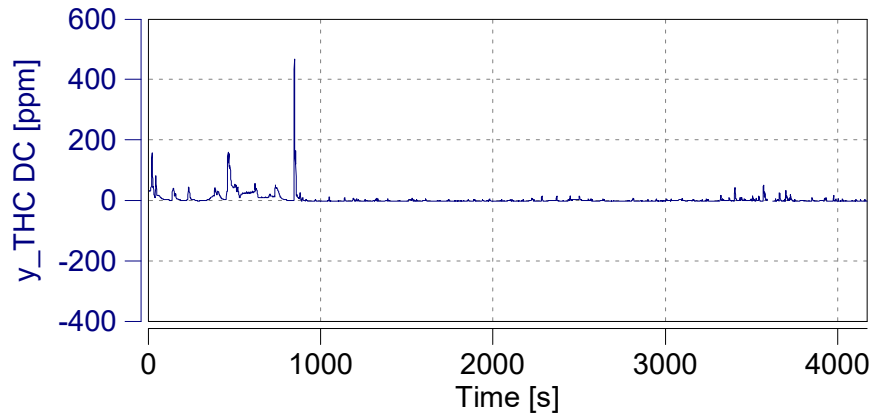
Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90



NOx - AVL 493



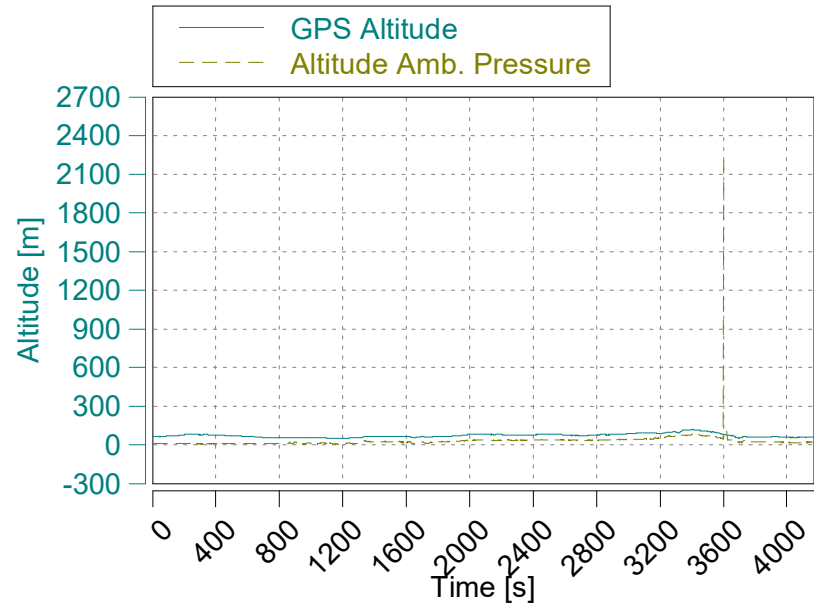
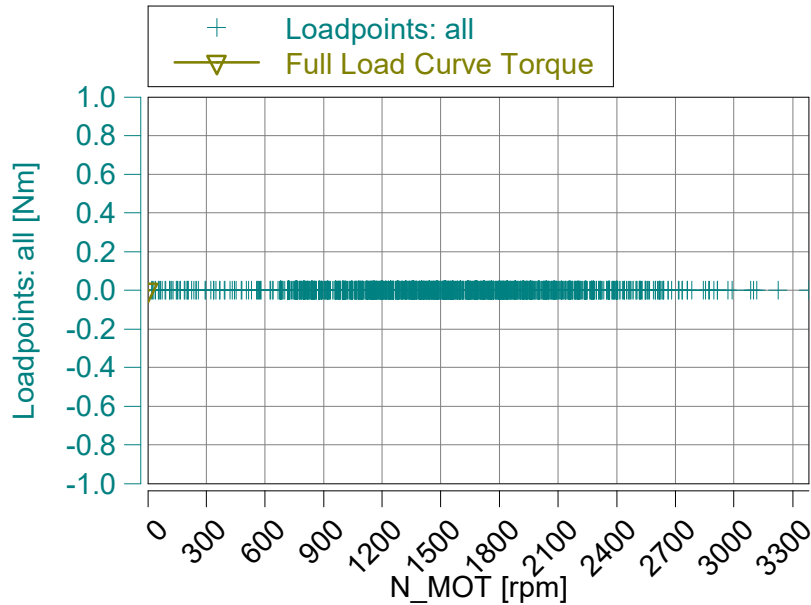


Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR X247-1267						
Vehicle type (e.g. M 3 , N 3 and application e.g. rigid or articulated truck, city bus)				#ERROR		
Vehicle description (e.g. vehicle model, prototype)				PEMS		
	CO	THC	NMHC	CH4	NOx	PM
Pass-fail results	passed		passed	passed	passed	passed
Work window conformity factor						
CO2 mass window conformity factor						
Nr. NOx urban valid windows below 90th perc. of all valid windows					997.0	
Trip Information	Urban		Rural		Motorway	
Shares of time of the trip in % characterised by urban, rural and motorway operation	92.0		7.2		0.8	
Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop						
Accelerating				30.2	%	
Decelerating				31.3	%	
Cruising				0.2	%	
Stop				38.4	%	
		Minimum		Maximum		
Work window average power (%)						
CO2 mass window duration (s)						
Work window: percentage of valid windows						
CO2 mass window: percentage of valid window						
Fuel consumption consistency ratio				m = 1.02		
				r <sup>2</sup> = 0.92		





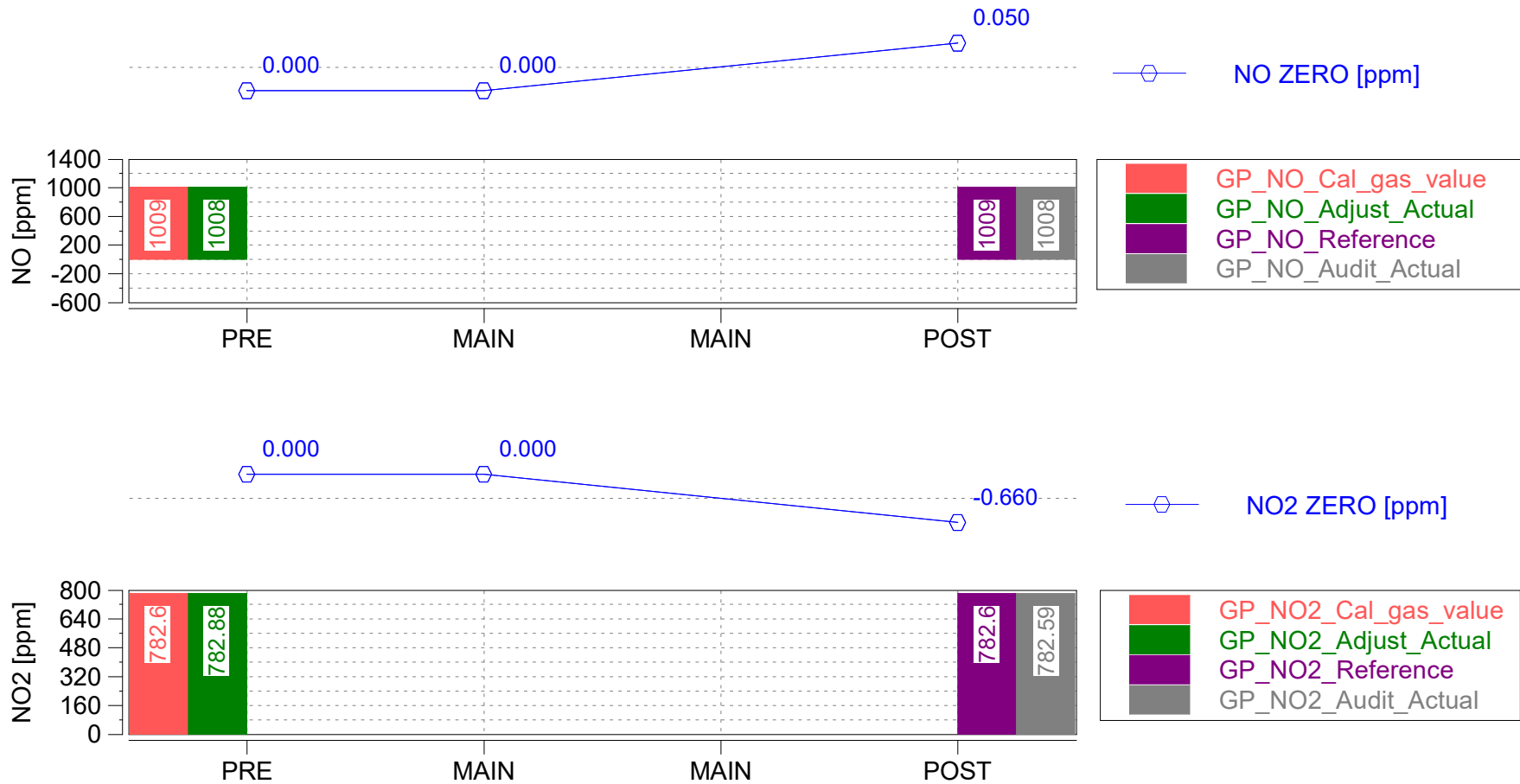
Trip Duration (a)	4148.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	296.7	g/kWh
avg BSFC ISO16183	312.5	g/kWh
Distance ECU	26.2	km
Distance GPS	26.145	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	2019-12-02	yyyy-mm-dd
GAS PEMS Leak Check Time	12:54:31	hh:mm:ss
GAS PEMS Leak Check External	0.08	%

- (a) GAS PEMS measurement state only
- (b) without Cold Start
- (c) not cummulated during exclusions

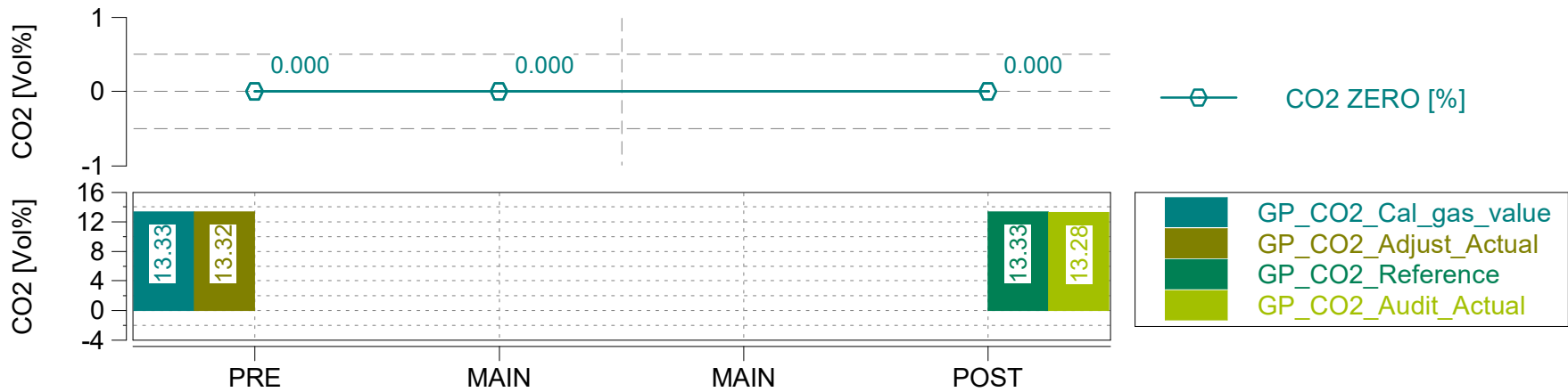
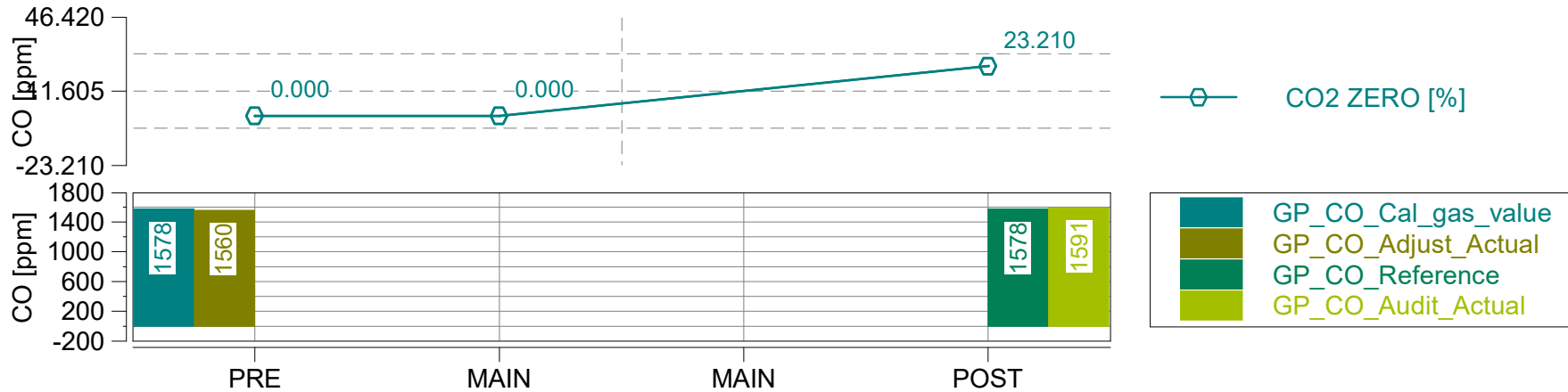
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
 Engine: /  
 NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
 Dry / Wet Corr.: 2 - CFR40 §86.1342-90



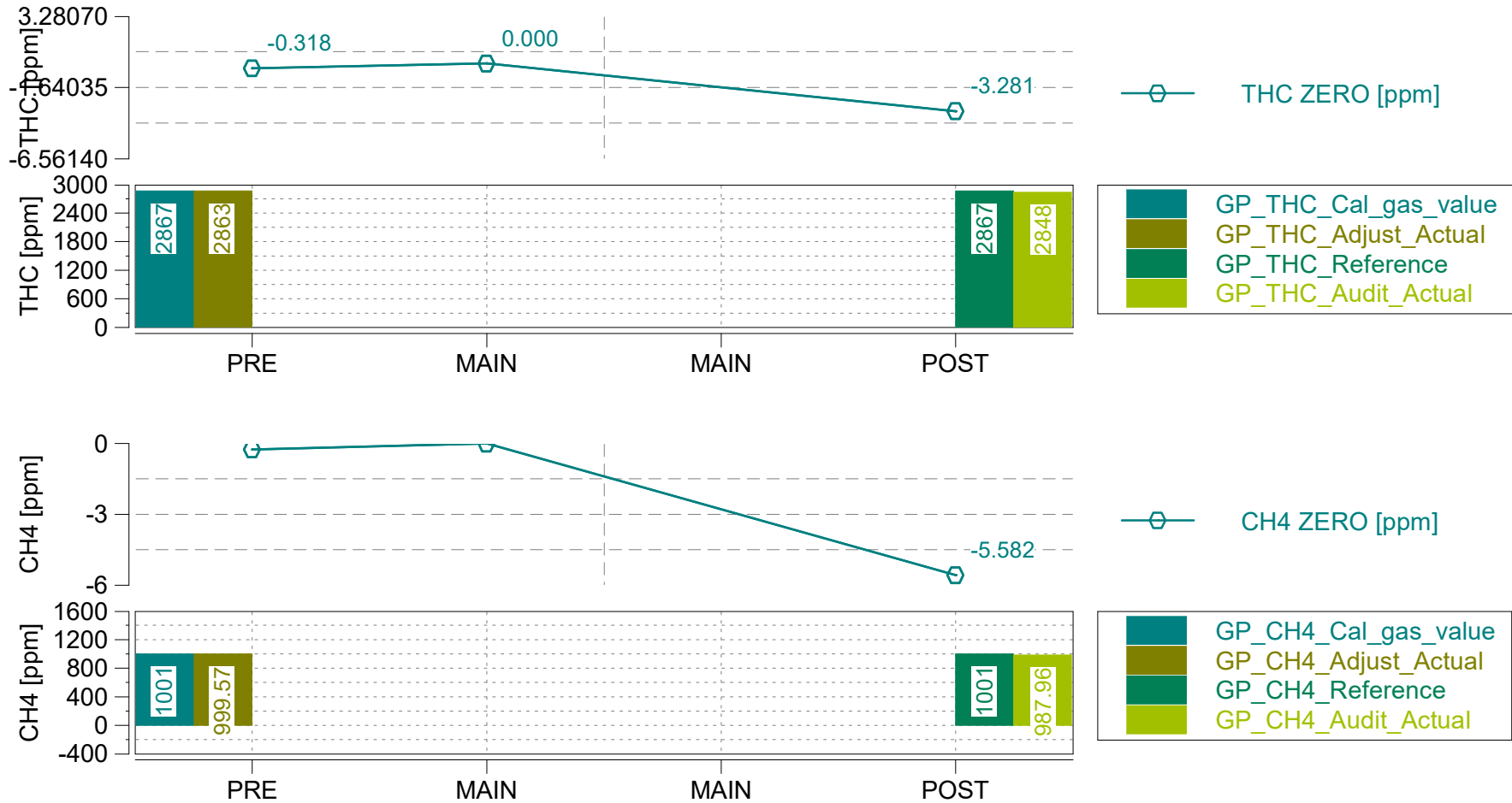
Concerto Version: 503 Build 368, Serial Number: 1604  
 M.O.V.E Post-Processing: DT\_1R3.1\_B300  
 Legislation:

Vehicle: X247 / PEMS  
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Concerto Version: 503 Build 368, Serial Number: 1604  
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 Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X247-1267

Page: Fuel Rate ECU vs. Calculated

'X247-1267 LA City Default'

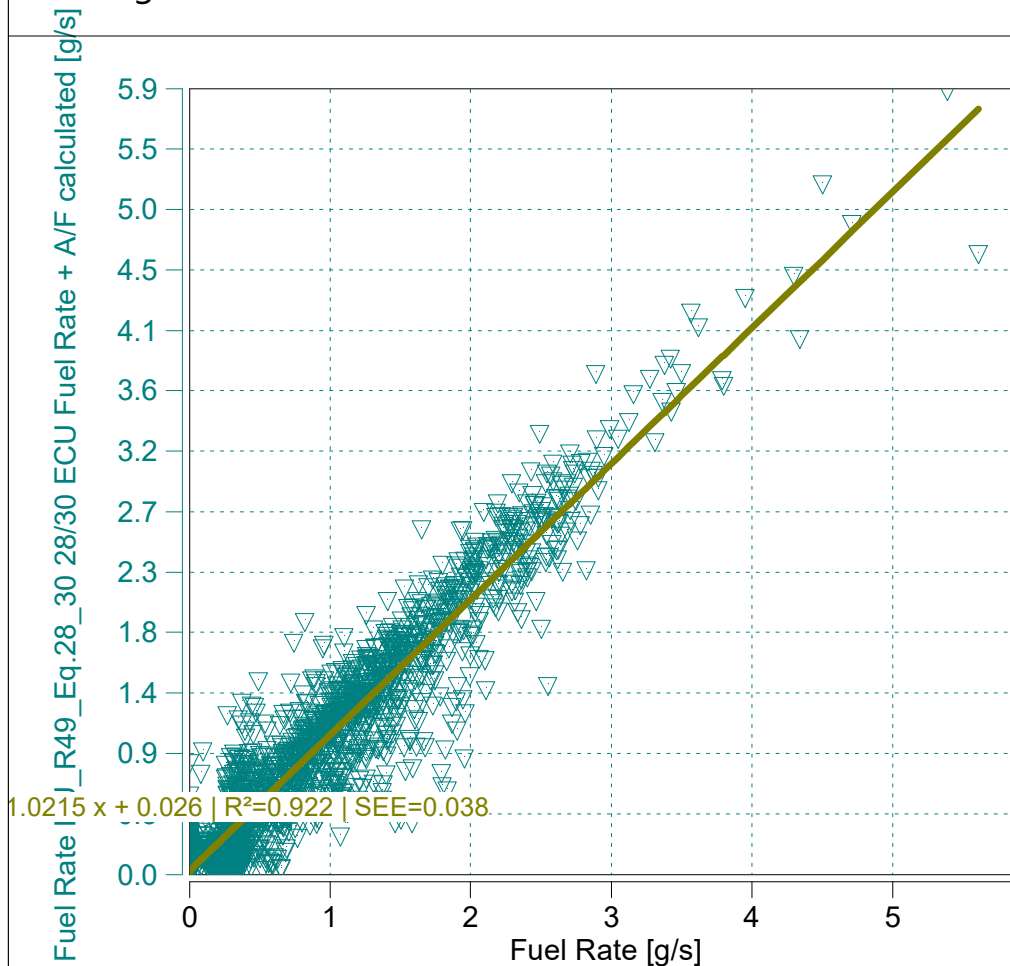
Start Date: 12/02/2019

Start Time: 10:27:00.0



Concerto M.O.V.E, 2019

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



$y = 1.0215x + 0.026 \mid R^2=0.922 \mid SEE=0.038$   
 $m = 1.02$  (0.9 - 1.1 recommended)  
 $R^2 = 0.92$  (min 0.9 mandatory)

Data from - to [% of Maximum]

Concerto Version: 503 Build 368, Serial Number: 1604  
M.O.V.E Post-Processing: DT\_1R3.1\_B300  
Legislation:

Vehicle: X247 / PEMS  
Engine: /  
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670  
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