Mercedes-Benz

Mercedes-Benz MY2021 GLC300 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 GLC300 4MATIC from Test Group MMBXJ02.0U3A, which is the highest volume Test Group applicable for MY2021 based on the projected 50 states' sales volumes prepared for NMOG + NOx fleet averages under Tier 3.

2. Approach

To demonstrate off-cycle tailpipe emissions, tests were performed on public roads in the Los Angeles area on city, highway, and mountain routes. These test routes have been approved by CARB. Emissions measured and/or calculated and reported include oxides of nitrogen (NO_x), carbon monoxide (CO), carbon dioxide (CO_2), total hydrocarbons (THC), and non-methane organic gases (NMOG). All tests were executed by a team in Long Beach, CA. This team is independent of Daimler AG's and Mercedes-Benz AG's product development departments. All vehicles were configured and tested by MBRDNA Long Beach Technical 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 February 2020. Tables 2 through 4 provide the vehicle test results of the combined route segments performed in the default transmission mode (Comfort Mode).

Table 1: Vehicle Specification

Model	Tier	Drive type	HP	Torque (ft.lb)	Transmission	Exh Treatment	Fuel	Start Mileage
GLC300 4Matic	ULEV50	AWD	255	273	9-Automatic	TWC	Gasoline	2349

Table 2: Highway Results

	A1 Highway East (g/mi)					B2 Highway West (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4Matic	321.66	0.44677	-0.00033	0.00458	-0.00031	284.22	0.49527	-0.00214	0.00601	-0.00204

Table 3: Mountain Results

	A2 Mountain Uphill (g/mi)					B1 Mountain Downhill (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4Matic	544.81	0.86045	-0.00062	0.01111	-0.00060	174.68	0.29011	-0.00002	0.00615	-0.00001

Table 4: Cold Start and Urban Driving Result

	A0 Long Beach → CARB (g/mi)					LA City (g/mi)				
Model	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**	**CO_2**	**CO**	**THC**	**NO_X**	**NMOG**
GLC300 4Matic	331.36	0.60168	0.01516	0.00914	0.01543	413.59	0.57293	-0.00405	0.01415	-0.00385

4. Trip Statistics

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

Table 5: Highway East (A1)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.25.36	26.88	15.29	62.99	2.3	1.8	50.6	45.2	416.9	68.06

Table 6: Highway West (B2)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.28.52	27.80	18.34	57.72	3.4	1.6	49.1	45.9	205.1	72.44

Table 7: Mountain Uphill (A2)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.39.30	17.49	15.93	26.57	20.5	1.0	40.8	37.7	1033.8	69.33

Table 8: Mountain Downhill (B1)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.29.20	17.09	15.39	34.95	13.1	1.3	46.3	39.4	73.3	69.56

Table 9: Long Beach to CARB (A0)

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.34.57	23.63	16.63	40.56	10.1	0.9	45.5	43.5	248.3	67.15

Table 10: LA City

Trip Duration h.mm.ss	Distance (mi)	V*Apos‡	Average Speed (mi/h)	Standstill %	Constant %	Acceleration %	Deceleration %	Cumulative pos. altitude (m)	Average temperature (F)
0.59.32	16.15	12.91	16.27	31.0	0.2	34.5	34.4	266.9	69.76

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

5. Routes

The routes for on-road emissions testing are approved by CARB and intended to include various road and traffic conditions. These routes include mountain driving at high elevation, urban driving, and highway driving. These routes are separated into six test sections with no key-off cycles between A0 and B2.

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	23.6	35 min	134	41	44	56
A1	26.9	26 min	290	63	94	6
A2	17.5	40 min	987	27	0	100
B1	17.1	30 min	988	35	21	79
B2	27.8	29 min	288	58	86	14
LA City	16.2	60 min	71	16	3	97

5.1 Highway Sections (A1 & B2)

These routes are representative of highway driving in California. Each route segment is approximately 27 miles and is composed of 95% highway and 5% surface roads. These segments travel between Vineyard Ave, Ontario CA and California Air Resource Board office at 9528 Telstar Ave, El Monte CA via Hwy 10. The average speed is 60mph and the net elevation change is approximately 950ft (289m).

A1 – Highway East

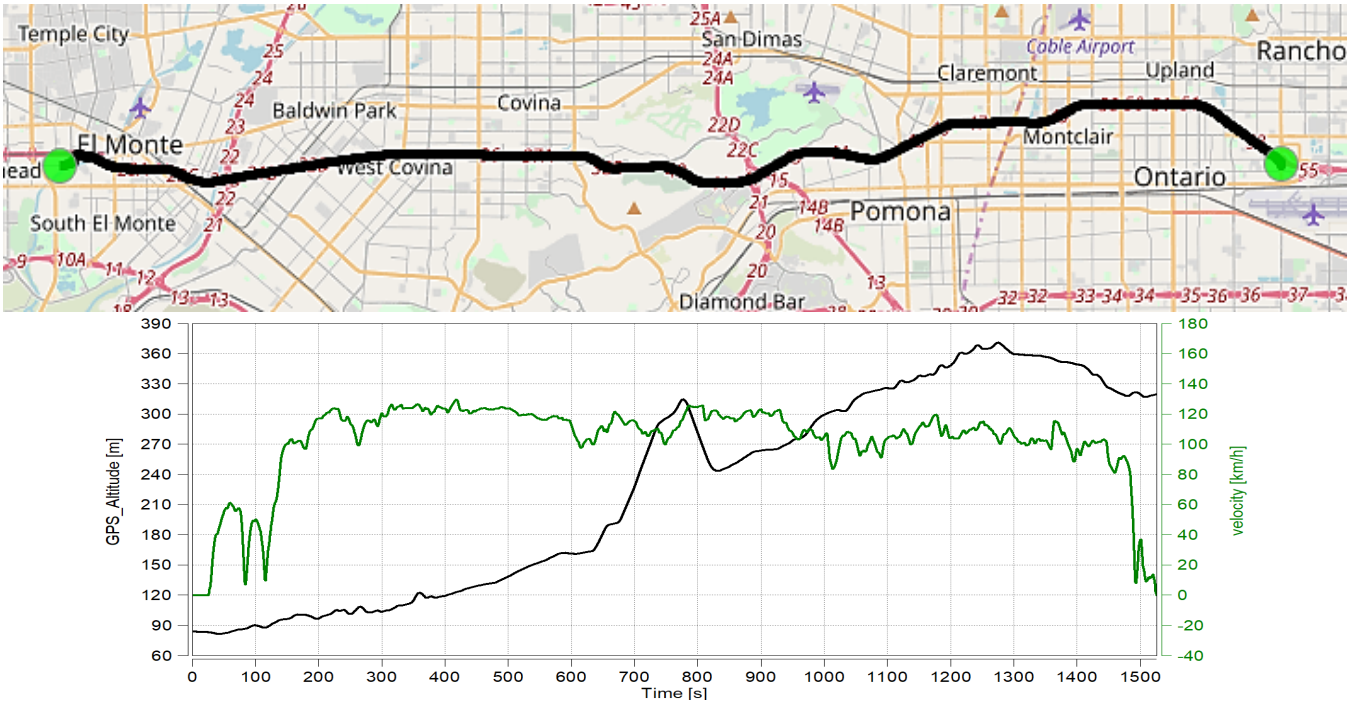


Figure 1. Map of Route A1 – Highway East. Including speed and elevation

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 31mph. The net elevation change is 3238ft (987m).

A2 – Mountain Uphill

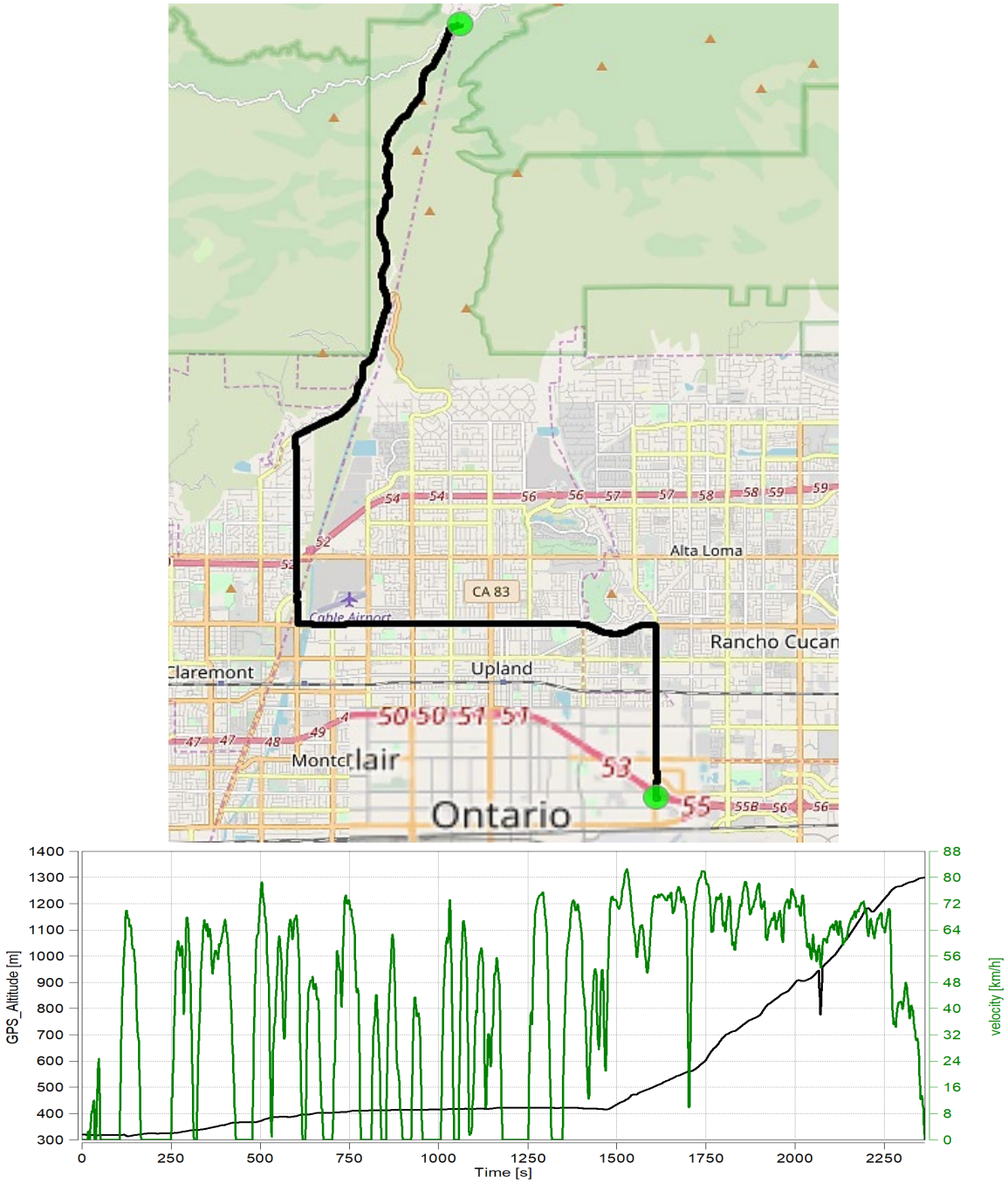


Figure 3. Map of Route A2 – Mountain Uphill. Including speed and elevation

B1 – Mountain Downhill.

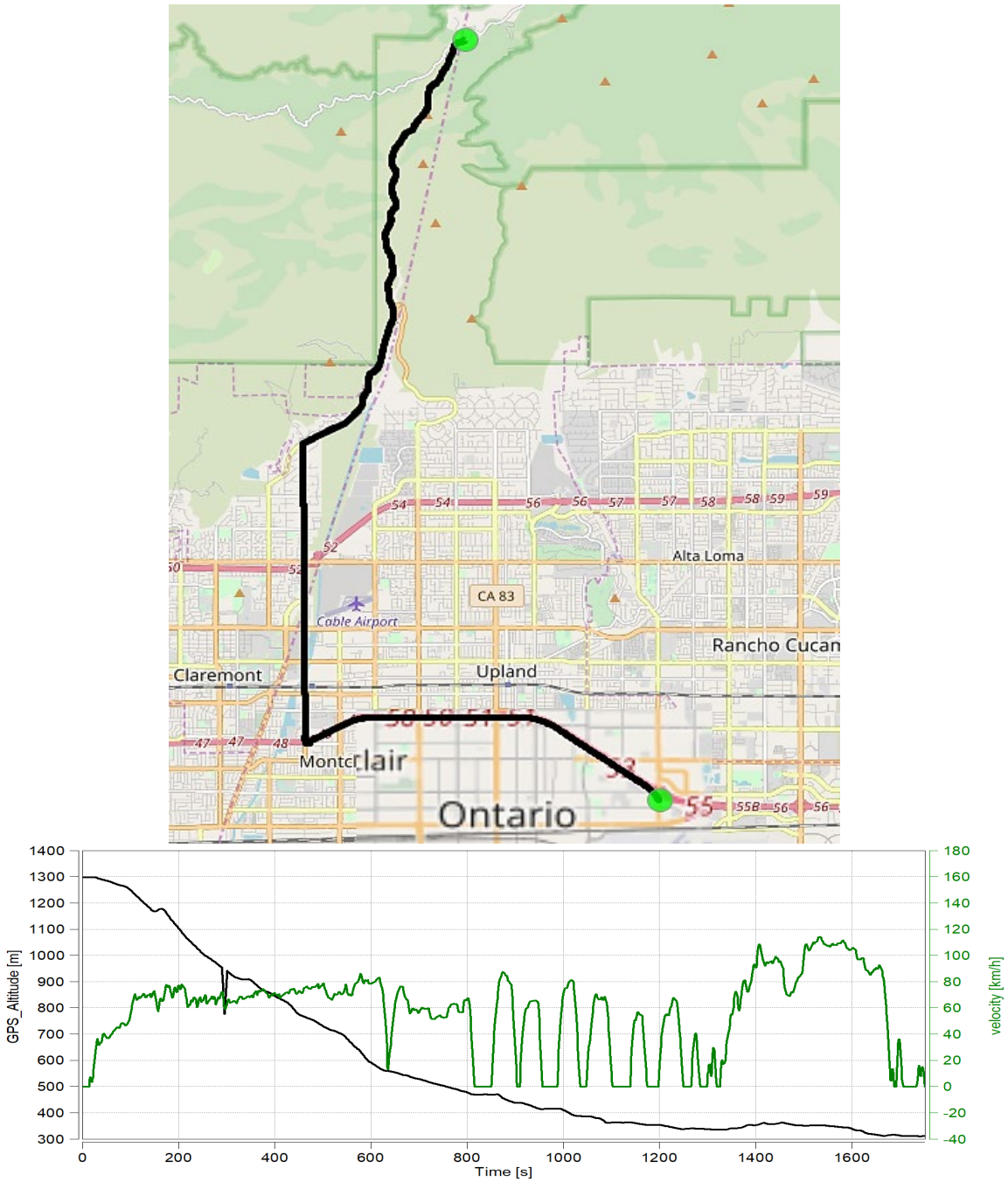


Figure 4. Map of Route B1 – Mountain Downhill. Including speed and elevation

5.3 Long Beach to CARB Section (A0)

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

A0 – Long Beach to CARB

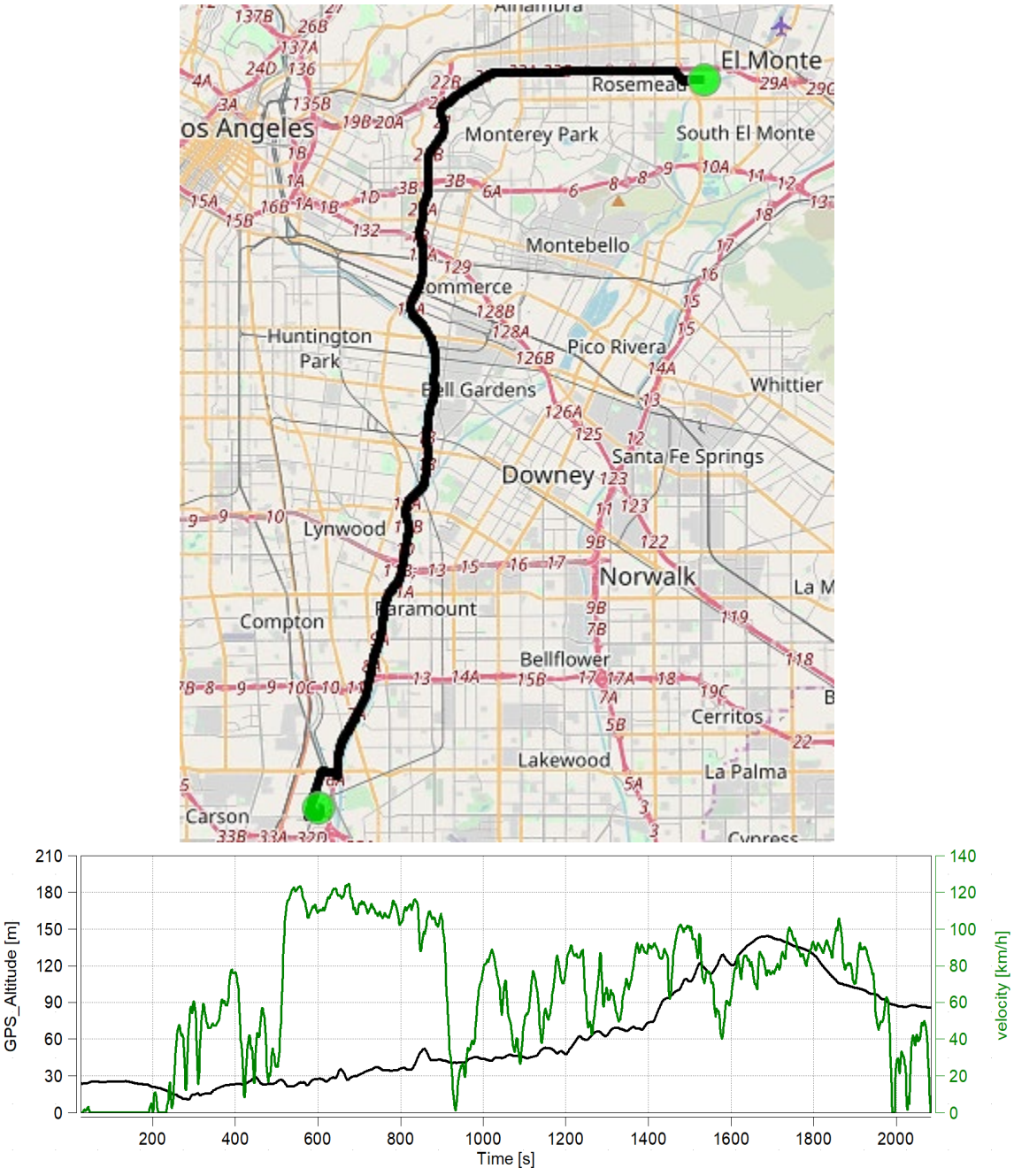


Figure 5. Map of Route A0 – Long Beach to CARB, El Monte. Including speed and elevation

5.4 LA City Driving Section

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

LA City Route

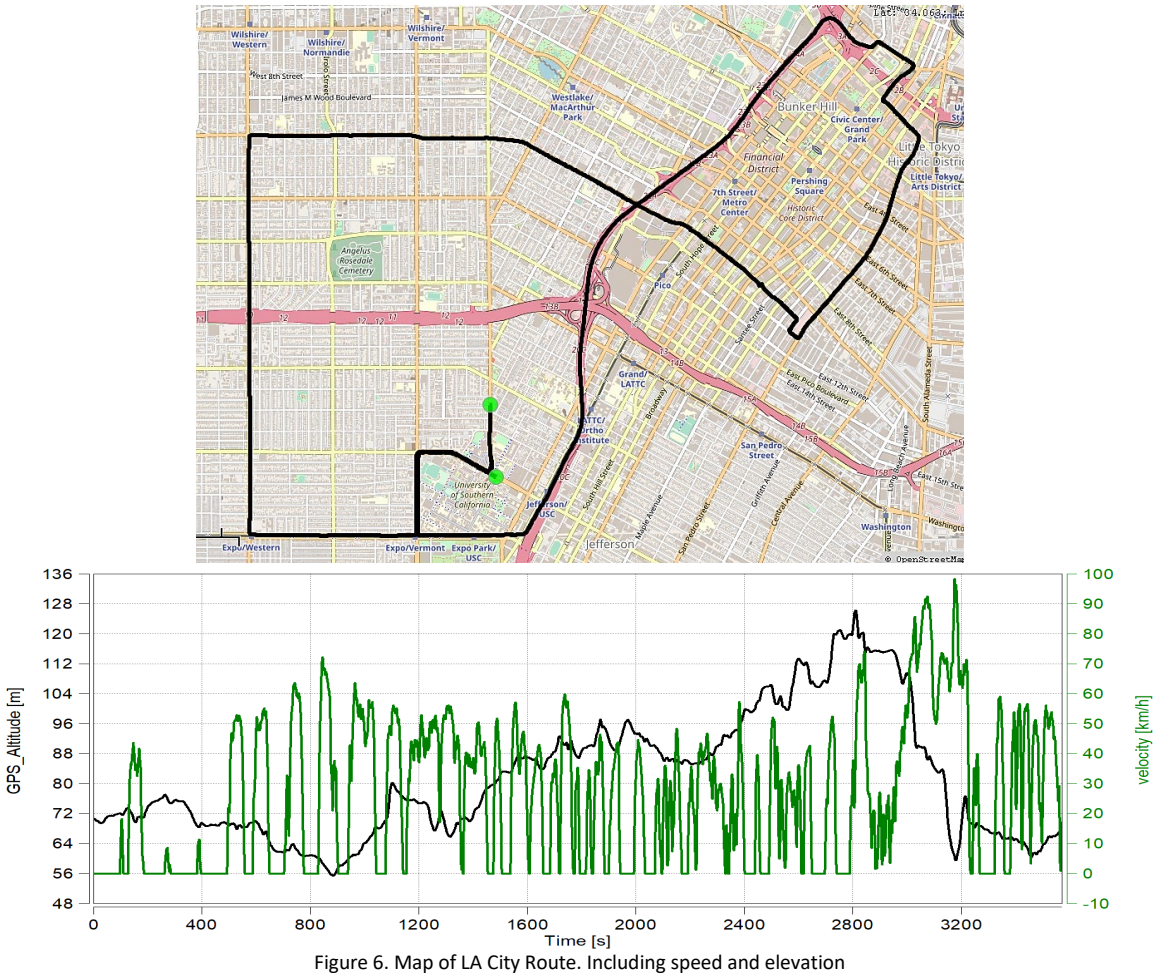


Figure 6. Map of LA City Route. Including speed and elevation

6. Log Sheets

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

The information is provided in the file: Flat_File_Log_Sheet_GLC300 MY21 2020-Feb-20.pdf

This file contains log sheet information on PEMS testing conducted with the MY2021 Mercedes-Benz GLC300 4MATIC test vehicle X253-3303. 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.

Case: X253-3303

Page: Trip Summary

'X253-3303 A1 HWY EAST'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1536.00	s
Trip Duration (a)	1536.00	s
Trip Distance	26.88	mi
Trip Distance (a)	26.88	mi
Trip Fuel Cons. (b)	2.49	kg
Trip Fuel Cons. (ab)	2.49	kg
Trip Fuel Cons. EU (ac)	2.85	kg
Trip Fuel Cons. US (ac)	2.85	kg
Trip Fuel Economy (b)	30.53	mpg_US
Trip Fuel Economy (ab)	30.53	mpg_US
Trip Fuel Economy EU (ac)	26.67	mpg_US
Trip Fuel Economy US (ac)	26.71	mpg_US
Trip Fuel Economy GGE (b)	30.53	mpg_US
Trip Fuel Economy GGE (ab)	30.53	mpg_US
Trip Fuel Economy EU GGE (ac)	26.67	mpg_US
Trip Fuel Economy US GGE (ac)	26.71	mpg_US
Trip Av. Eng. Speed	1753.31	rpm
Trip Av. Torque	111.10	lbft
Trip Av. Power	39.57	hp
Trip Work		
Trip Work (a)	16.88	hphr
Trip Exhaust Mass	43.95	kg
Trip Exhaust Mass EU (ac)	38.03	kg
Trip Exhaust Mass US (ac)	38.11	kg
Trip Av. Amb. Temperature	68.06	deg_F
Trip Av. Humidity	31.66	%
Trip Av. GPS Altitude	227.49	m
Fuel Type	Petrol (E10)	

ave THC	-1.50815	ppm
ave NMHC	-1.47799	ppm
ave CH4	-0.03016	ppm
ave CO	237.01950	ppm
ave CO2	12.32893	%
ave NOx	3.93470	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	-0.01616	g
tot NMHC	-0.01495	g
tot CH4	-0.00036	g
tot CO	12.02398	g
tot CO2	8635.99710	g
tot NO (d)	0.06628	g
tot NO2	0.05690	g
tot NOx	0.12317	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	62.99611	mi/hr
Trip Distance Share Urban	3.04891	% distance
Trip Distance Share Rural	2.82091	% distance
Trip Distance Share Motorway	94.13018	% distance

BS CO2	511.54201	g/hphr
BS CO	0.71222	g/hphr
BS THC	-0.00096	g/hphr
BS NMHC	-0.00089	g/hphr
BS CH4	-0.00002	g/hphr
BS NO (d)	0.00393	g/hphr
BS NO2	0.00337	g/hphr
BS NOx	0.00730	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	321.29948	g/mi
DS CO	0.44735	g/mi
DS THC	-0.00060	g/mi
DS NMHC	-0.00056	g/mi
DS CH4	-0.00001	g/mi
DS NO (d)	0.00247	g/mi
DS NO2	0.00212	g/mi
DS NOx	0.00458	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3466.37308	g/kg
FS CO	4.82626	g/kg
FS THC	-0.00649	g/kg
FS NMHC	-0.00600	g/kg
FS CH4	-0.00014	g/kg
FS NO (d)	0.02660	g/kg
FS NO2	0.02284	g/kg
FS NOx	0.04944	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 A1 HWY EAST'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1536.00	s
Trip Duration (a)	1536.00	s
Trip Distance	26.88	mi
Trip Distance (a)	26.88	mi
Trip Fuel Cons. (b)	2.49	kg
Trip Fuel Cons. (ab)	2.49	kg
Trip Fuel Cons. EU (ac)	2.85	kg
Trip Fuel Cons. US (ac)	2.85	kg
Trip Fuel Economy (b)	30.53	mpg_US
Trip Fuel Economy (ab)	30.53	mpg_US
Trip Fuel Economy EU (ac)	26.67	mpg_US
Trip Fuel Economy US (ac)	26.71	mpg_US
Trip Fuel Economy GGE (b)	30.53	mpg_US
Trip Fuel Economy GGE (ab)	30.53	mpg_US
Trip Fuel Economy EU GGE (ac)	26.67	mpg_US
Trip Fuel Economy US GGE (ac)	26.71	mpg_US
Trip Av. Eng. Speed	1753.31	rpm
Trip Av. Torque	111.10	lbft
Trip Av. Power	39.57	hp
Trip Work		
Trip Work (a)	16.88	hphr
Trip Exhaust Mass	43.95	kg
Trip Exhaust Mass EU (ac)	38.03	kg
Trip Exhaust Mass US (ac)	38.11	kg
Trip Av. Amb. Temperature	68.06	deg_F
Trip Av. Humidity	31.66	%
Trip Av. GPS Altitude	227.49	m
Fuel Type	Petrol (E10)	

ave THC DC	-1.17472	ppm
ave NMHC DC	-1.15123	ppm
ave CH4 DC	-0.02349	ppm
ave CO DC	236.71498	ppm
ave CO2 DC	12.34282	%
ave NOx DC	3.93207	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	-0.00881	g
tot NMHC DC	-0.00815	g
tot CH4 DC	-0.00020	g
tot CO DC	12.00853	g
tot CO2 DC	8645.72597	g
tot NO DC (d)	0.06621	g
tot NO2 DC	0.05693	g
tot NOx DC	0.12314	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	62.99611	mi/hr
Trip Distance Share Urban	3.04891	% distance
Trip Distance Share Rural	2.82091	% distance
Trip Distance Share Motorway	94.13018	% distance

BS CO2 DC	512.11829	g/hphr
BS CO DC	0.71131	g/hphr
BS THC DC	-0.00052	g/hphr
BS NMHC DC	-0.00048	g/hphr
BS CH4 DC	-0.00001	g/hphr
BS NO DC (d)	0.00392	g/hphr
BS NO2 DC	0.00337	g/hphr
BS NOx DC	0.00729	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	321.66144	g/mi
DS CO DC	0.44677	g/mi
DS THC DC	-0.00033	g/mi
DS NMHC DC	-0.00030	g/mi
DS CH4 DC	-0.00001	g/mi
DS NO DC (d)	0.00246	g/mi
DS NO2 DC	0.00212	g/mi
DS NOx DC	0.00458	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3470.27812	g/kg
FS CO DC	4.82006	g/kg
FS THC DC	-0.00354	g/kg
FS NMHC DC	-0.00327	g/kg
FS CH4 DC	-0.00008	g/kg
FS NO DC (d)	0.02658	g/kg
FS NO2 DC	0.02285	g/kg
FS NOx DC	0.04943	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

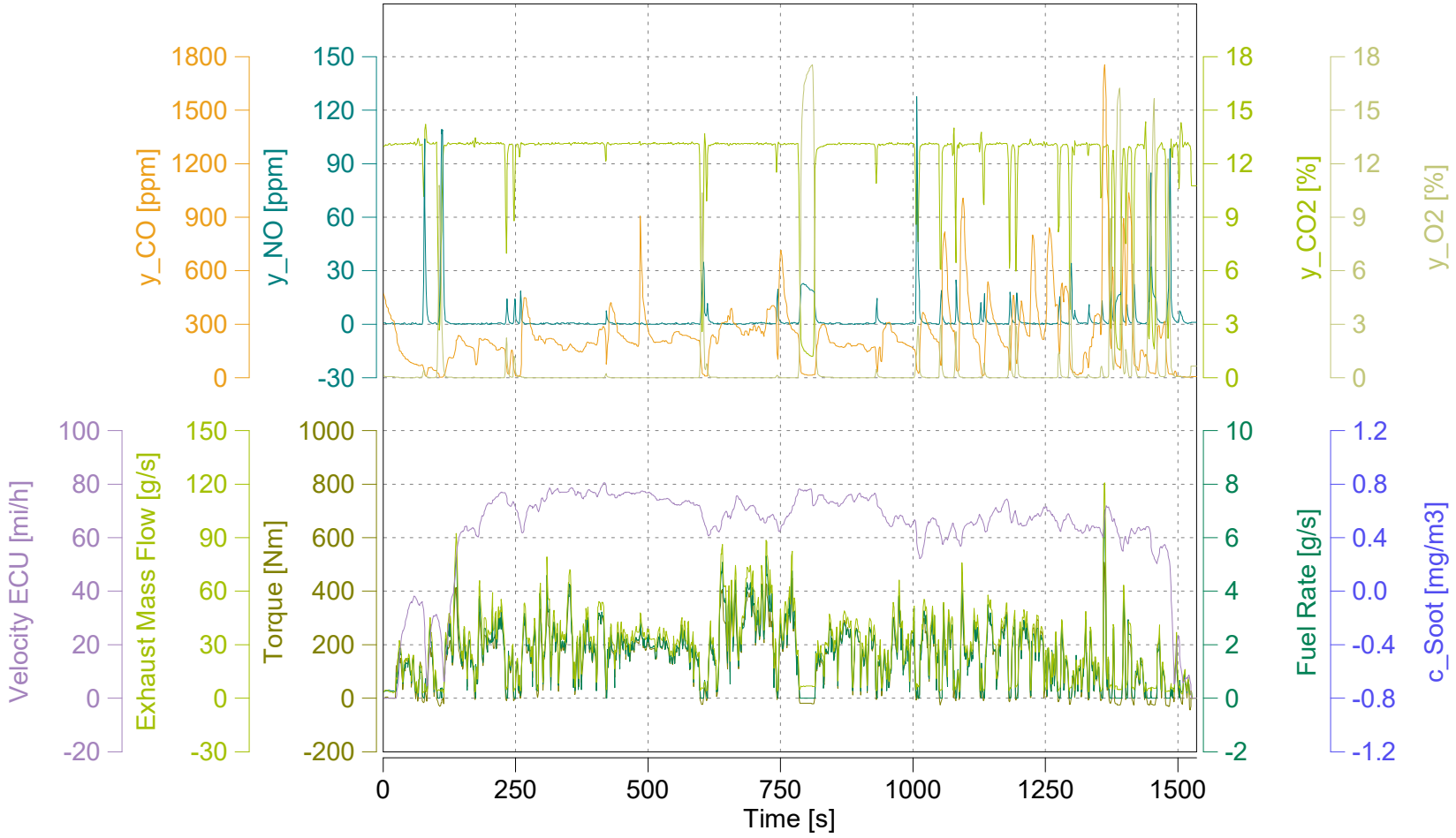
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

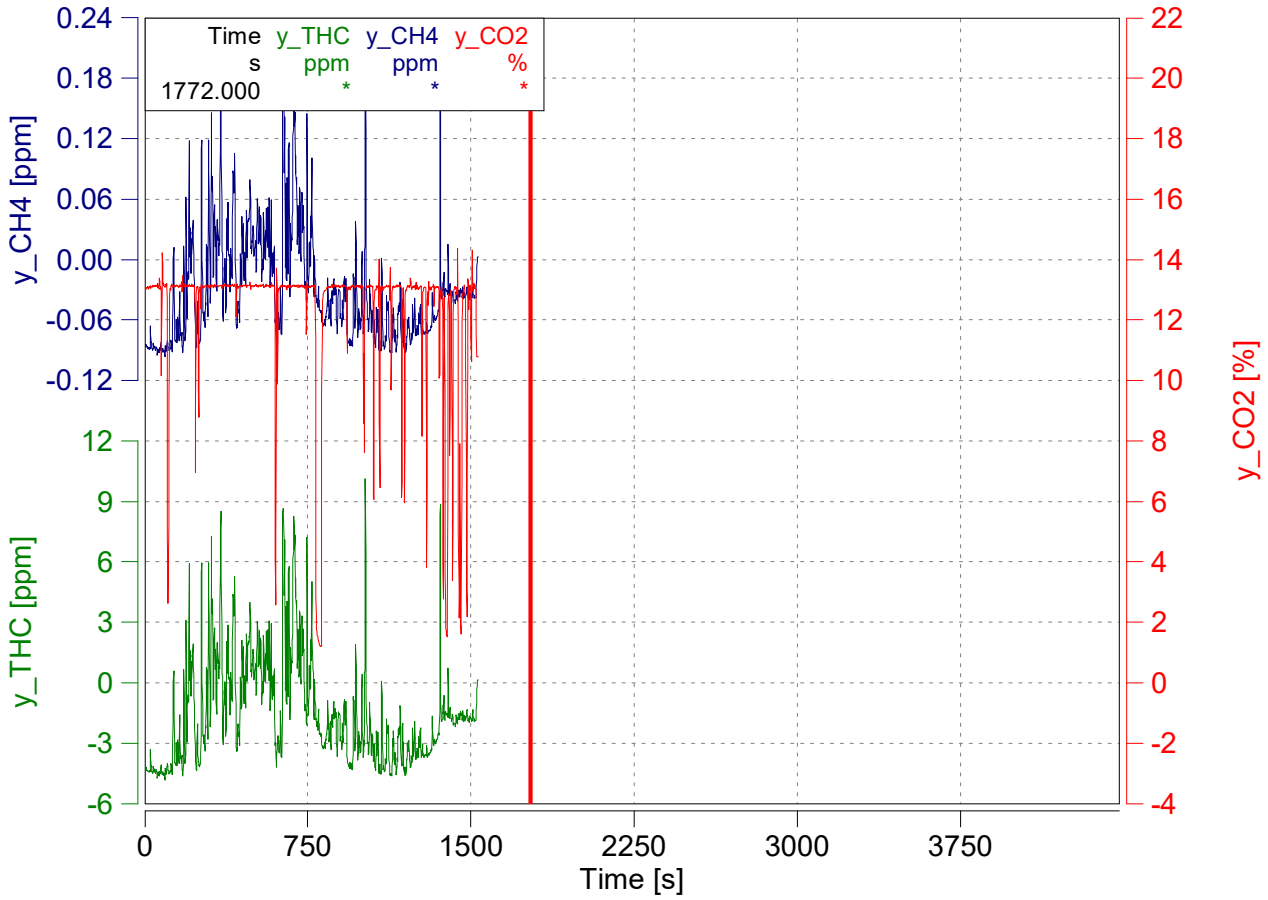
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

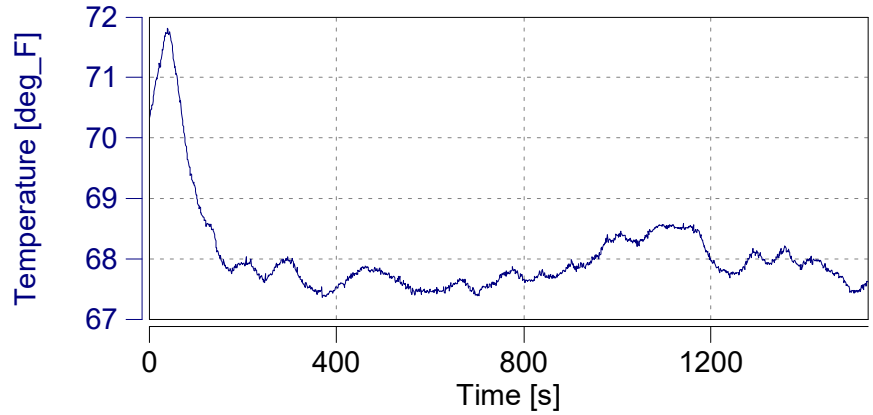
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

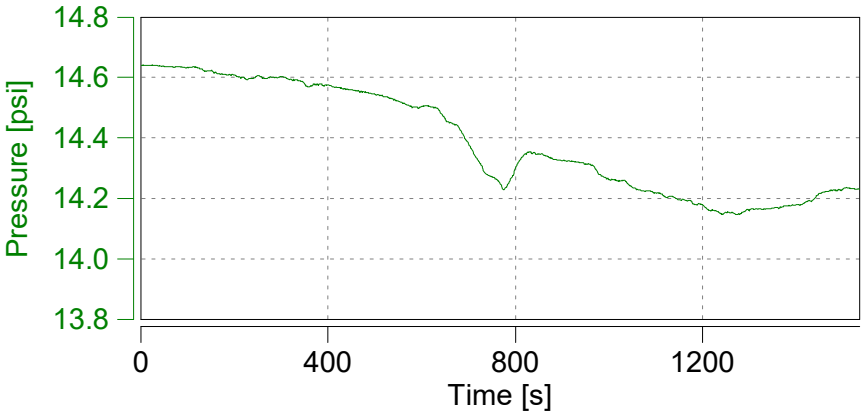
Case: X253-3303

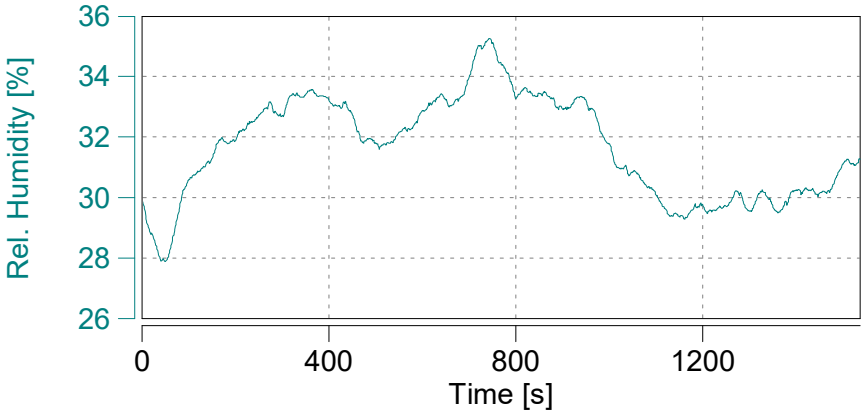
Page: Ambient Conditions

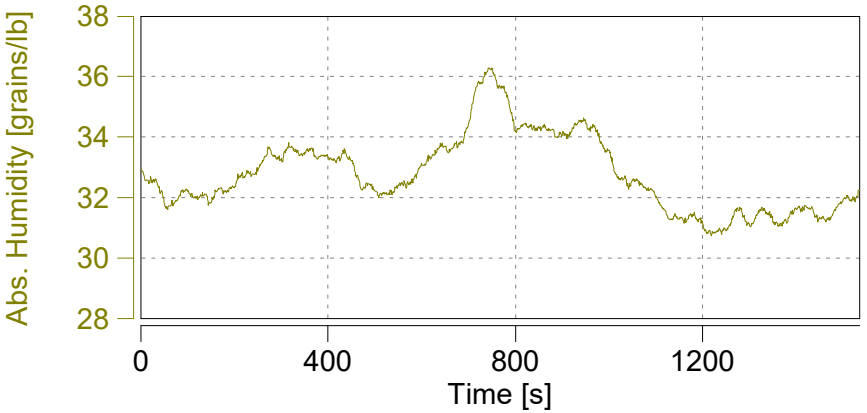
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

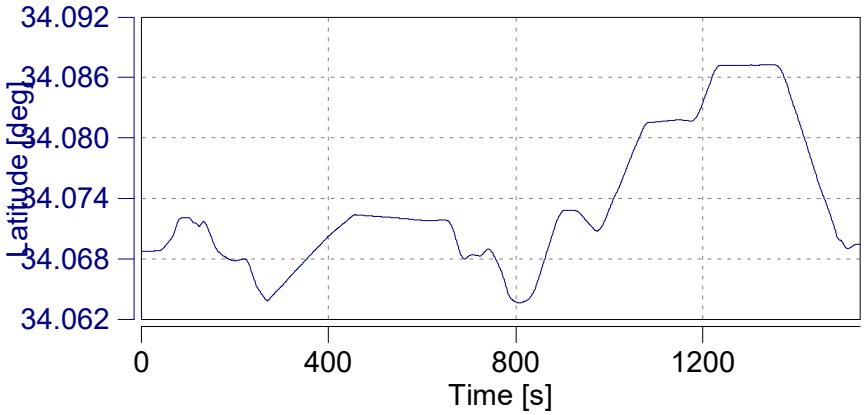
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

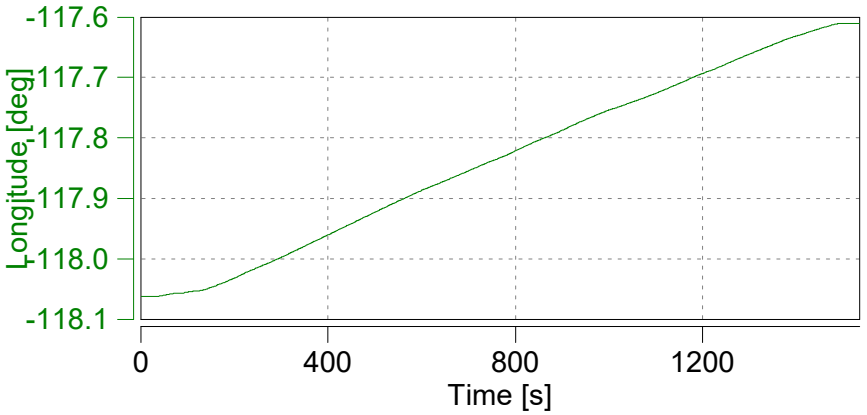
Case: X253-3303

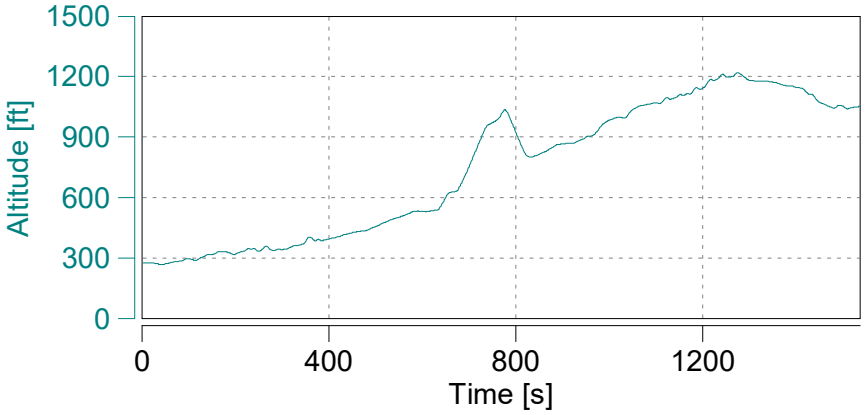
Page: GPS

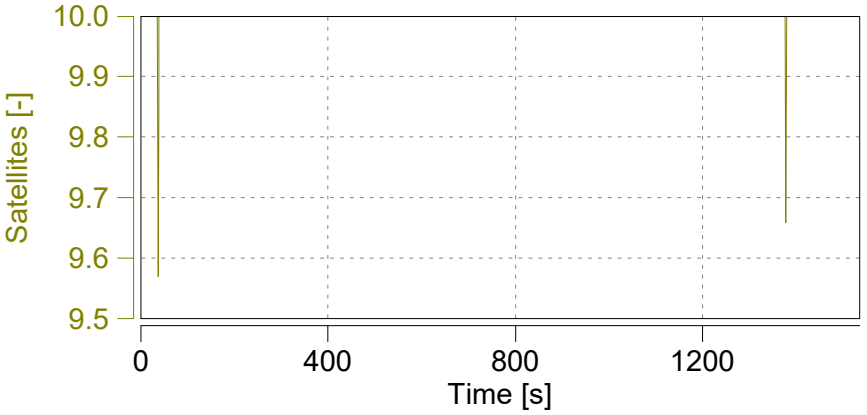
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

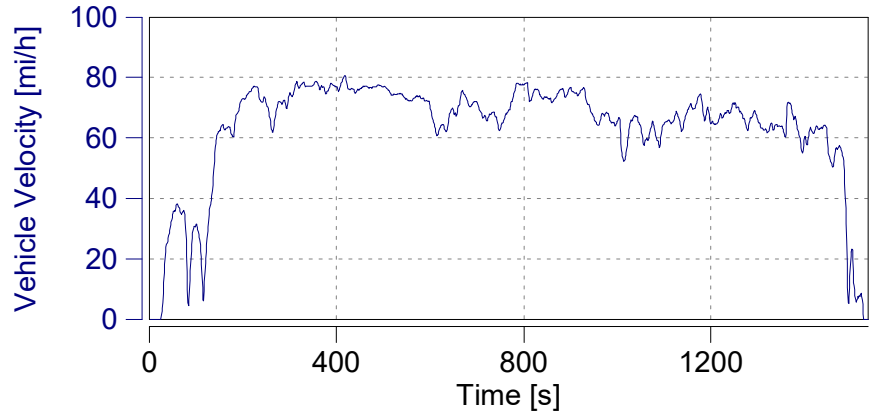
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

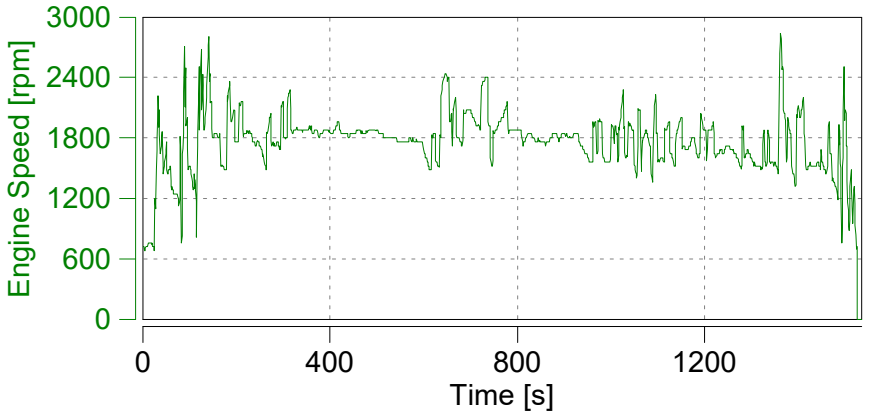
Case: X253-3303

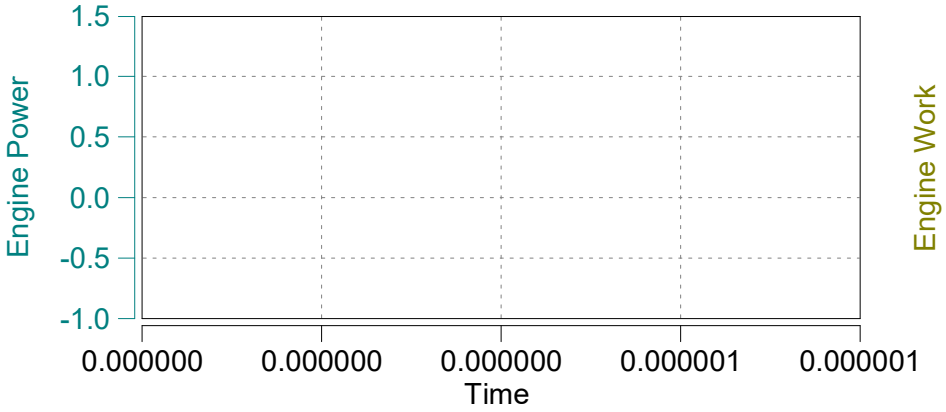
Page: Engine (1)

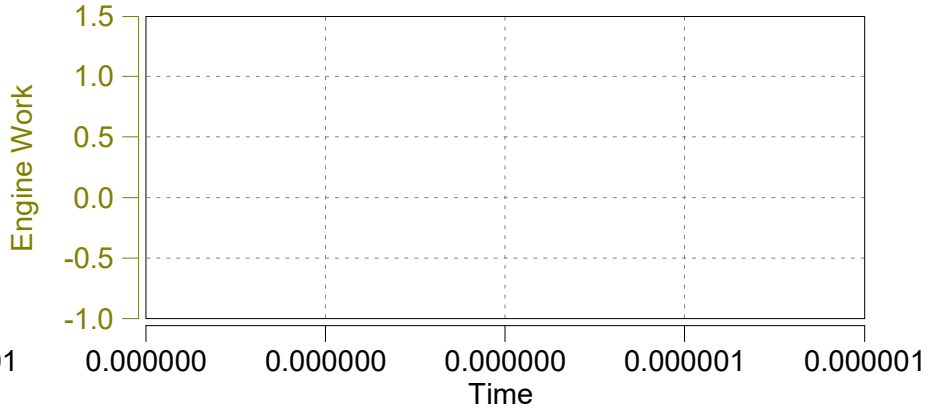
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

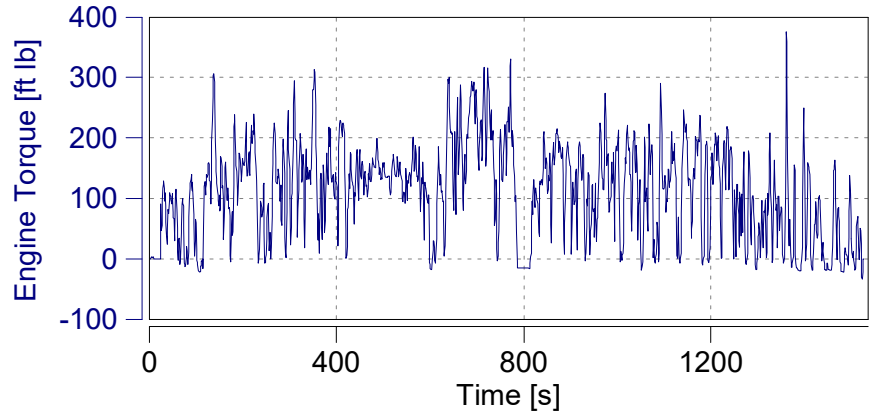
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

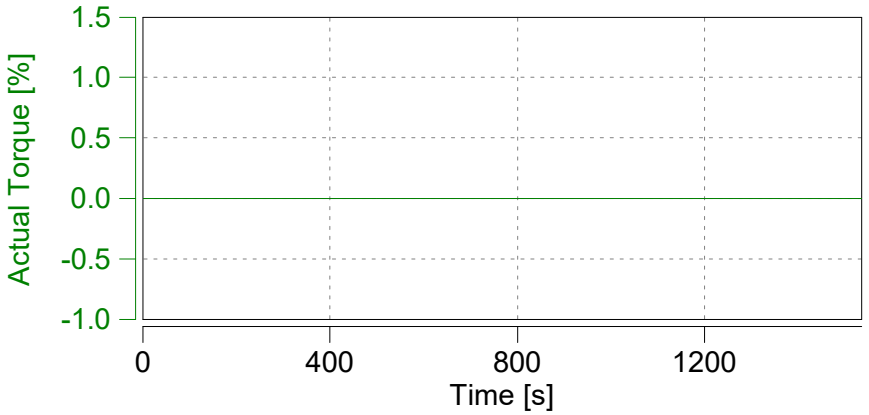
Case: X253-3303

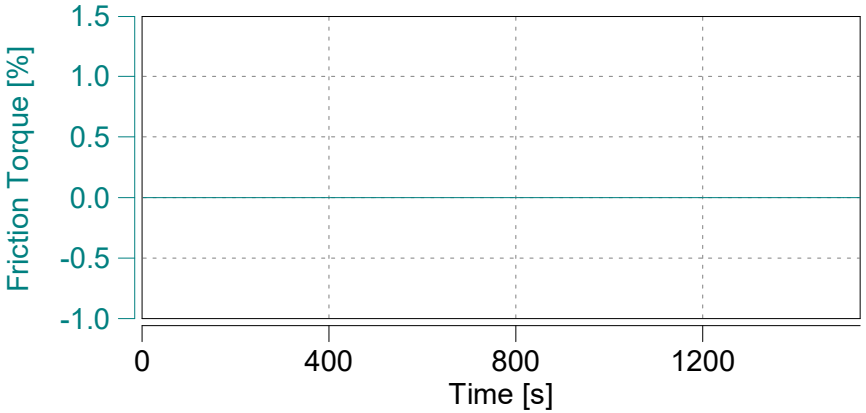
Page: Engine (2)

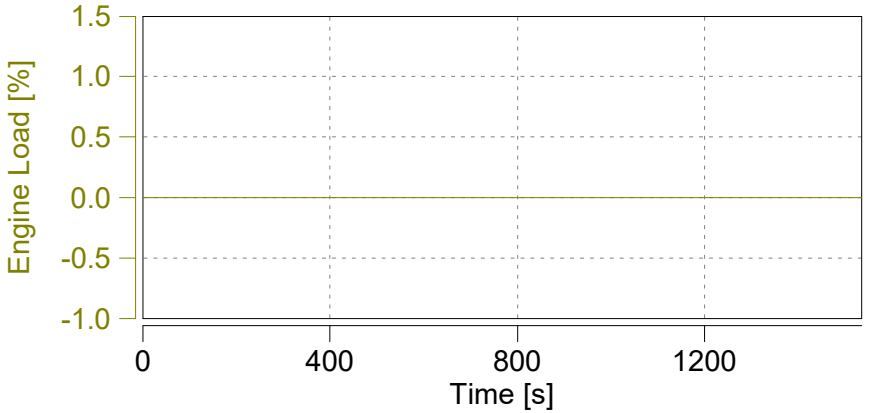
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

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Engine: /
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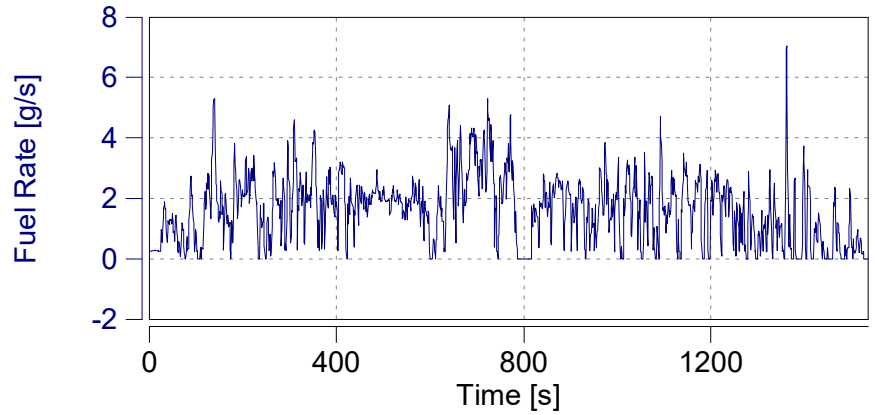
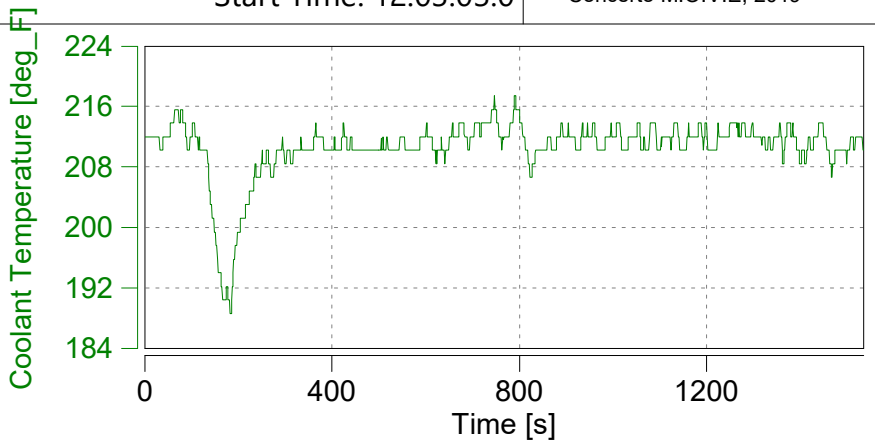
Case: X253-3303

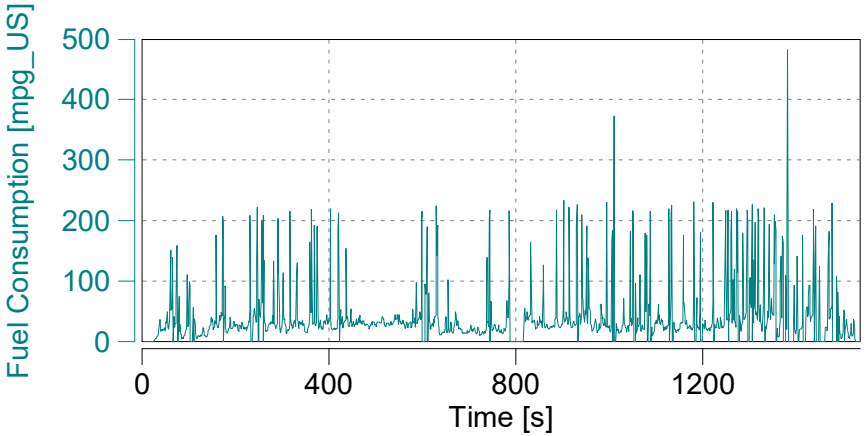
Page: Engine (3)

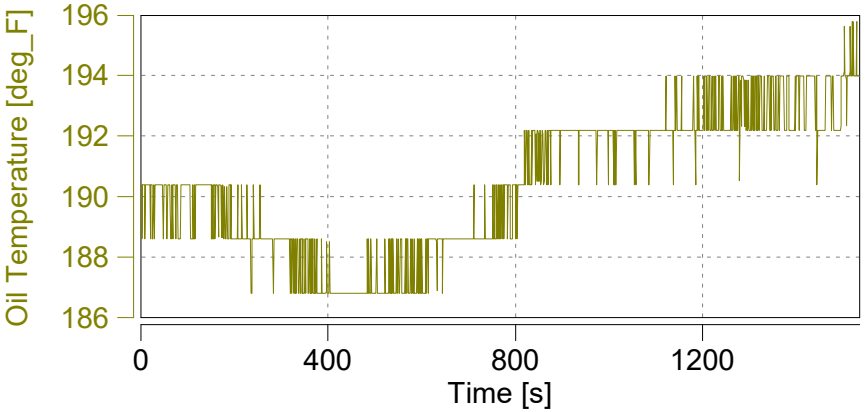
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
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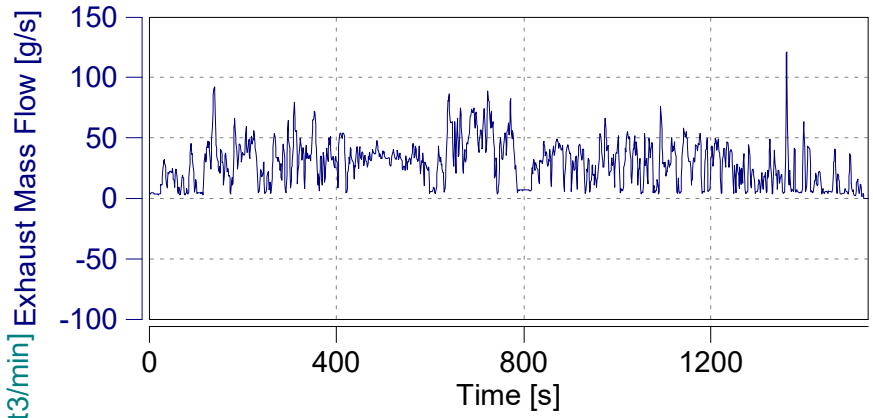
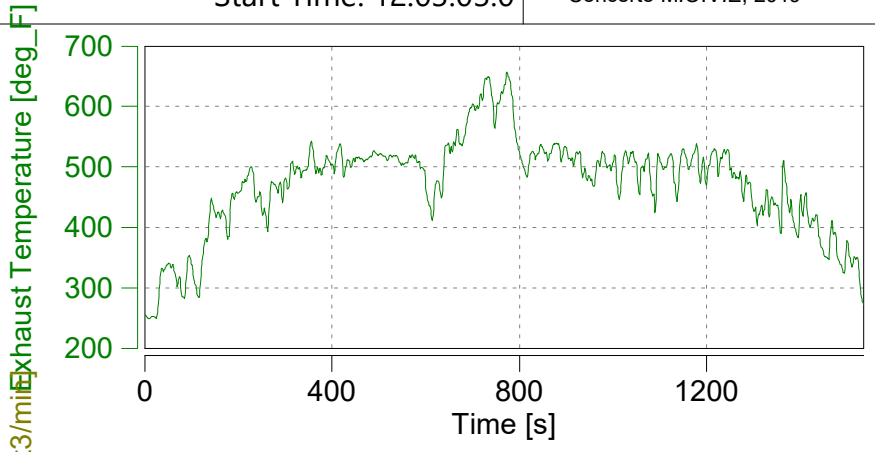
Case: X253-3303

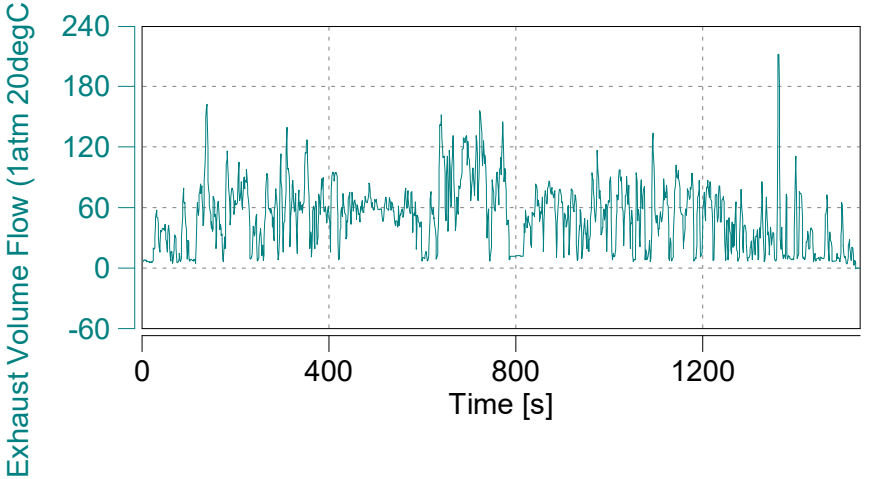
Page: Exhaust Flow (1)

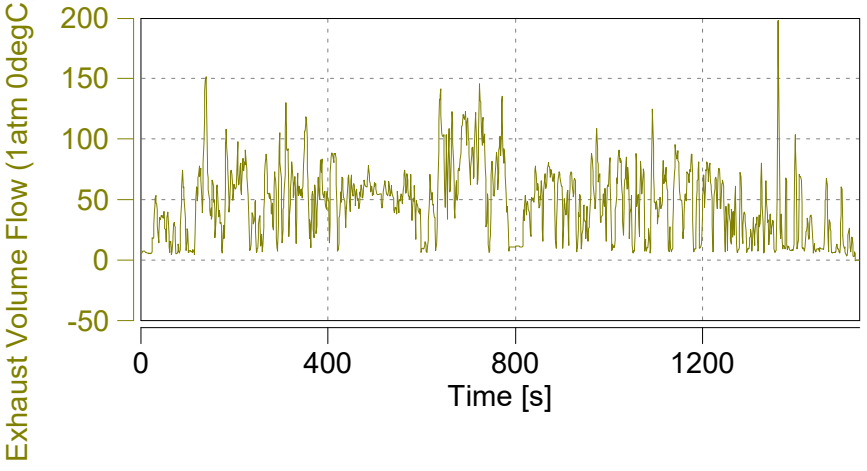
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
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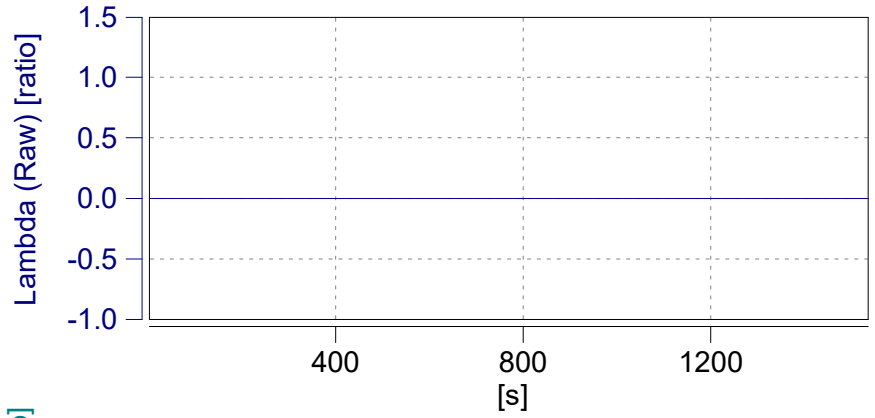
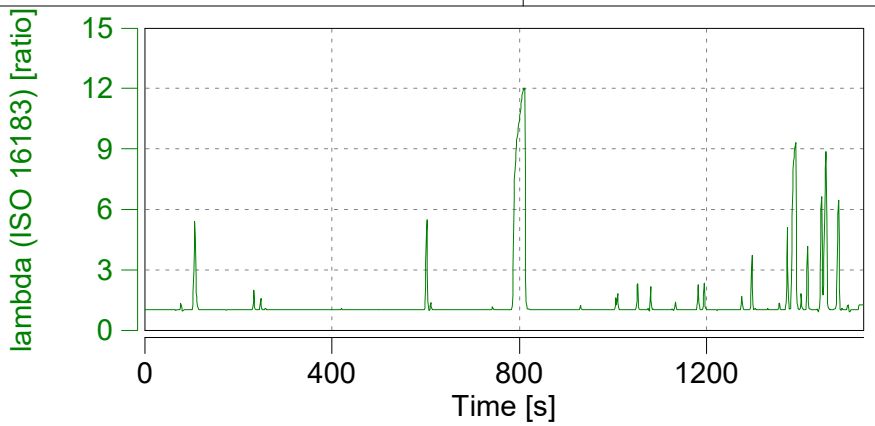
Case: X253-3303

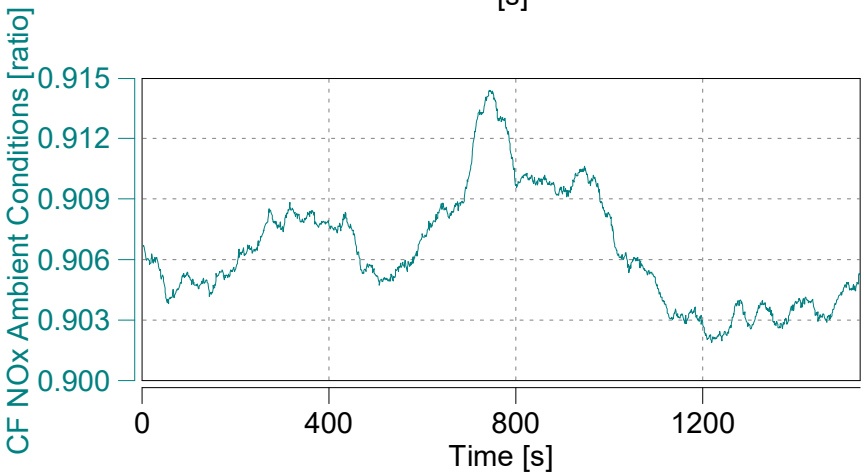
Page: Exhaust Flow (2)

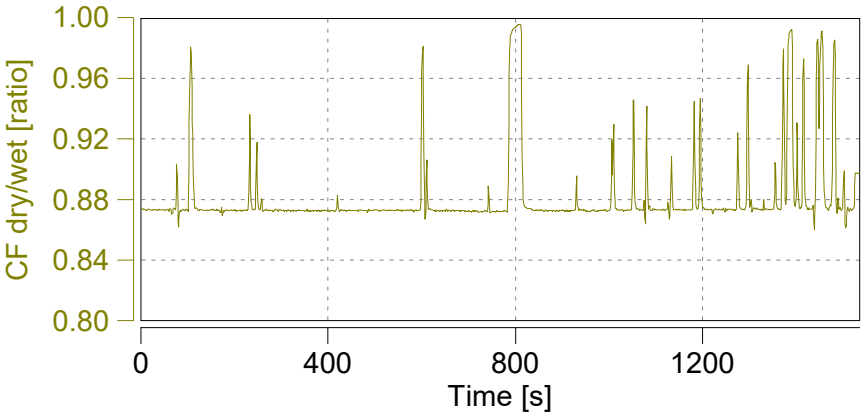
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

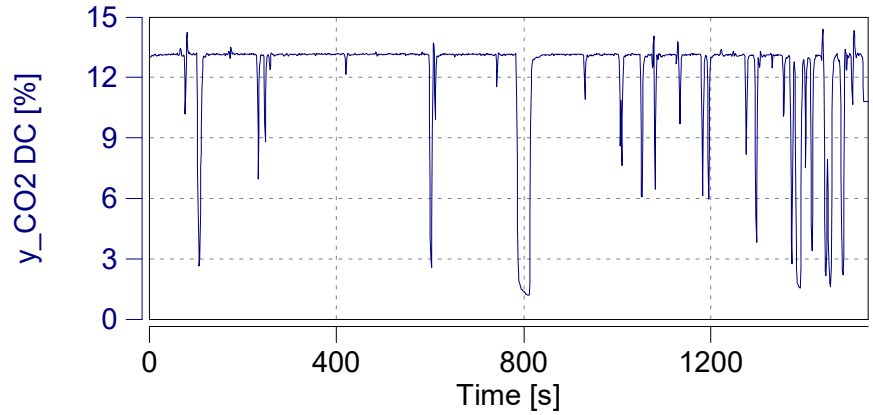
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

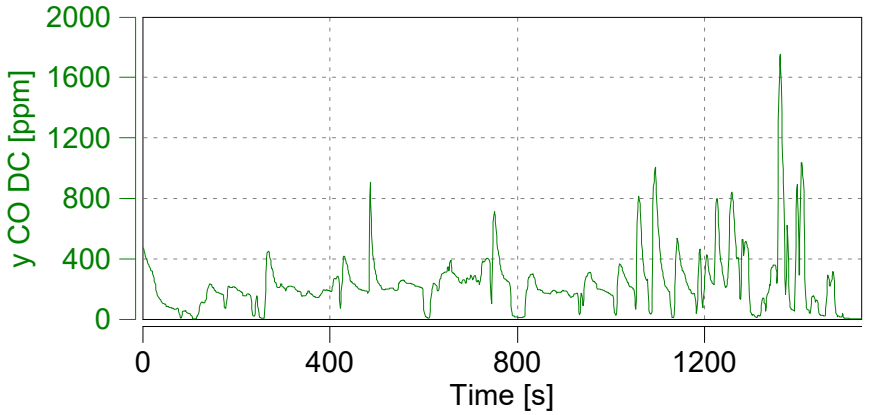
Case: X253-3303

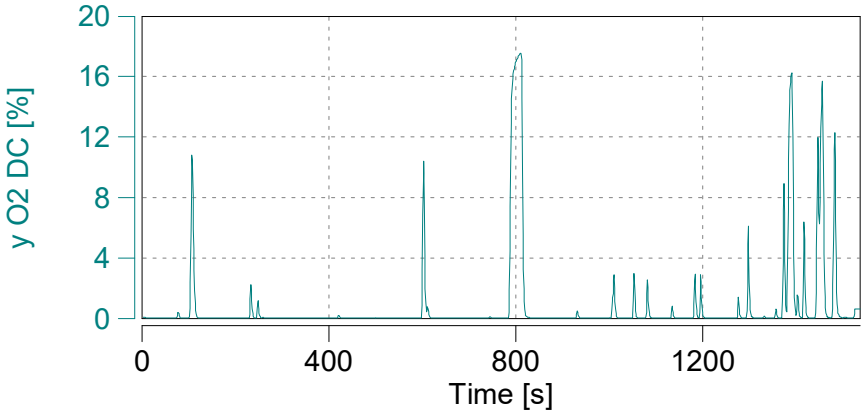
Page: Corrected Emissions (1)

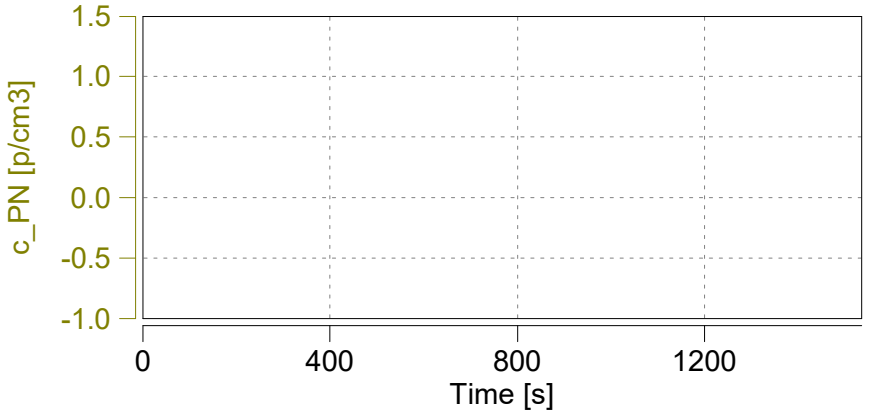
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

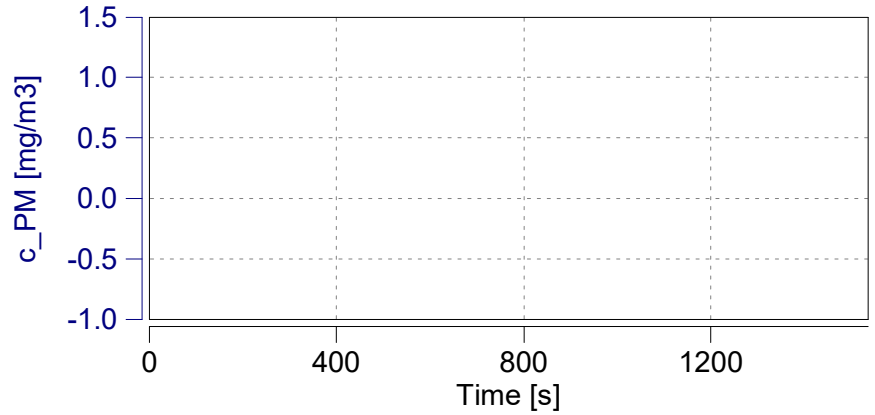
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

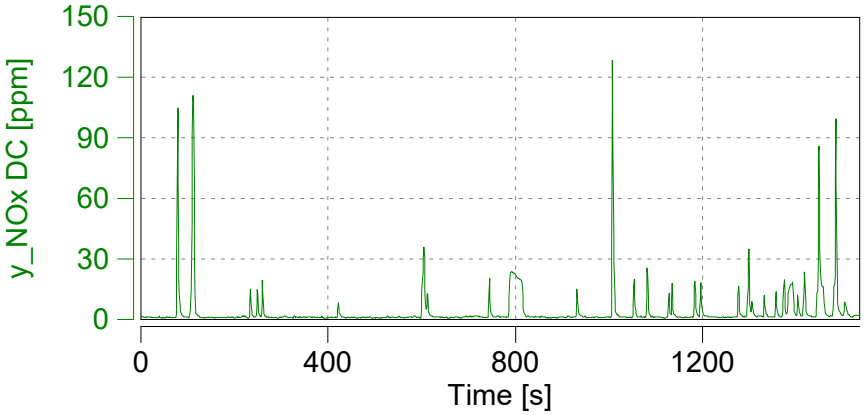
Case: X253-3303

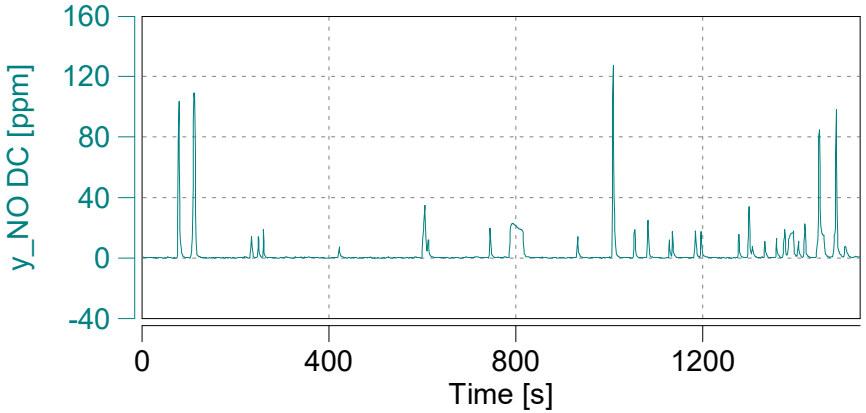
Page: Corrected Emissions (2)

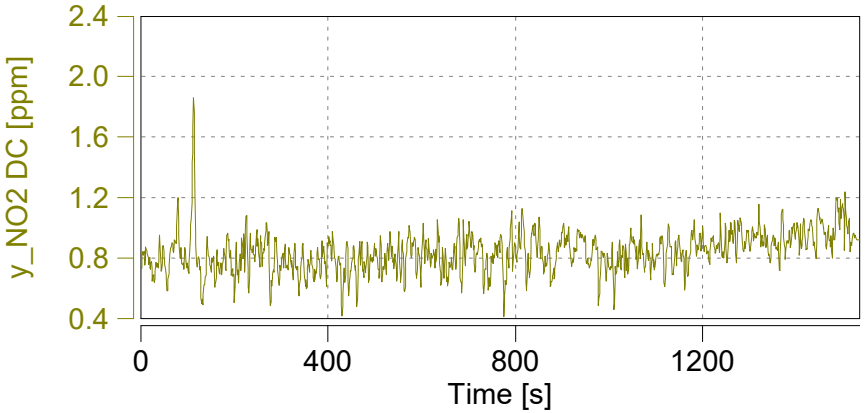
'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

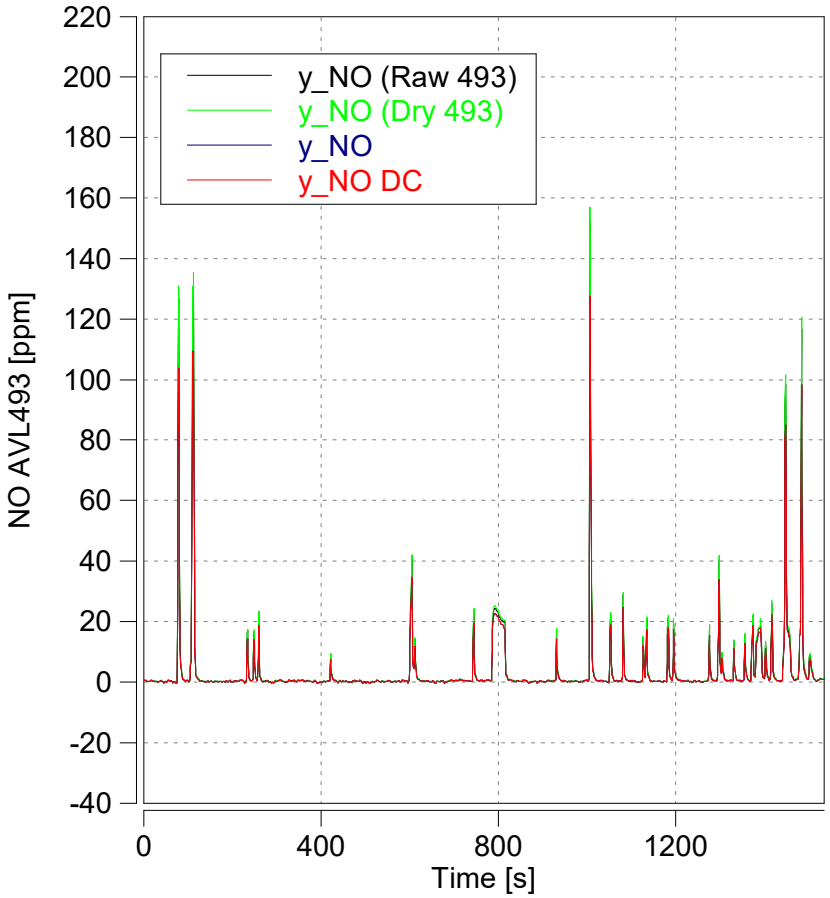
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

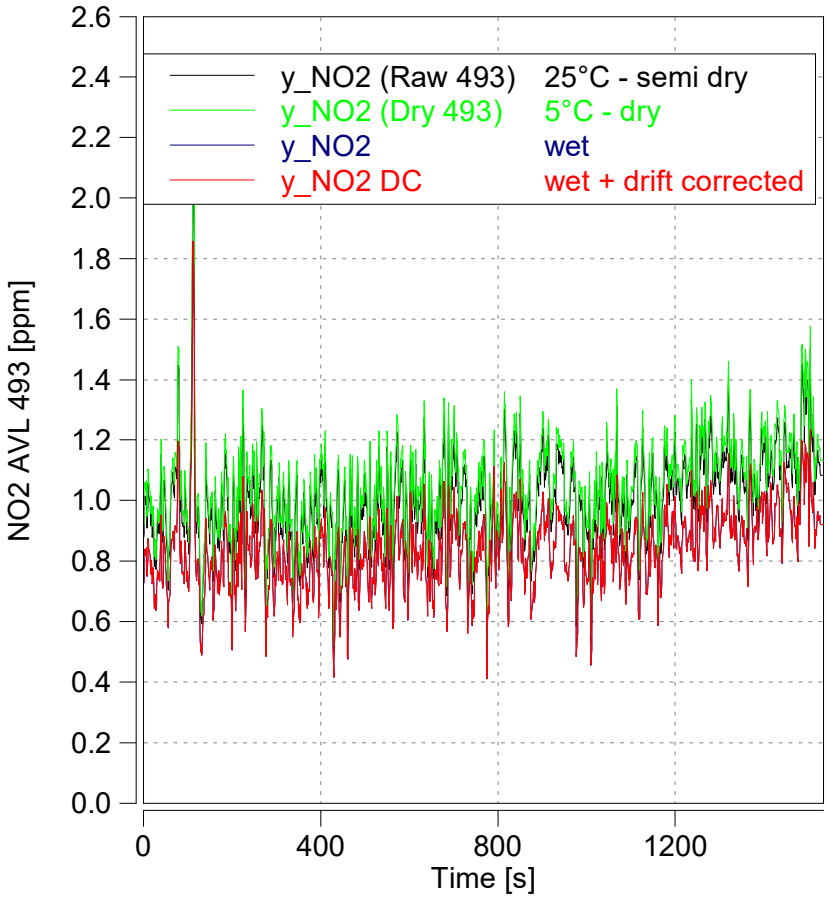
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





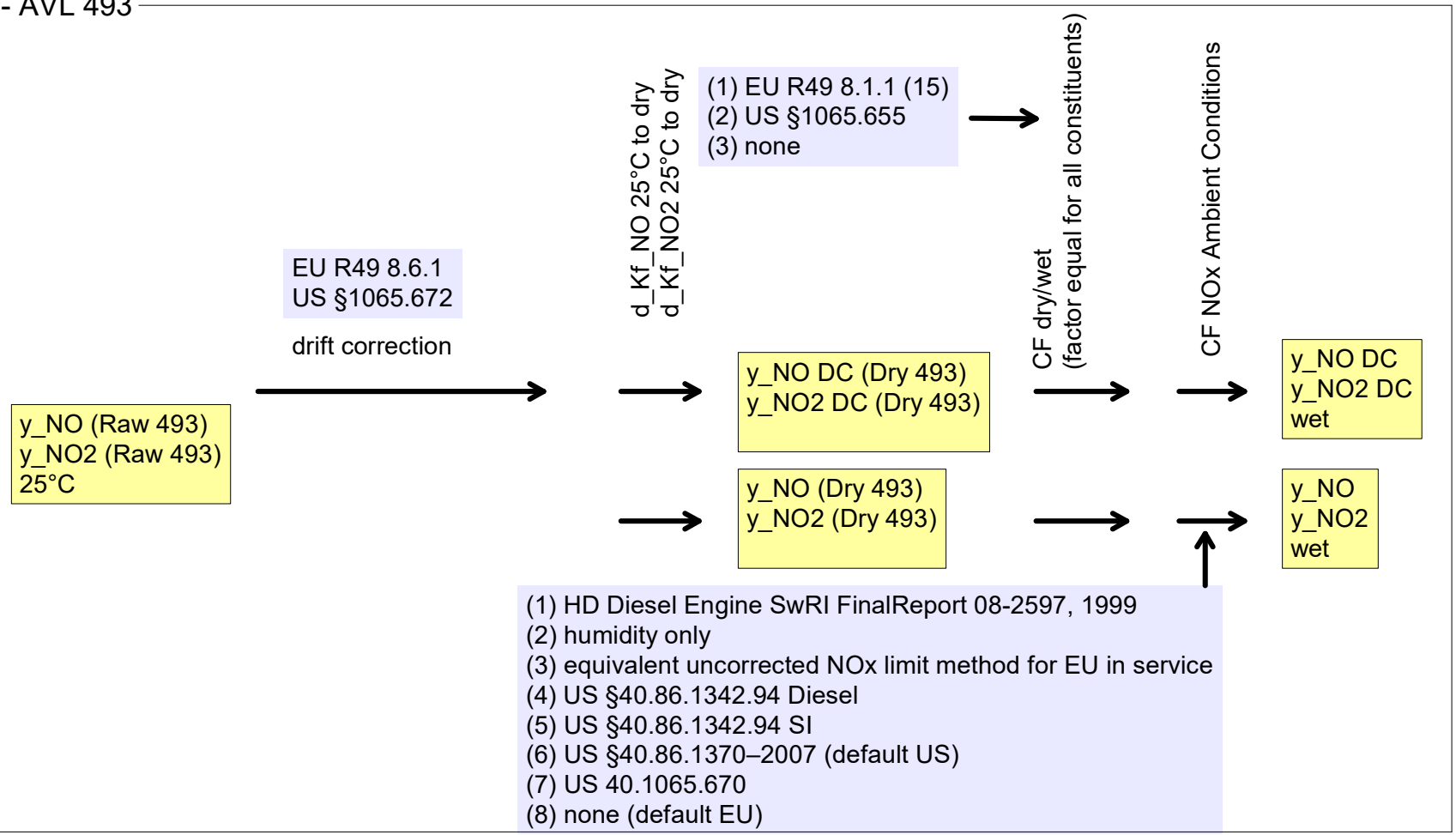
Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019

NOx - AVL 493

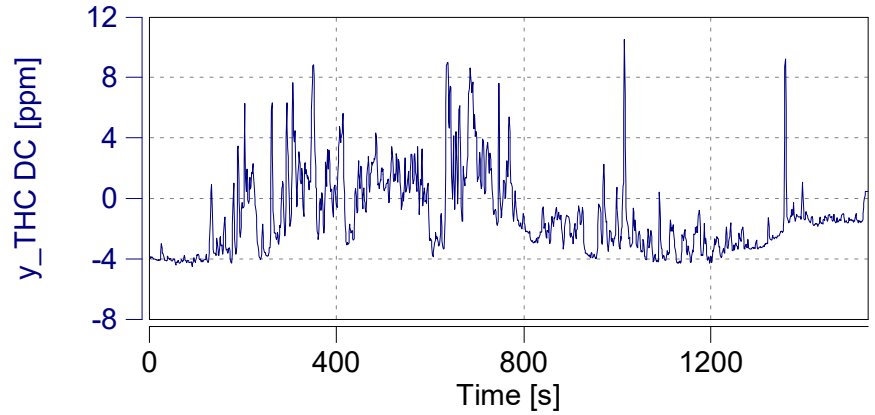


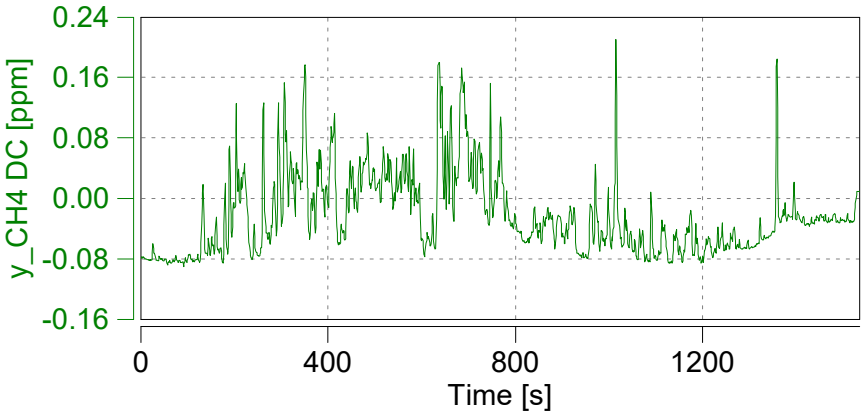
Case: X253-3303

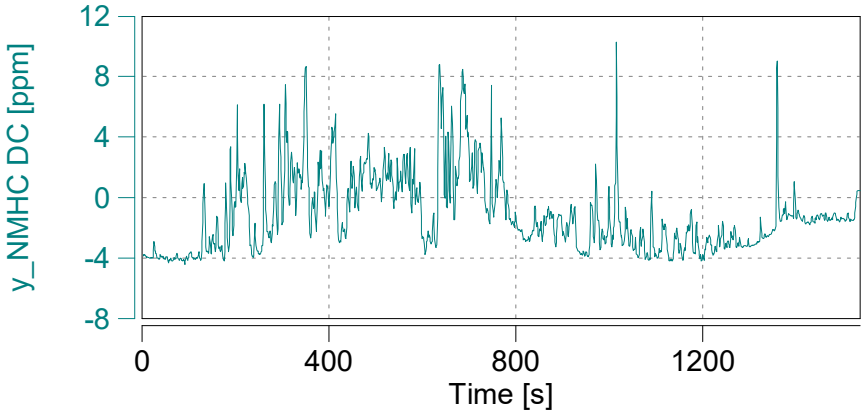
Page: Corrected Emissions (5)

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	11.3	3.6	85.2

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	50.6	%
Decelerating	45.2	%
Cruising	1.8	%
Stop	2.3	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

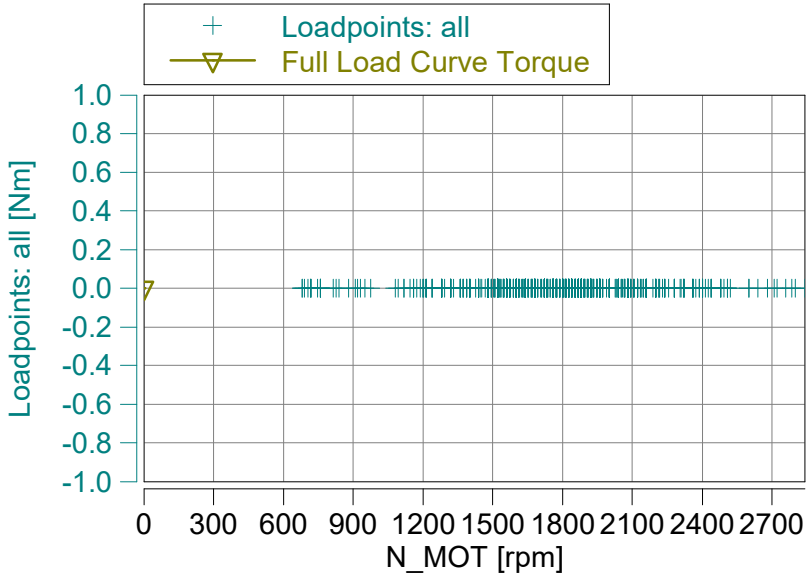
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.09
	r^2 = 0.98

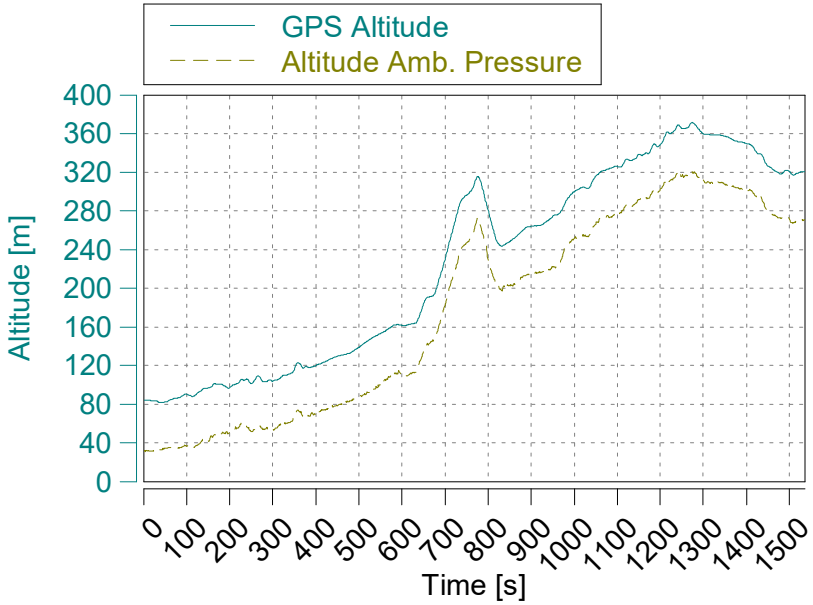
Case: X253-3303

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

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	1536.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	197.9	g/kWh
avg BSFC ISO16183	226.5	g/kWh
Distance ECU	43.3	km
Distance GPS	43.756	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
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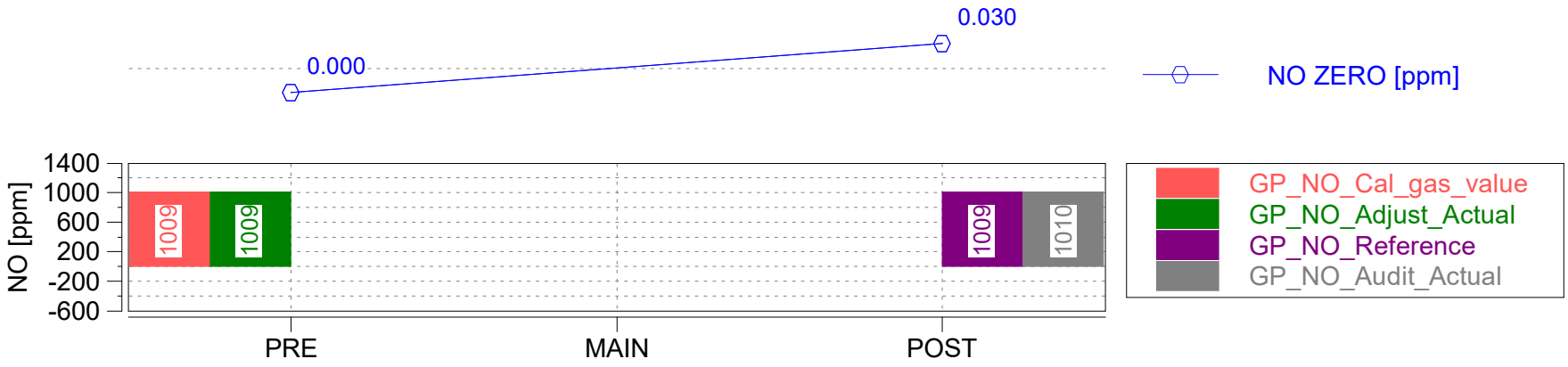
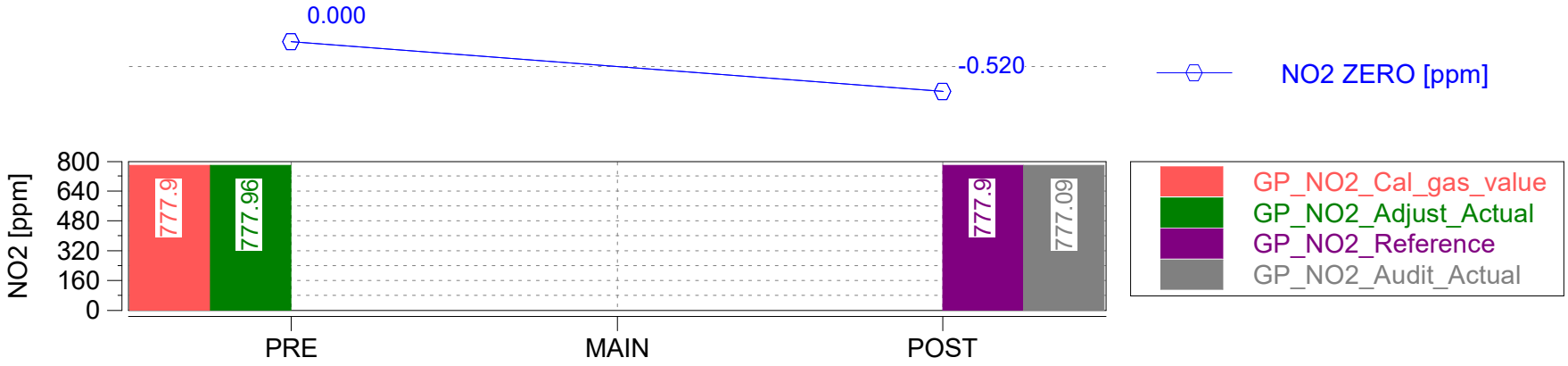
Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

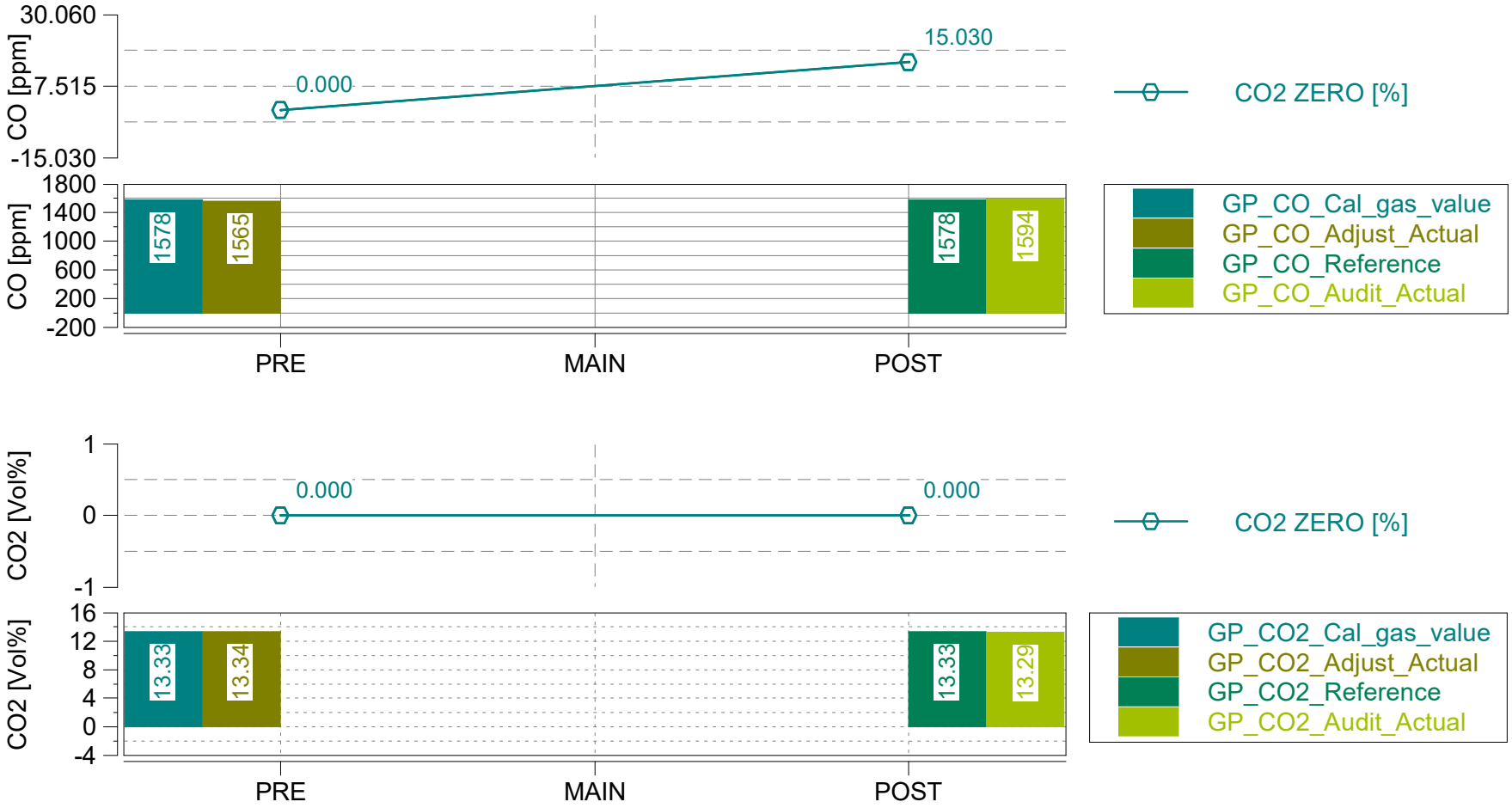
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

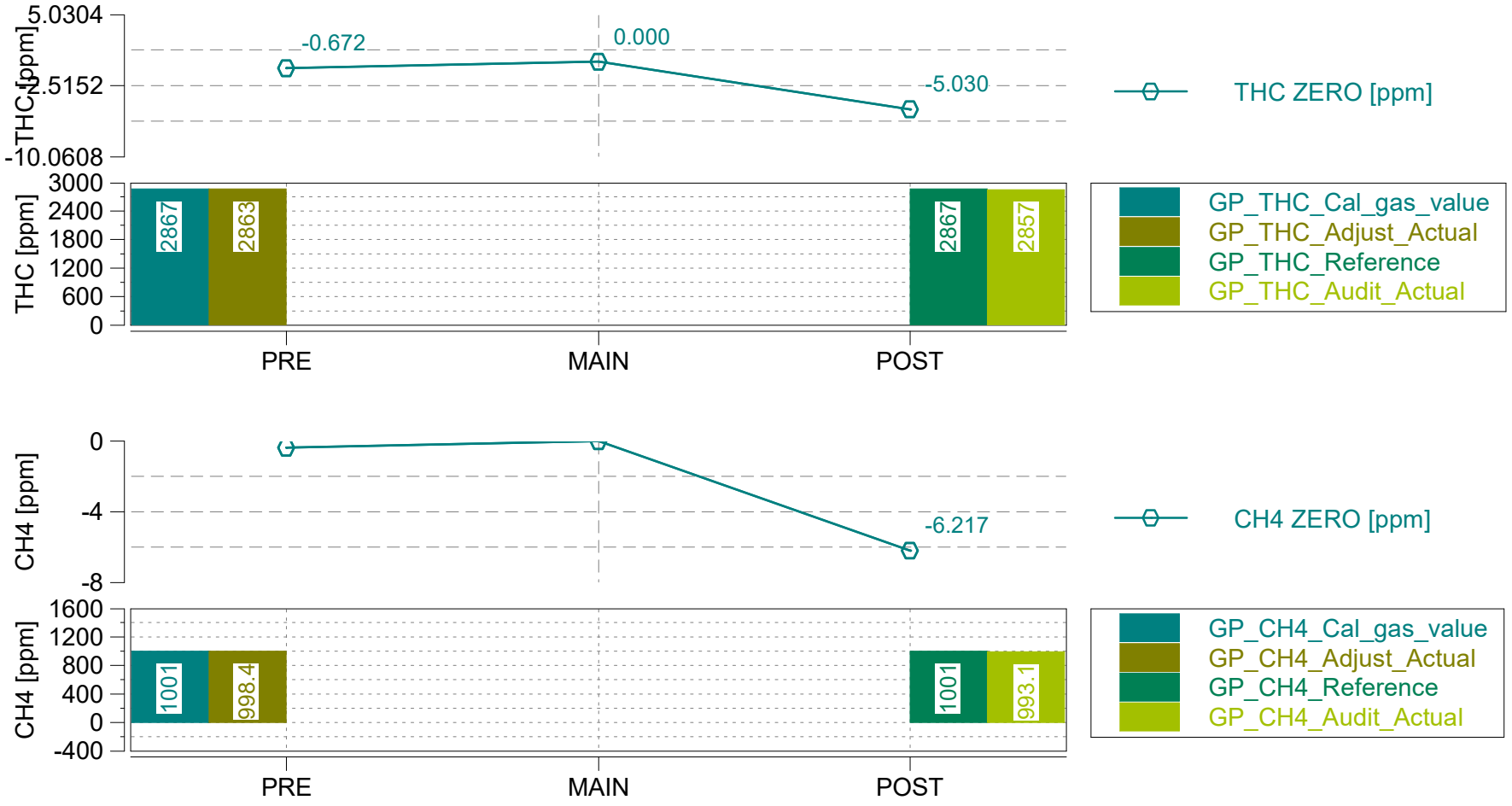
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

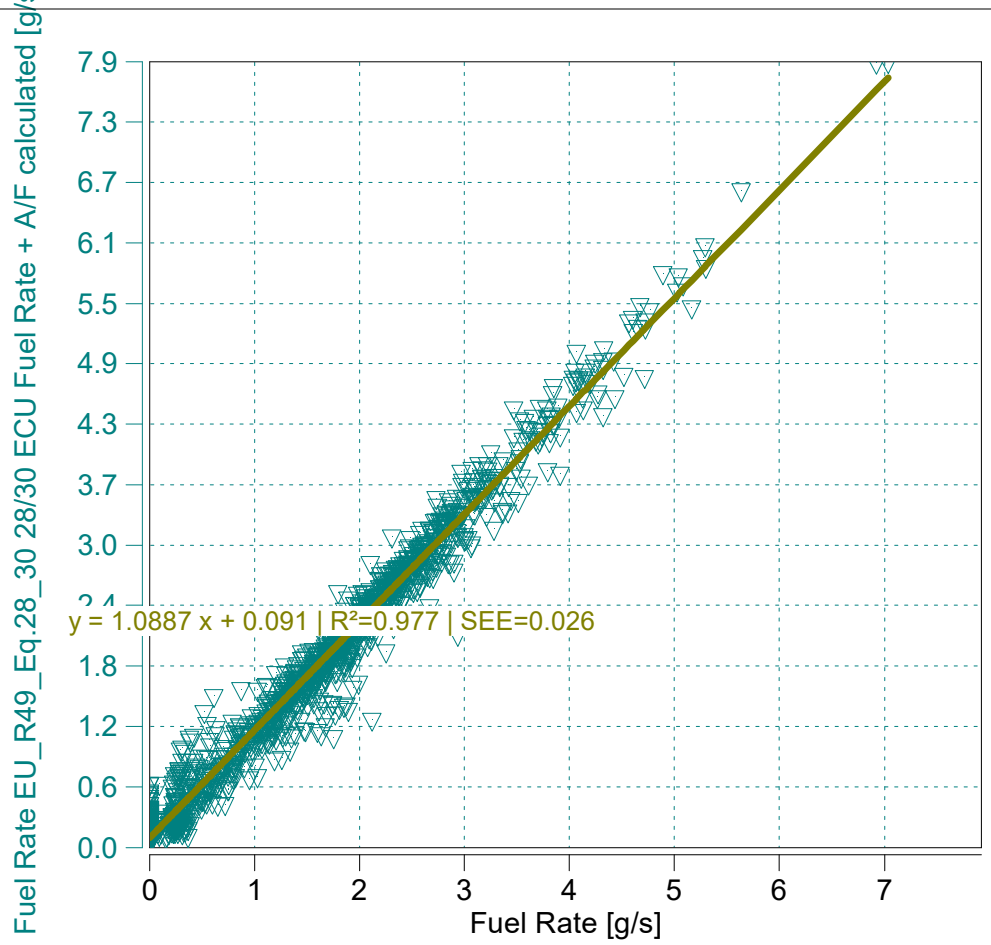
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 A1 HWY EAST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.0887 x + 0.091 | R²=0.977 | SEE=0.026
m = 1.09 (0.9 - 1.1 recommended)
R² = 0.98 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 | 100

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary

'X253-3303 B2 HWY WEST'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1734.00	s
Trip Duration (a)	1734.00	s
Trip Distance	27.80	mi
Trip Distance (a)	27.80	mi
Trip Fuel Cons. (b)	2.29	kg
Trip Fuel Cons. (ab)	2.29	kg
Trip Fuel Cons. EU (ac)	2.61	kg
Trip Fuel Cons. US (ac)	2.60	kg
Trip Fuel Economy (b)	34.33	mpg_US
Trip Fuel Economy (ab)	34.33	mpg_US
Trip Fuel Economy EU (ac)	30.17	mpg_US
Trip Fuel Economy US (ac)	30.22	mpg_US
Trip Fuel Economy GGE (b)	34.33	mpg_US
Trip Fuel Economy GGE (ab)	34.33	mpg_US
Trip Fuel Economy EU GGE (ac)	30.17	mpg_US
Trip Fuel Economy US GGE (ac)	30.22	mpg_US
Trip Av. Eng. Speed	1755.13	rpm
Trip Av. Torque	83.14	lbft
Trip Av. Power	30.71	hp
Trip Work		
Trip Work (a)	14.79	hphr
Trip Exhaust Mass	40.78	kg
Trip Exhaust Mass EU (ac)	35.29	kg
Trip Exhaust Mass US (ac)	35.38	kg
Trip Av. Amb. Temperature	72.44	deg_F
Trip Av. Humidity	27.33	%
Trip Av. GPS Altitude	212.61	m
Fuel Type	Petrol (E10)	

ave THC	-3.75697	ppm
ave NMHC	-3.68183	ppm
ave CH4	-0.07514	ppm
ave CO	277.64223	ppm
ave CO2	11.82872	%
ave NOx	5.71696	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	-0.06631	g
tot NMHC	-0.06134	g
tot CH4	-0.00147	g
tot CO	13.78733	g
tot CO2	7892.93810	g
tot NO (d)	0.10775	g
tot NO2	0.05952	g
tot NOx	0.16727	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	57.72058	mi/hr
Trip Distance Share Urban	5.61201	% distance
Trip Distance Share Rural	8.35564	% distance
Trip Distance Share Motorway	86.03234	% distance

BS CO2	533.61319	g/hphr
BS CO	0.93211	g/hphr
BS THC	-0.00448	g/hphr
BS NMHC	-0.00415	g/hphr
BS CH4	-0.00010	g/hphr
BS NO (d)	0.00728	g/hphr
BS NO2	0.00402	g/hphr
BS NOx	0.01131	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	283.89739	g/mi
DS CO	0.49591	g/mi
DS THC	-0.00239	g/mi
DS NMHC	-0.00221	g/mi
DS CH4	-0.00005	g/mi
DS NO (d)	0.00388	g/mi
DS NO2	0.00214	g/mi
DS NOx	0.00602	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3444.75138	g/kg
FS CO	6.01727	g/kg
FS THC	-0.02894	g/kg
FS NMHC	-0.02677	g/kg
FS CH4	-0.00064	g/kg
FS NO (d)	0.04703	g/kg
FS NO2	0.02598	g/kg
FS NOx	0.07300	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 B2 HWY WEST'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1734.00	s
Trip Duration (a)	1734.00	s
Trip Distance	27.80	mi
Trip Distance (a)	27.80	mi
Trip Fuel Cons. (b)	2.29	kg
Trip Fuel Cons. (ab)	2.29	kg
Trip Fuel Cons. EU (ac)	2.61	kg
Trip Fuel Cons. US (ac)	2.60	kg
Trip Fuel Economy (b)	34.33	mpg_US
Trip Fuel Economy (ab)	34.33	mpg_US
Trip Fuel Economy EU (ac)	30.17	mpg_US
Trip Fuel Economy US (ac)	30.22	mpg_US
Trip Fuel Economy GGE (b)	34.33	mpg_US
Trip Fuel Economy GGE (ab)	34.33	mpg_US
Trip Fuel Economy EU GGE (ac)	30.17	mpg_US
Trip Fuel Economy US GGE (ac)	30.22	mpg_US
Trip Av. Eng. Speed	1755.13	rpm
Trip Av. Torque	83.14	lbft
Trip Av. Power	30.71	hp
Trip Work		
Trip Work (a)	14.79	hphr
Trip Exhaust Mass	40.78	kg
Trip Exhaust Mass EU (ac)	35.29	kg
Trip Exhaust Mass US (ac)	35.38	kg
Trip Av. Amb. Temperature	72.44	deg_F
Trip Av. Humidity	27.33	%
Trip Av. GPS Altitude	212.61	m
Fuel Type	Petrol (E10)	

ave THC DC	-3.42857	ppm
ave NMHC DC	-3.36000	ppm
ave CH4 DC	-0.06857	ppm
ave CO DC	277.28552	ppm
ave CO2 DC	11.84205	%
ave NOx DC	5.71271	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	-0.05960	g
tot NMHC DC	-0.05513	g
tot CH4 DC	-0.00132	g
tot CO DC	13.76961	g
tot CO2 DC	7901.82989	g
tot NO DC (d)	0.10765	g
tot NO2 DC	0.05955	g
tot NOx DC	0.16719	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	57.72058	mi/hr
Trip Distance Share Urban	5.61201	% distance
Trip Distance Share Rural	8.35564	% distance
Trip Distance Share Motorway	86.03234	% distance

BS CO2 DC	534.21434	g/hphr
BS CO DC	0.93091	g/hphr
BS THC DC	-0.00403	g/hphr
BS NMHC DC	-0.00373	g/hphr
BS CH4 DC	-0.00009	g/hphr
BS NO DC (d)	0.00728	g/hphr
BS NO2 DC	0.00403	g/hphr
BS NOx DC	0.01130	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	284.21722	g/mi
DS CO DC	0.49527	g/mi
DS THC DC	-0.00214	g/mi
DS NMHC DC	-0.00198	g/mi
DS CH4 DC	-0.00005	g/mi
DS NO DC (d)	0.00387	g/mi
DS NO2 DC	0.00214	g/mi
DS NOx DC	0.00601	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3448.63206	g/kg
FS CO DC	6.00954	g/kg
FS THC DC	-0.02601	g/kg
FS NMHC DC	-0.02406	g/kg
FS CH4 DC	-0.00058	g/kg
FS NO DC (d)	0.04698	g/kg
FS NO2 DC	0.02599	g/kg
FS NOx DC	0.07297	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

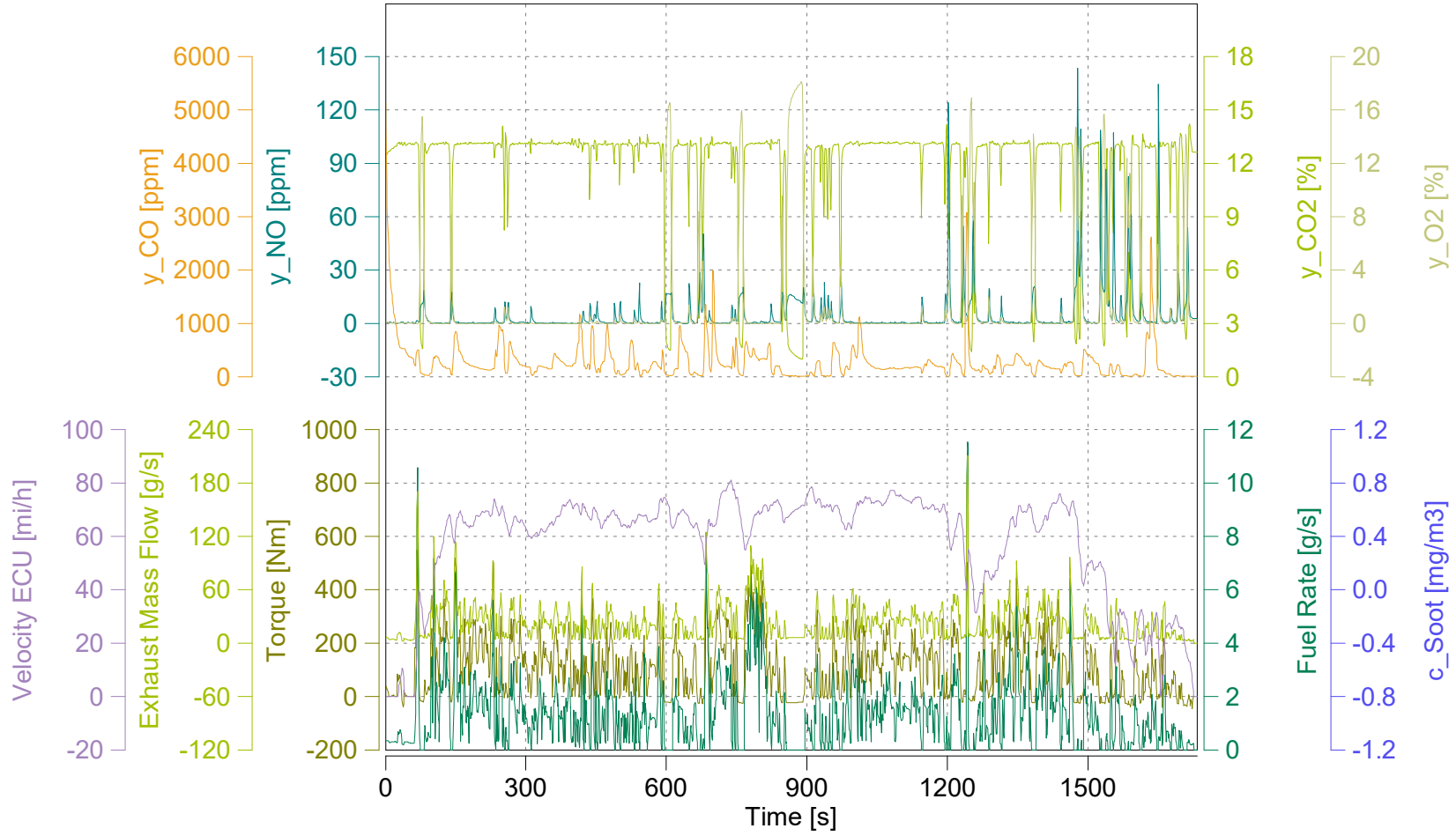
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

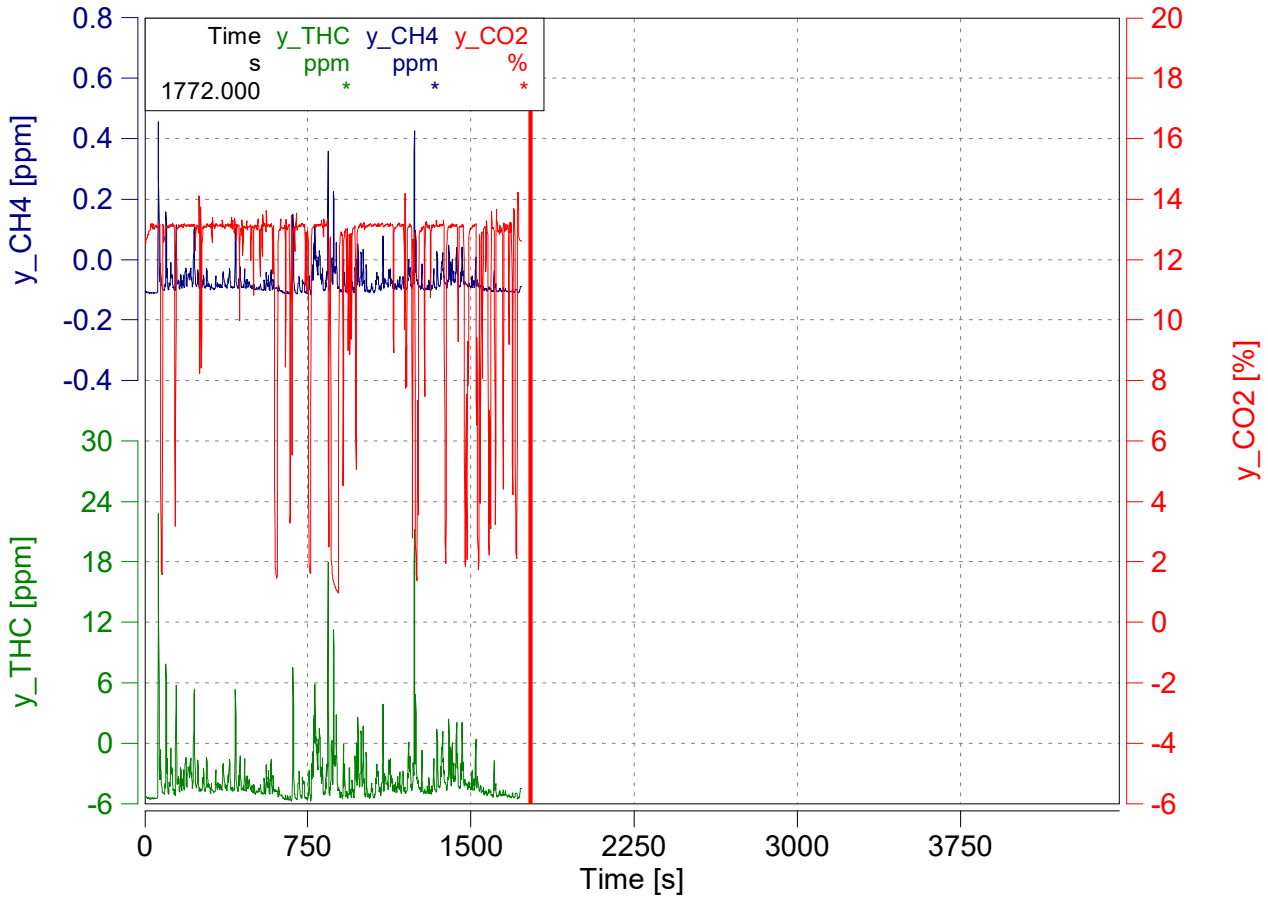
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

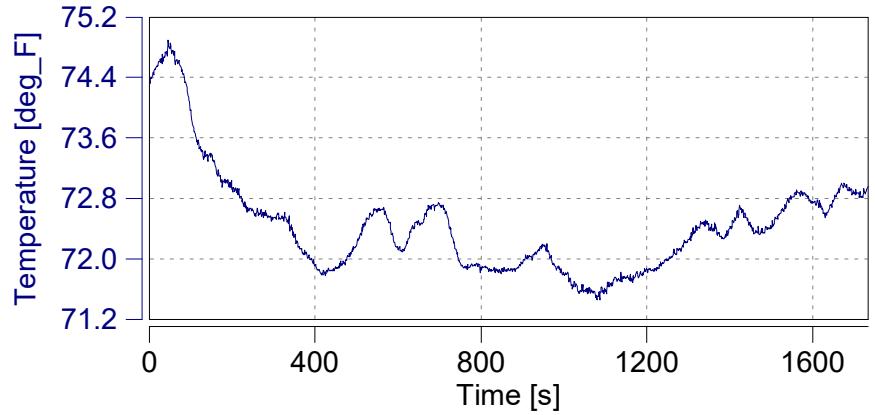
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

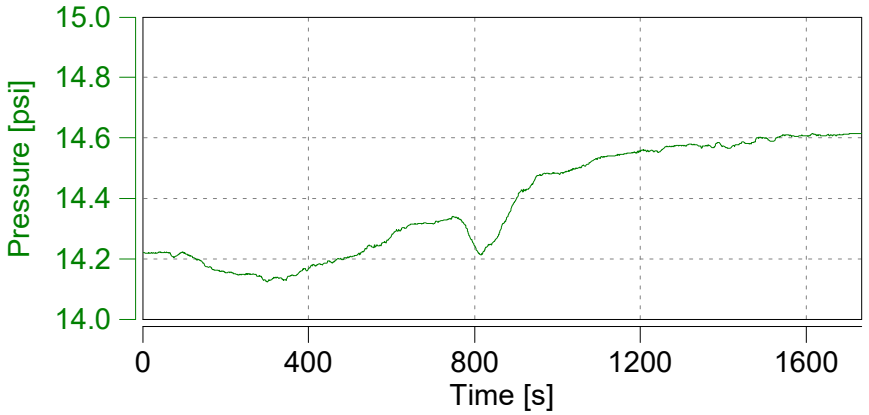
Case: X253-3303

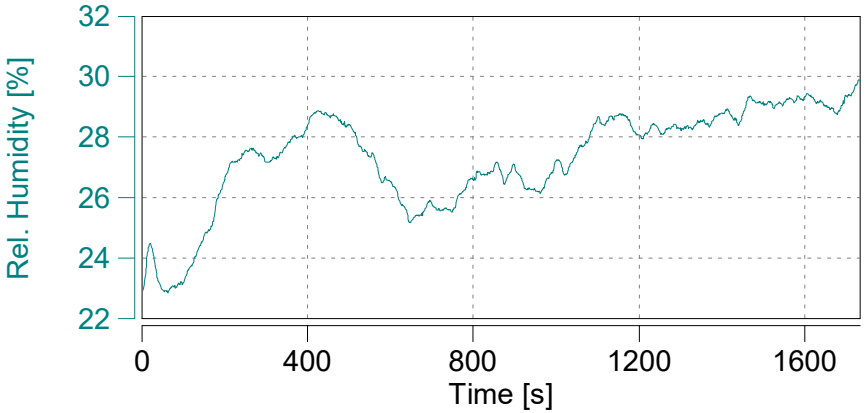
Page: Ambient Conditions

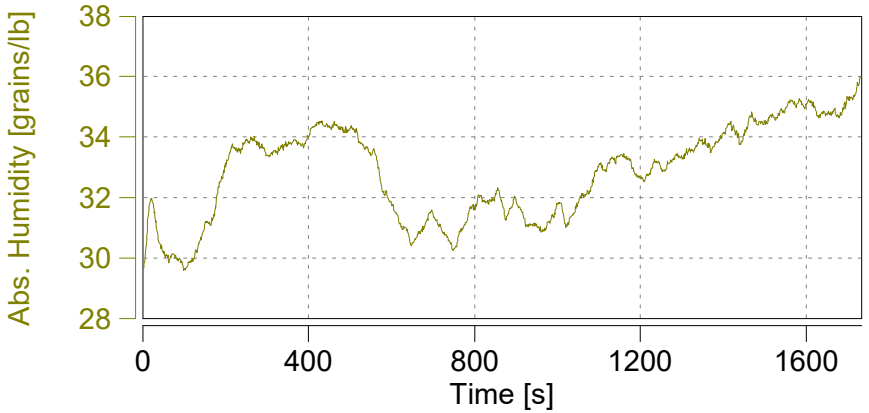
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
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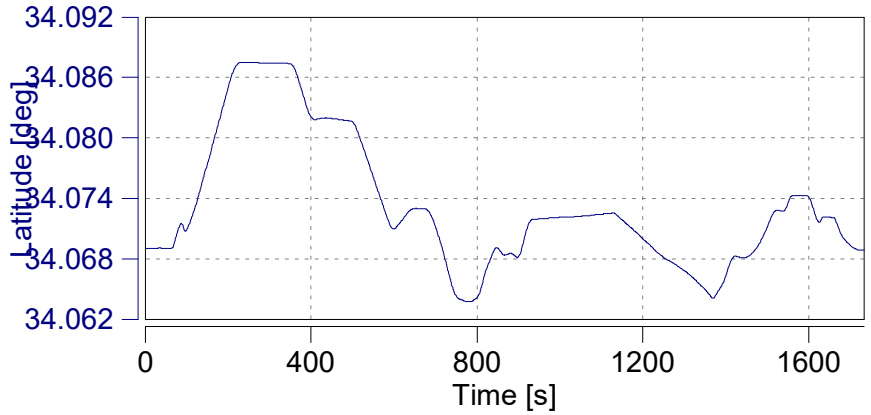
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

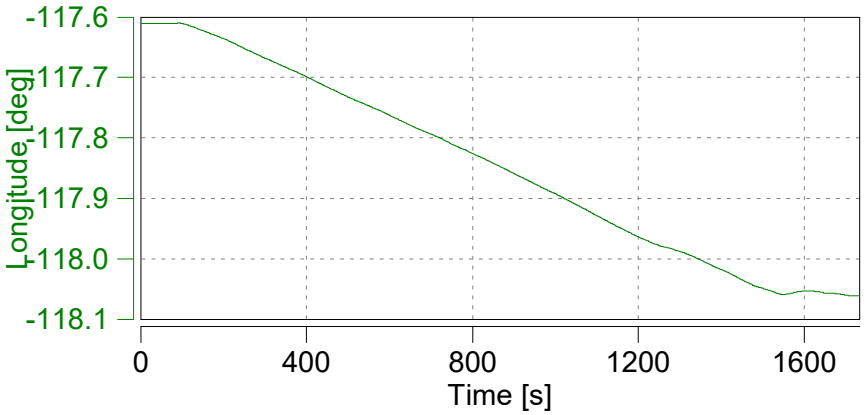
Case: X253-3303

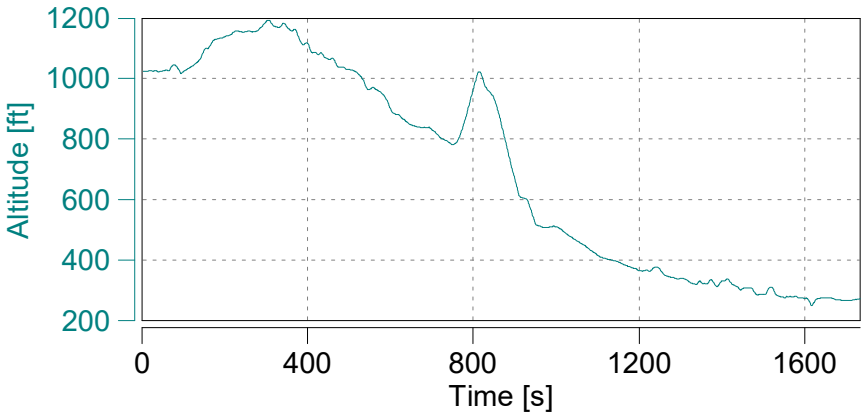
Page: GPS

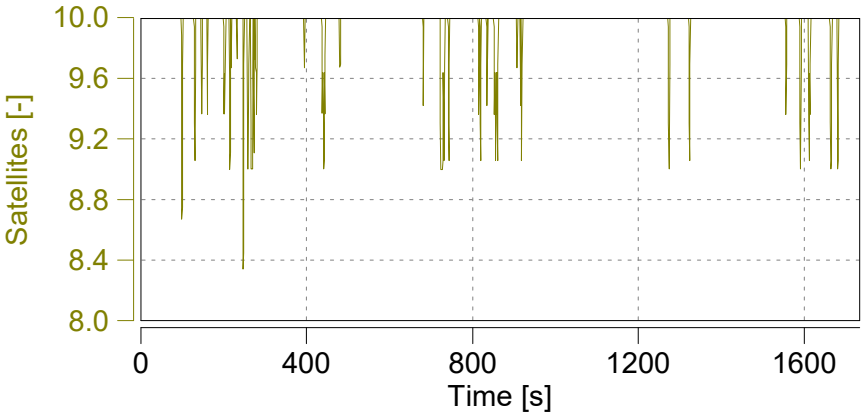
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
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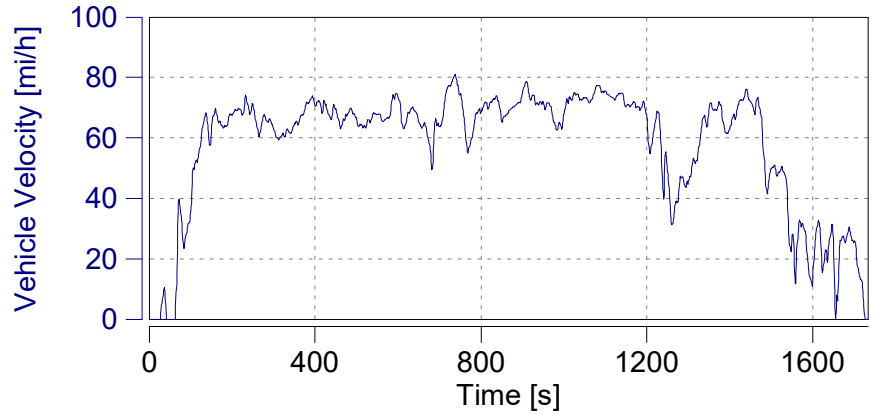
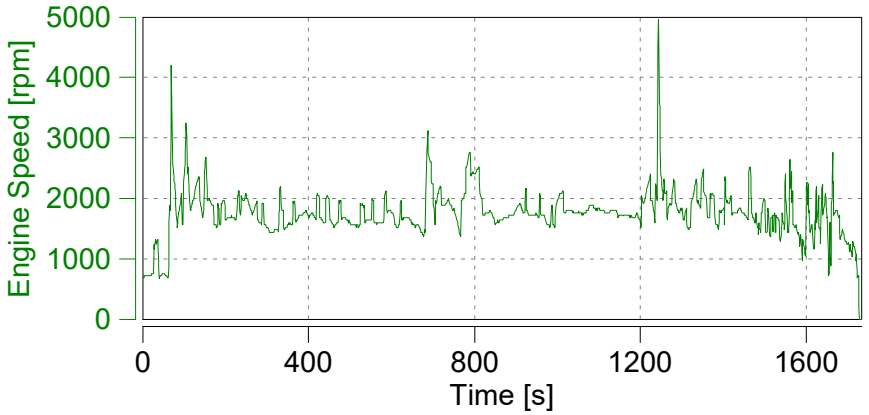
Case: X253-3303

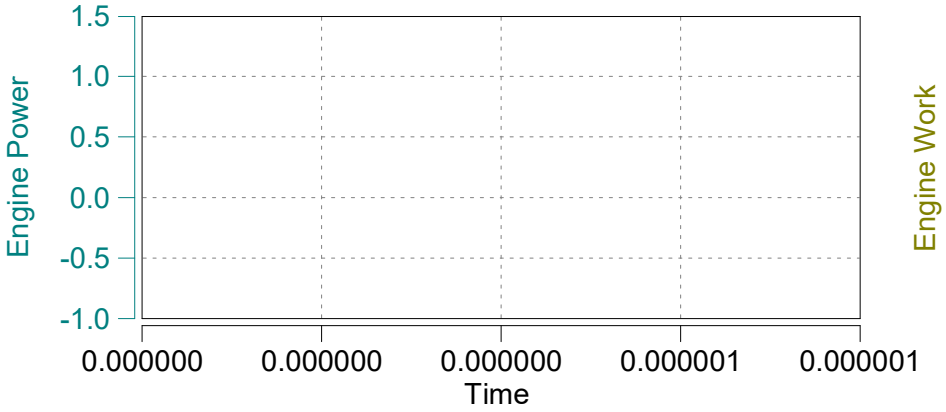
Page: Engine (1)

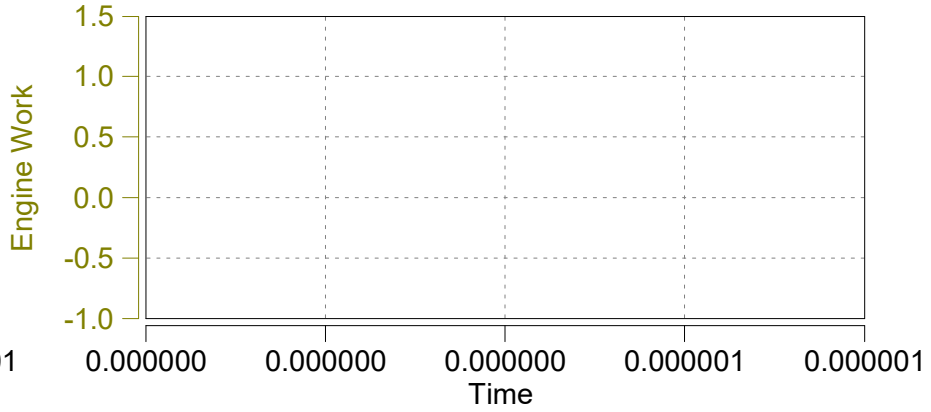
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
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Vehicle: X253 / PEMS
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NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
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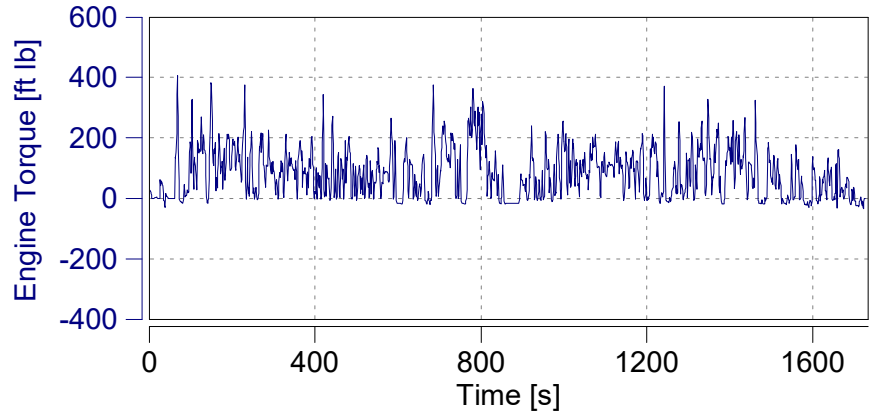
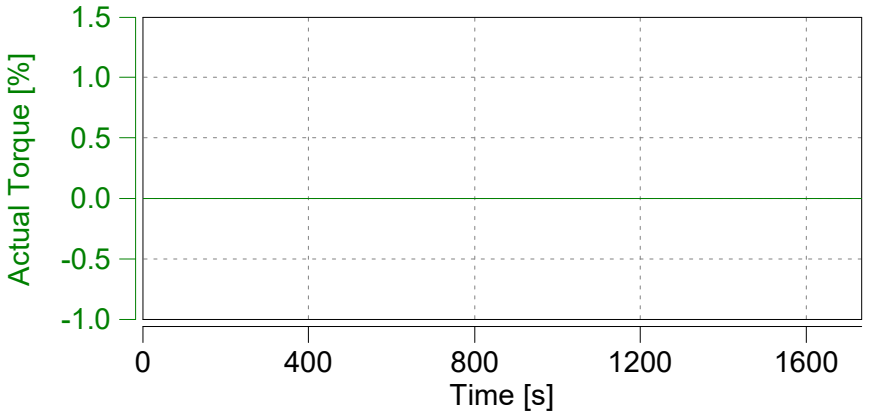
Case: X253-3303

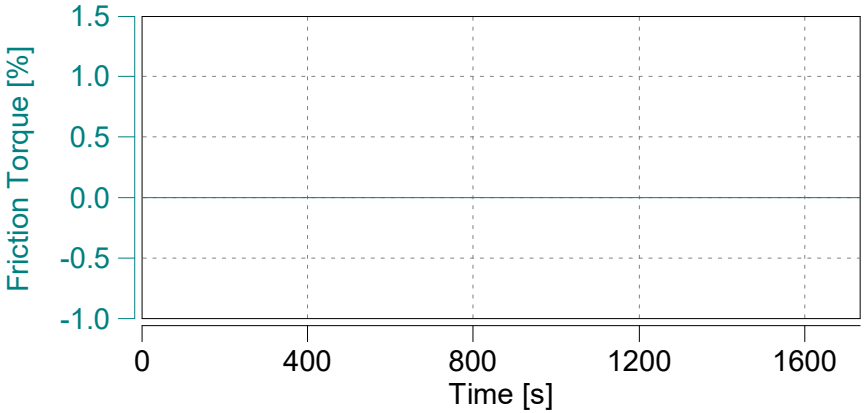
Page: Engine (2)

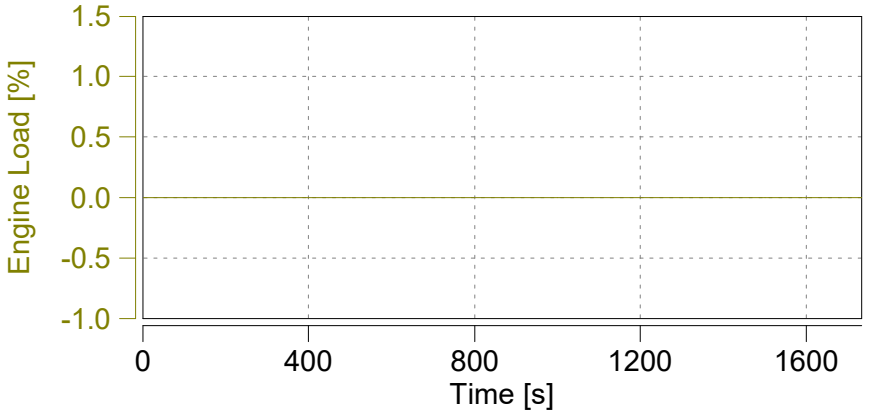
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
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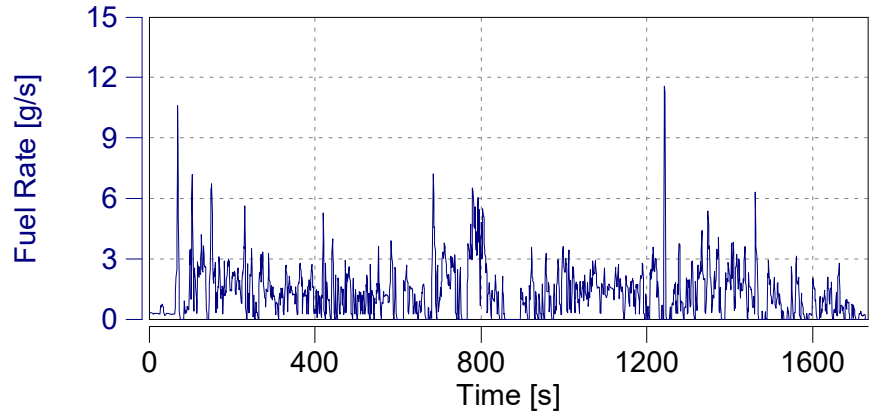
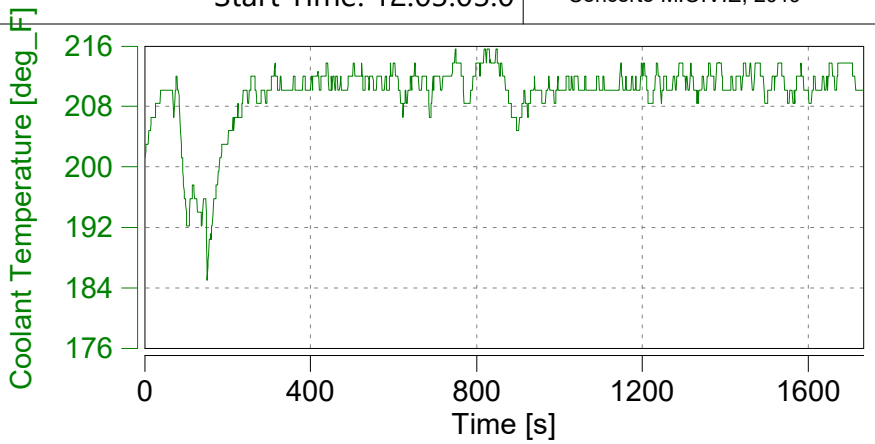
Case: X253-3303

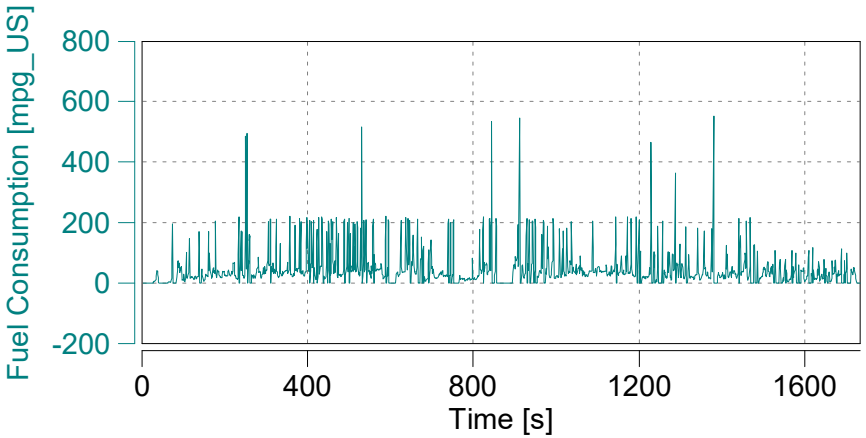
Page: Engine (3)

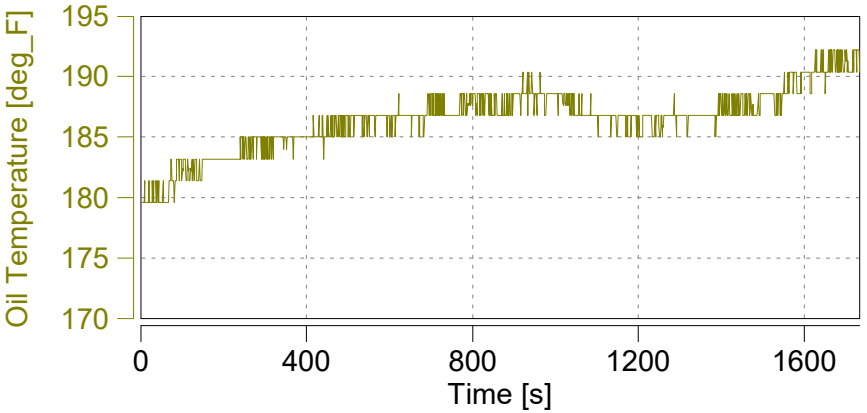
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

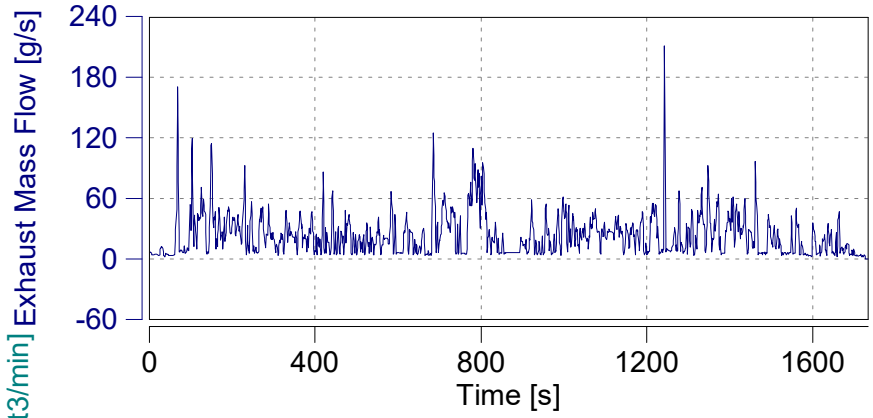
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

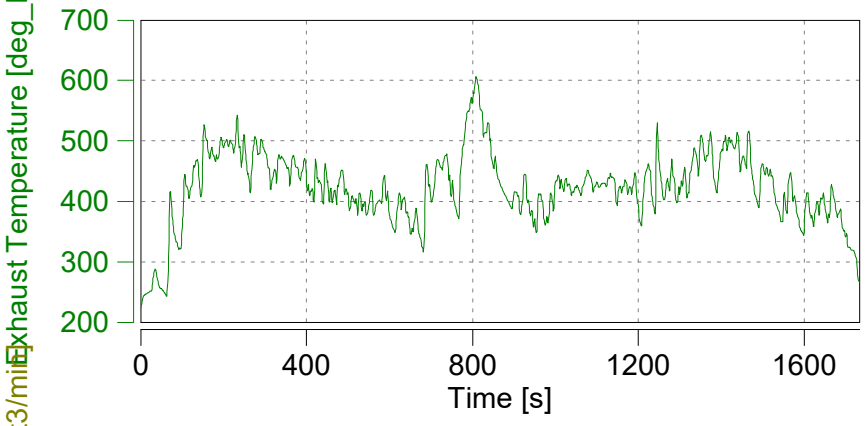
Case: X253-3303

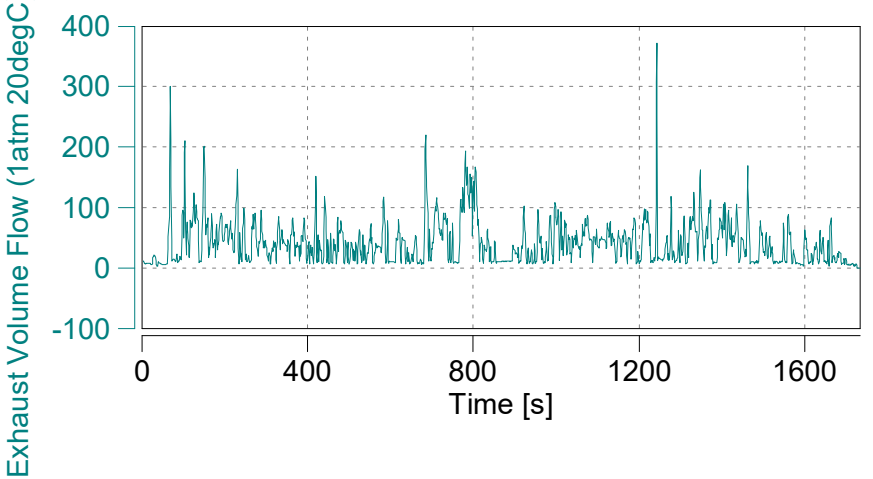
Page: Exhaust Flow (1)

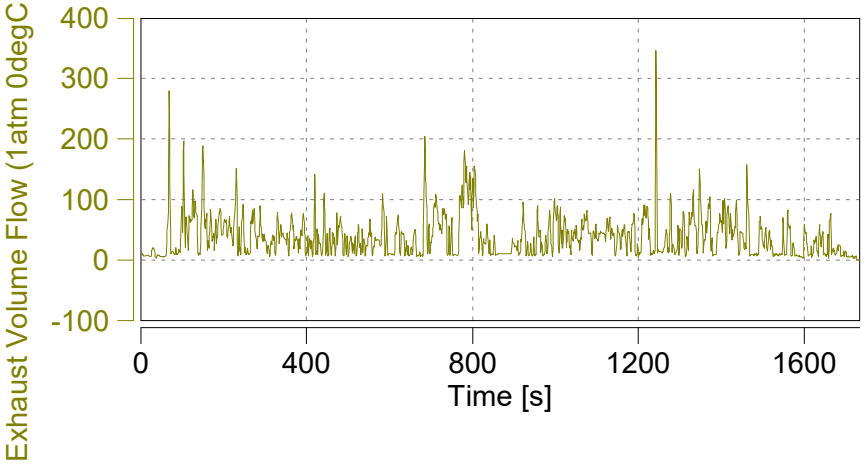
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

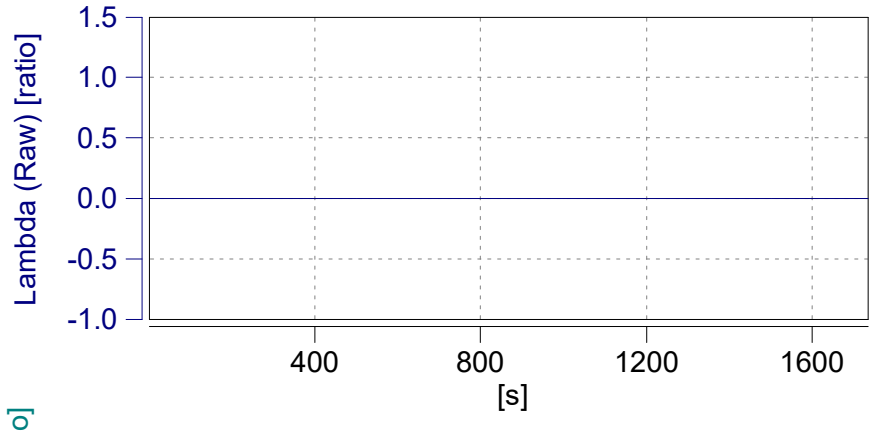
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

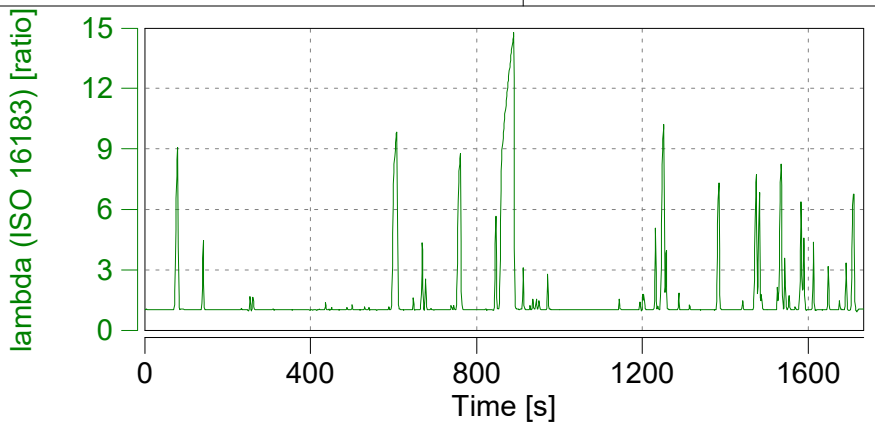
Case: X253-3303

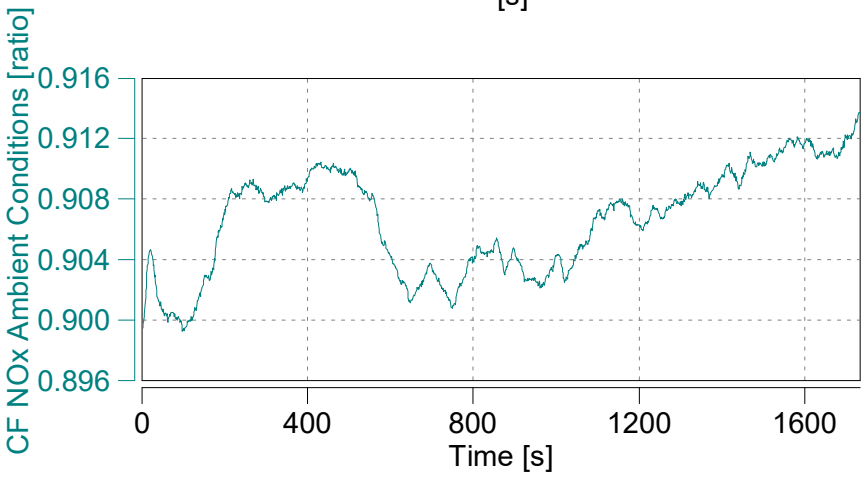
Page: Exhaust Flow (2)

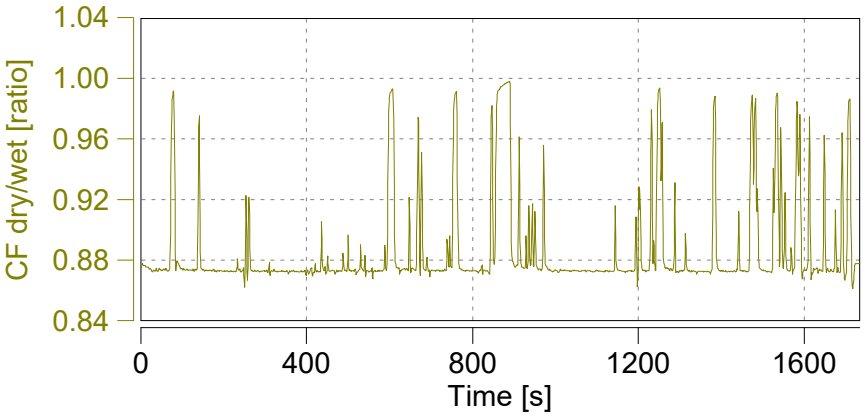
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

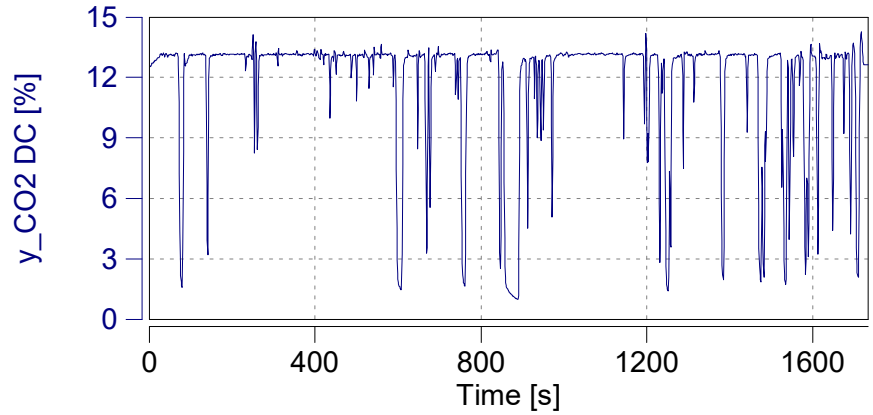
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

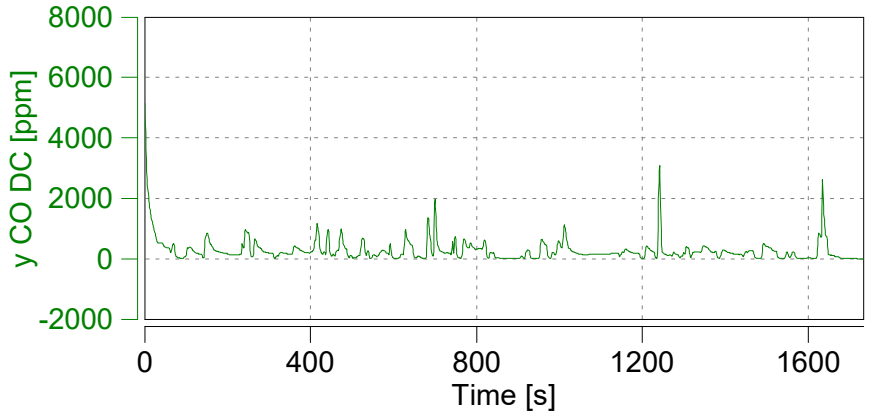
Case: X253-3303

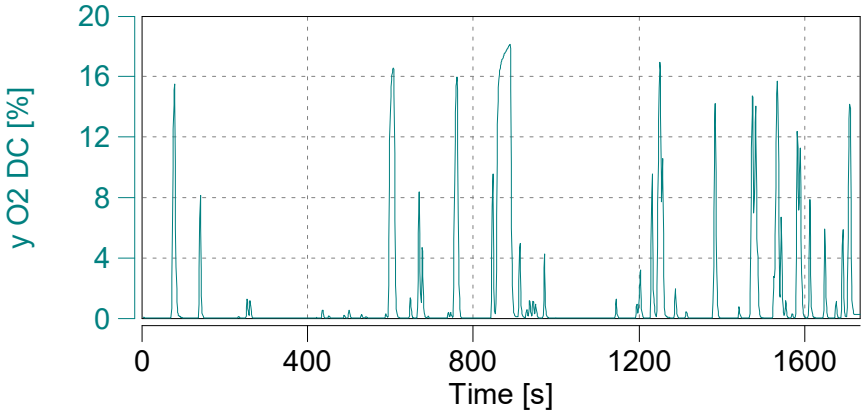
Page: Corrected Emissions (1)

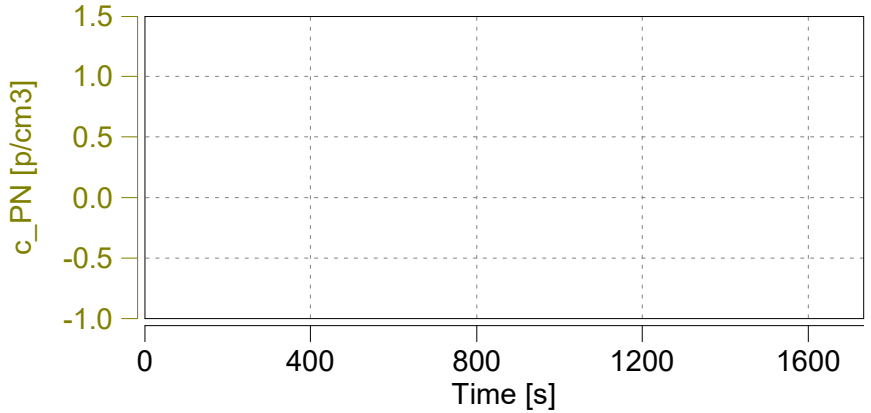
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

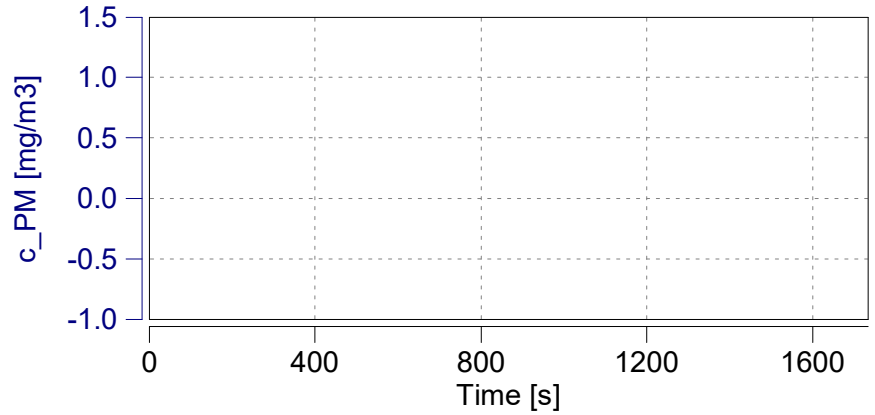
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

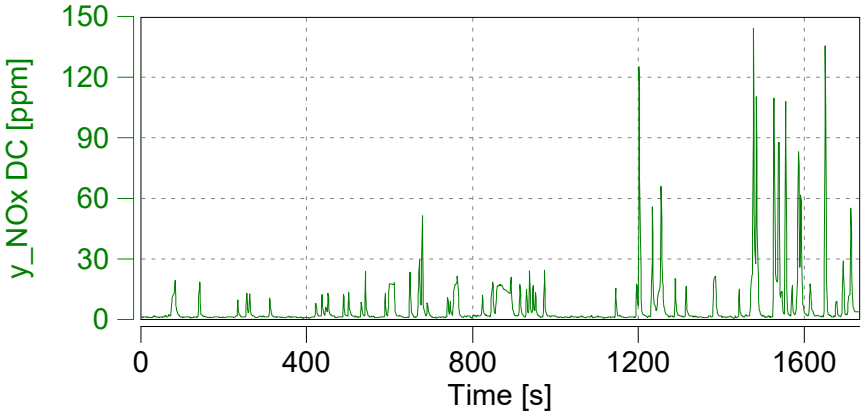
Case: X253-3303

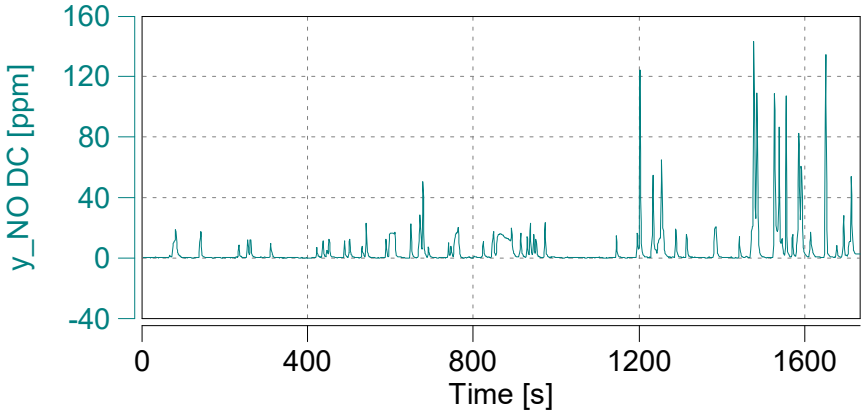
Page: Corrected Emissions (2)

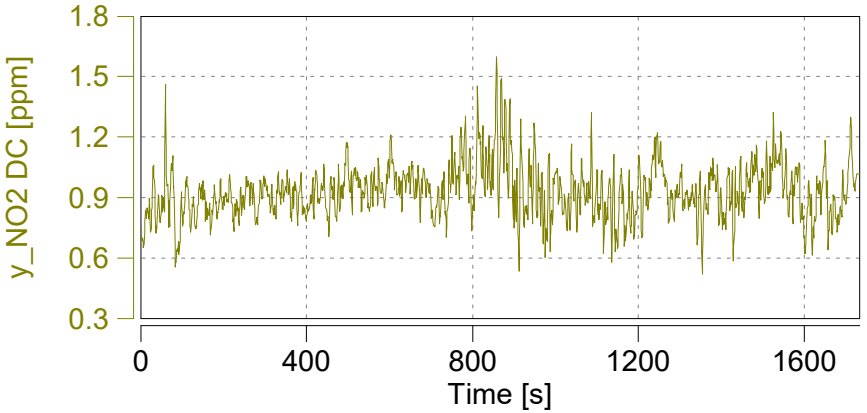
'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

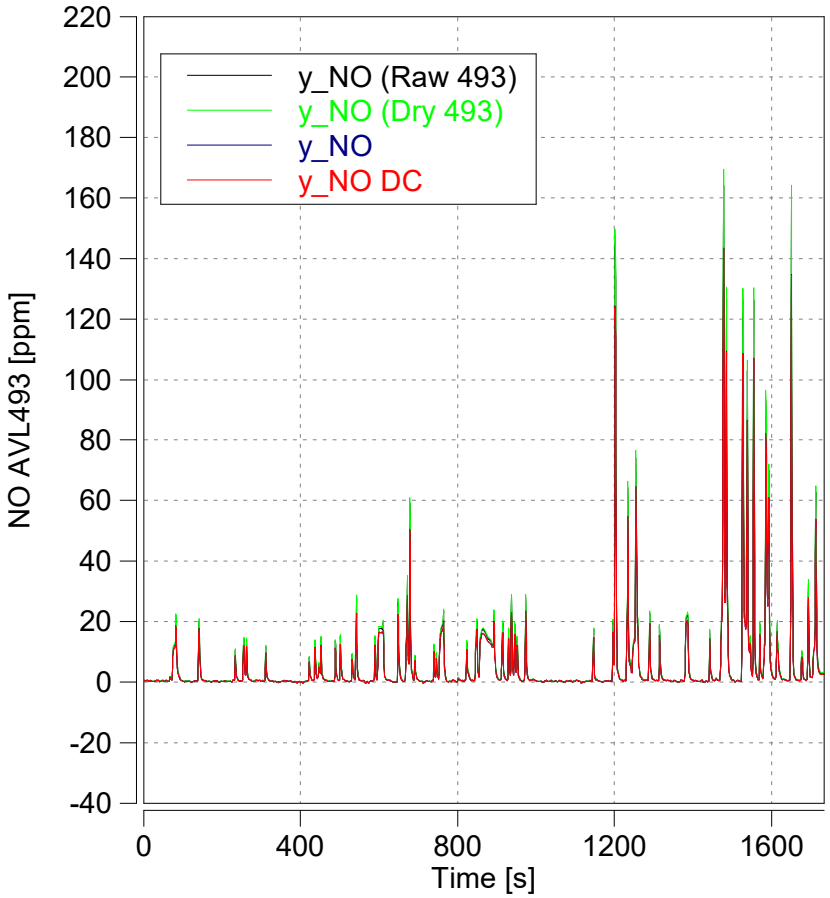
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

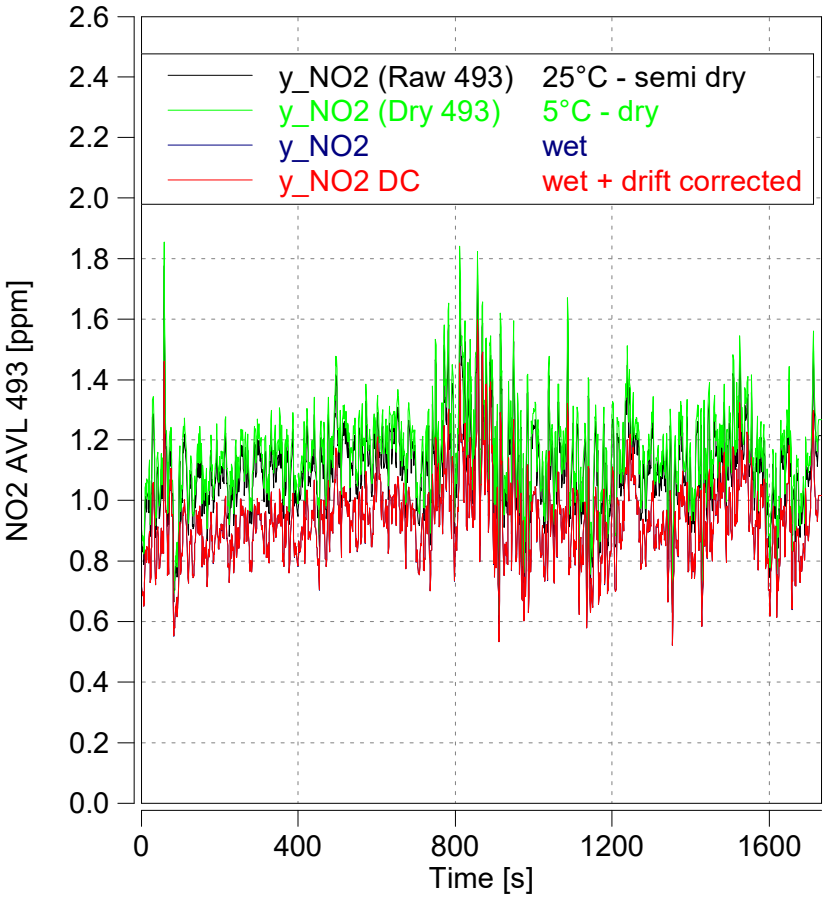
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

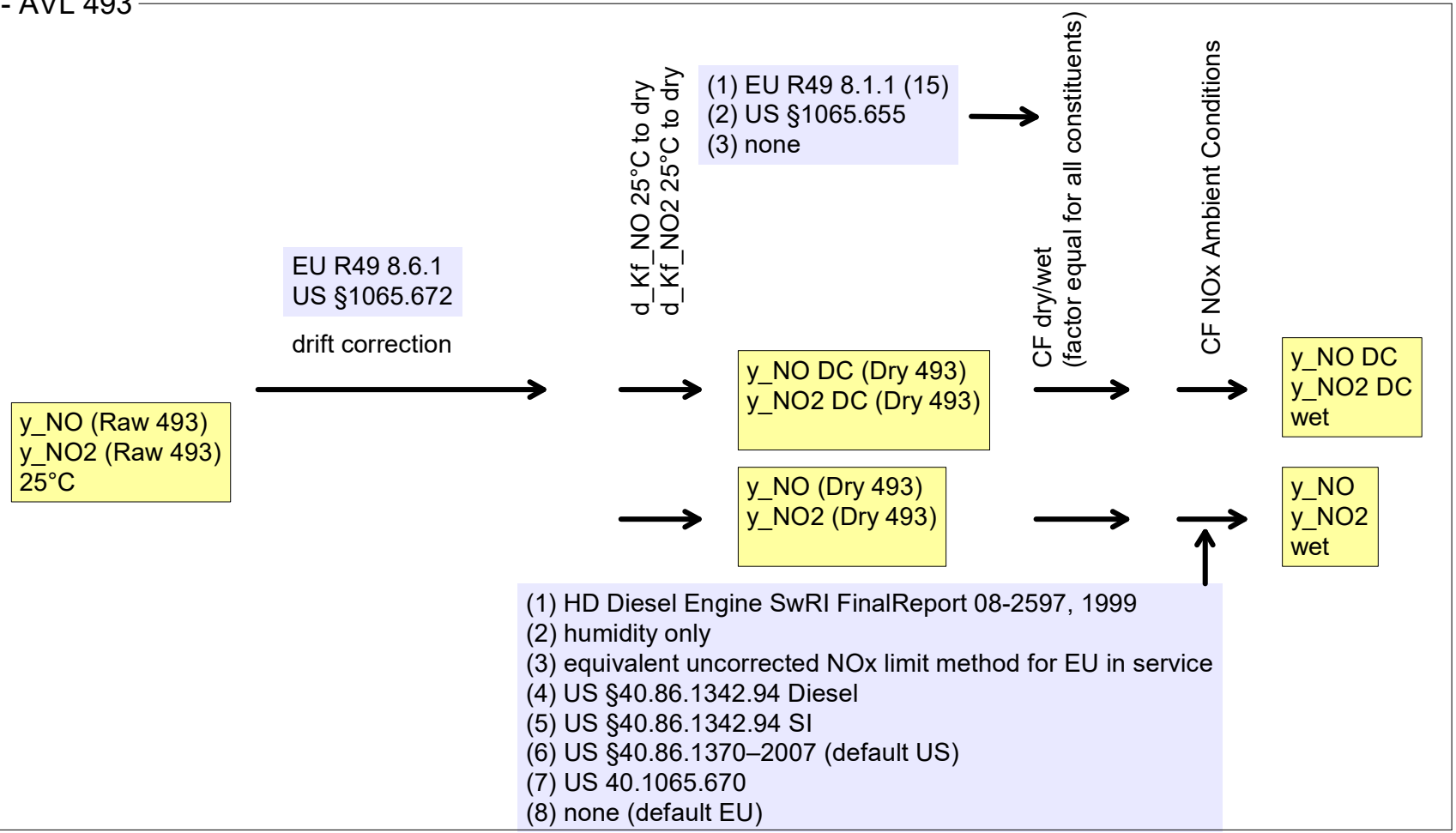
Case: X253-3303

Page: Corrected Emissions (4) NOx Corrections

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019

NOx - AVL 493



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

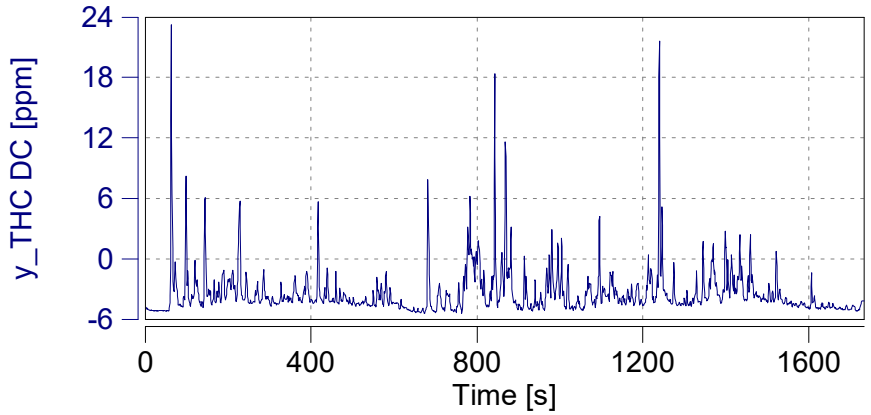
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

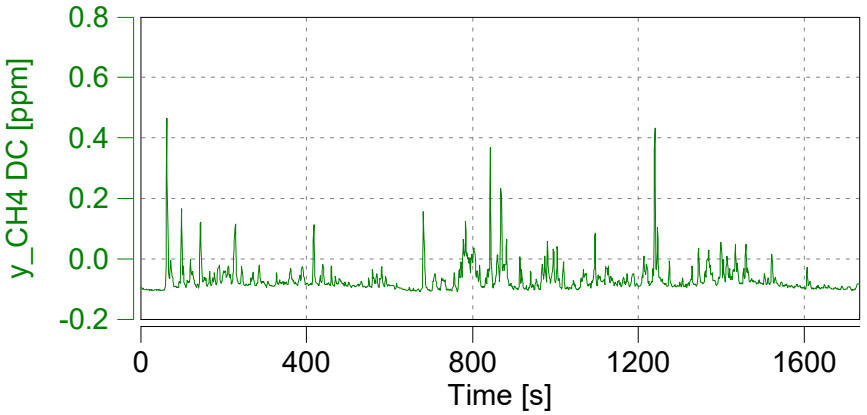
Case: X253-3303

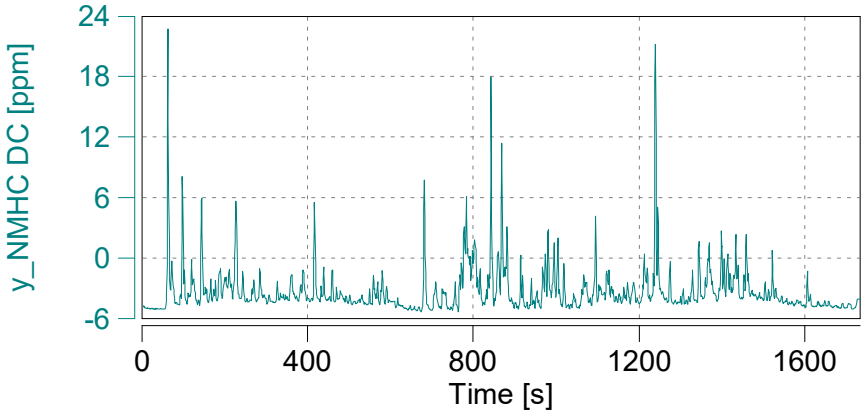
Page: Corrected Emissions (5)

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	17.5	10.0	72.4

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	49.1	%
Decelerating	45.9	%
Cruising	1.6	%
Stop	3.4	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

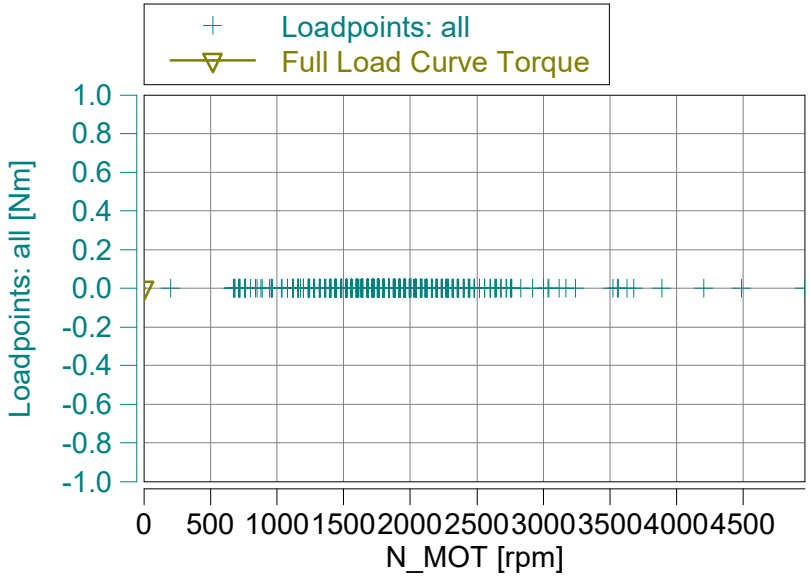
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.05
	r^2 = 0.96

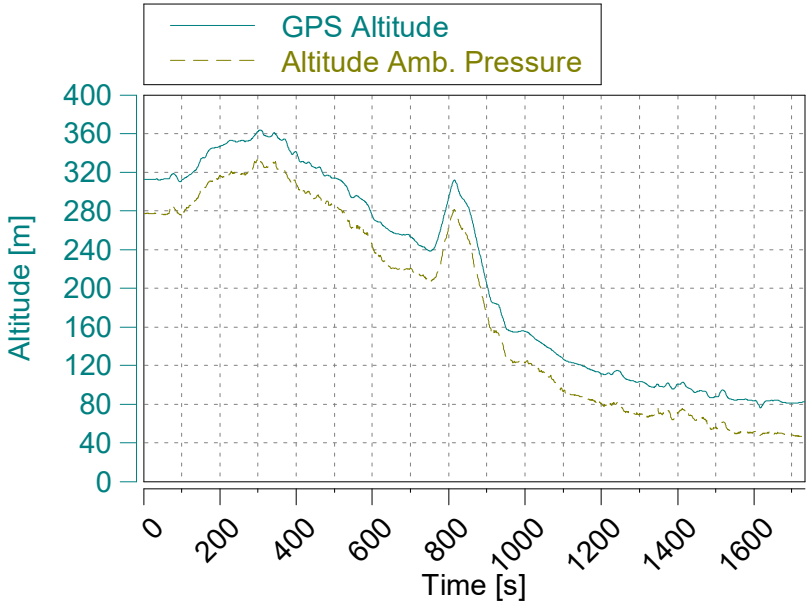
Case: X253-3303

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

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	1734.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	207.7	g/kWh
avg BSFC ISO16183	236.4	g/kWh
Distance ECU	44.7	km
Distance GPS	45.309	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
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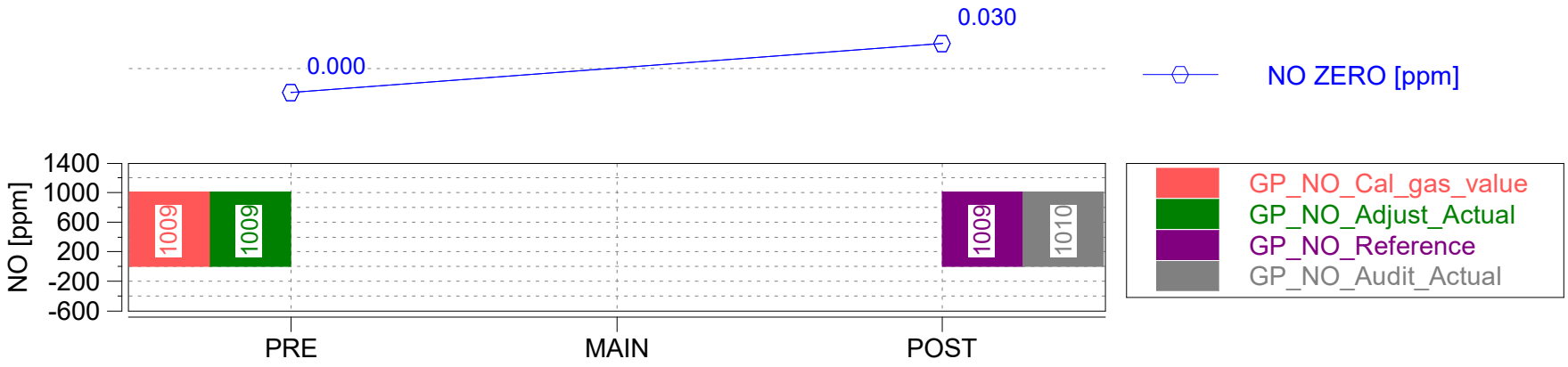
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

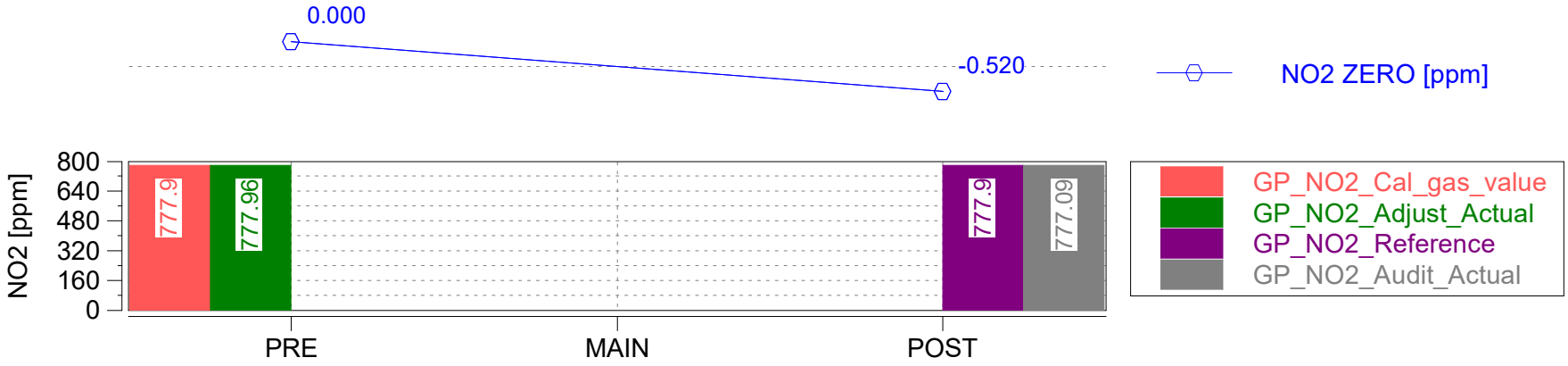
Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

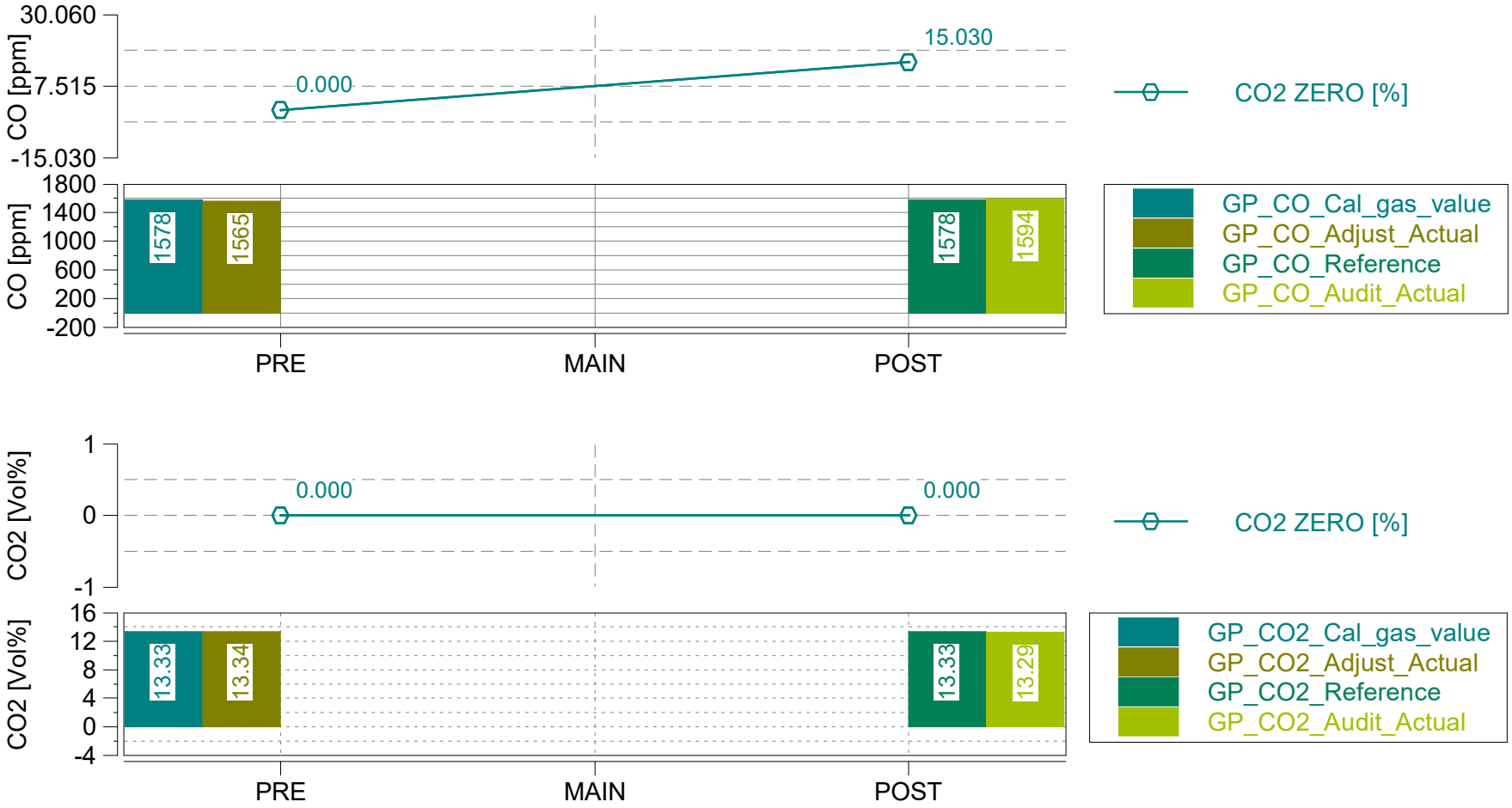
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

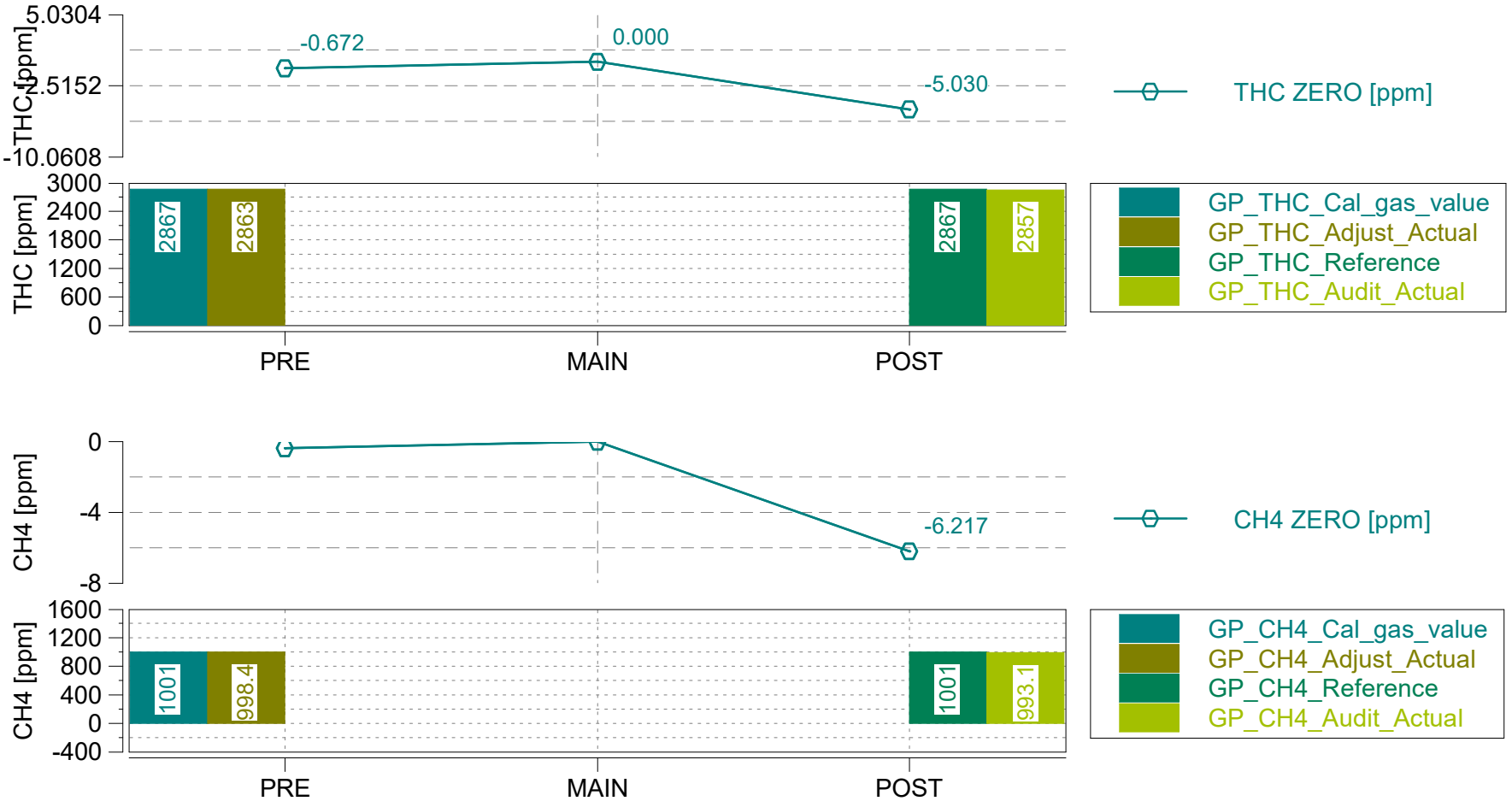
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

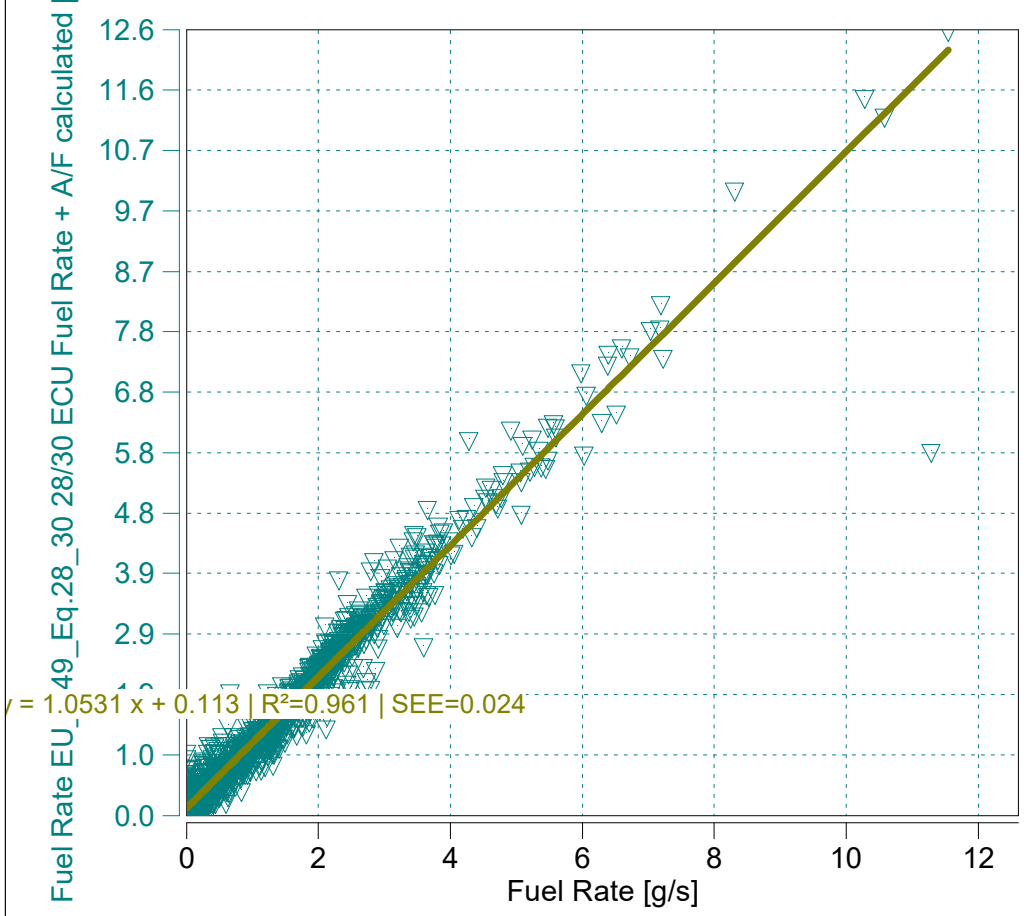
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 B2 HWY WEST'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.0531 x + 0.113 | R²=0.961 | SEE=0.024
m = 1.05 (0.9 - 1.1 recommended)
R² = 0.96 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 503 Build 82, Serial Number: 1604
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Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary

'X253-3303 A2 Mountain Uphill'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	2370.00	s
Trip Duration (a)	2370.00	s
Trip Distance	17.49	mi
Trip Distance (a)	17.49	mi
Trip Fuel Cons. (b)	2.78	kg
Trip Fuel Cons. (ab)	2.78	kg
Trip Fuel Cons. EU (ac)	3.14	kg
Trip Fuel Cons. US (ac)	3.14	kg
Trip Fuel Economy (b)	17.83	mpg_US
Trip Fuel Economy (ab)	17.83	mpg_US
Trip Fuel Economy EU (ac)	15.74	mpg_US
Trip Fuel Economy US (ac)	15.77	mpg_US
Trip Fuel Economy GGE (b)	17.83	mpg_US
Trip Fuel Economy GGE (ab)	17.83	mpg_US
Trip Fuel Economy EU GGE (ac)	15.74	mpg_US
Trip Fuel Economy US GGE (ac)	15.77	mpg_US
Trip Av. Eng. Speed	1446.08	rpm
Trip Av. Torque	81.94	lbft
Trip Av. Power	27.24	hp
Trip Work		
Trip Work (a)	17.93	hphr
Trip Exhaust Mass	48.46	kg
Trip Exhaust Mass EU (ac)	42.45	kg
Trip Exhaust Mass US (ac)	42.58	kg
Trip Av. Amb. Temperature	69.33	deg_F
Trip Av. Humidity	28.95	%
Trip Av. GPS Altitude	553.61	m
Fuel Type	Petrol (E10)	

ave THC	-1.48646	ppm
ave NMHC	-1.45673	ppm
ave CH4	-0.02973	ppm
ave CO	274.12791	ppm
ave CO2	11.35407	%
ave NOx	6.18968	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	-0.01901	g
tot NMHC	-0.01758	g
tot CH4	-0.00042	g
tot CO	15.07138	g
tot CO2	9519.77791	g
tot NO (d)	0.10813	g
tot NO2	0.08628	g
tot NOx	0.19441	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	26.57189	mi/hr
Trip Distance Share Urban	33.20387	% distance
Trip Distance Share Rural	66.79613	% distance
Trip Distance Share Motorway	0.00000	% distance

BS CO2	530.86304	g/hphr
BS CO	0.84044	g/hphr
BS THC	-0.00106	g/hphr
BS NMHC	-0.00098	g/hphr
BS CH4	-0.00002	g/hphr
BS NO (d)	0.00603	g/hphr
BS NO2	0.00481	g/hphr
BS NOx	0.01084	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	544.20008	g/mi
DS CO	0.86156	g/mi
DS THC	-0.00109	g/mi
DS NMHC	-0.00100	g/mi
DS CH4	-0.00002	g/mi
DS NO (d)	0.00618	g/mi
DS NO2	0.00493	g/mi
DS NOx	0.01111	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3429.14268	g/kg
FS CO	5.42890	g/kg
FS THC	-0.00685	g/kg
FS NMHC	-0.00633	g/kg
FS CH4	-0.00015	g/kg
FS NO (d)	0.03895	g/kg
FS NO2	0.03108	g/kg
FS NOx	0.07003	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 A2 Mountain Uphill'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	2370.00	s
Trip Duration (a)	2370.00	s
Trip Distance	17.49	mi
Trip Distance (a)	17.49	mi
Trip Fuel Cons. (b)	2.78	kg
Trip Fuel Cons. (ab)	2.78	kg
Trip Fuel Cons. EU (ac)	3.14	kg
Trip Fuel Cons. US (ac)	3.14	kg
Trip Fuel Economy (b)	17.83	mpg_US
Trip Fuel Economy (ab)	17.83	mpg_US
Trip Fuel Economy EU (ac)	15.74	mpg_US
Trip Fuel Economy US (ac)	15.77	mpg_US
Trip Fuel Economy GGE (b)	17.83	mpg_US
Trip Fuel Economy GGE (ab)	17.83	mpg_US
Trip Fuel Economy EU GGE (ac)	15.74	mpg_US
Trip Fuel Economy US GGE (ac)	15.77	mpg_US
Trip Av. Eng. Speed	1446.08	rpm
Trip Av. Torque	81.94	lbft
Trip Av. Power	27.24	hp
Trip Work		
Trip Work (a)	17.93	hphr
Trip Exhaust Mass	48.46	kg
Trip Exhaust Mass EU (ac)	42.45	kg
Trip Exhaust Mass US (ac)	42.58	kg
Trip Av. Amb. Temperature	69.33	deg_F
Trip Av. Humidity	28.95	%
Trip Av. GPS Altitude	553.61	m
Fuel Type	Petrol (E10)	

ave THC DC	-1.15298	ppm
ave NMHC DC	-1.12992	ppm
ave CH4 DC	-0.02306	ppm
ave CO DC	273.77571	ppm
ave CO2 DC	11.36686	%
ave NOx DC	6.18525	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	-0.01090	g
tot NMHC DC	-0.01009	g
tot CH4 DC	-0.00024	g
tot CO DC	15.05202	g
tot CO2 DC	9530.50241	g
tot NO DC (d)	0.10803	g
tot NO2 DC	0.08632	g
tot NOx DC	0.19435	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	26.57189	mi/hr
Trip Distance Share Urban	33.20387	% distance
Trip Distance Share Rural	66.79613	% distance
Trip Distance Share Motorway	0.00000	% distance

BS CO2 DC	531.46108	g/hphr
BS CO DC	0.83936	g/hphr
BS THC DC	-0.00061	g/hphr
BS NMHC DC	-0.00056	g/hphr
BS CH4 DC	-0.00001	g/hphr
BS NO DC (d)	0.00602	g/hphr
BS NO2 DC	0.00481	g/hphr
BS NOx DC	0.01084	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	544.81315	g/mi
DS CO DC	0.86045	g/mi
DS THC DC	-0.00062	g/mi
DS NMHC DC	-0.00058	g/mi
DS CH4 DC	-0.00001	g/mi
DS NO DC (d)	0.00618	g/mi
DS NO2 DC	0.00493	g/mi
DS NOx DC	0.01111	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3433.00578	g/kg
FS CO DC	5.42193	g/kg
FS THC DC	-0.00393	g/kg
FS NMHC DC	-0.00363	g/kg
FS CH4 DC	-0.00009	g/kg
FS NO DC (d)	0.03891	g/kg
FS NO2 DC	0.03109	g/kg
FS NOx DC	0.07001	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

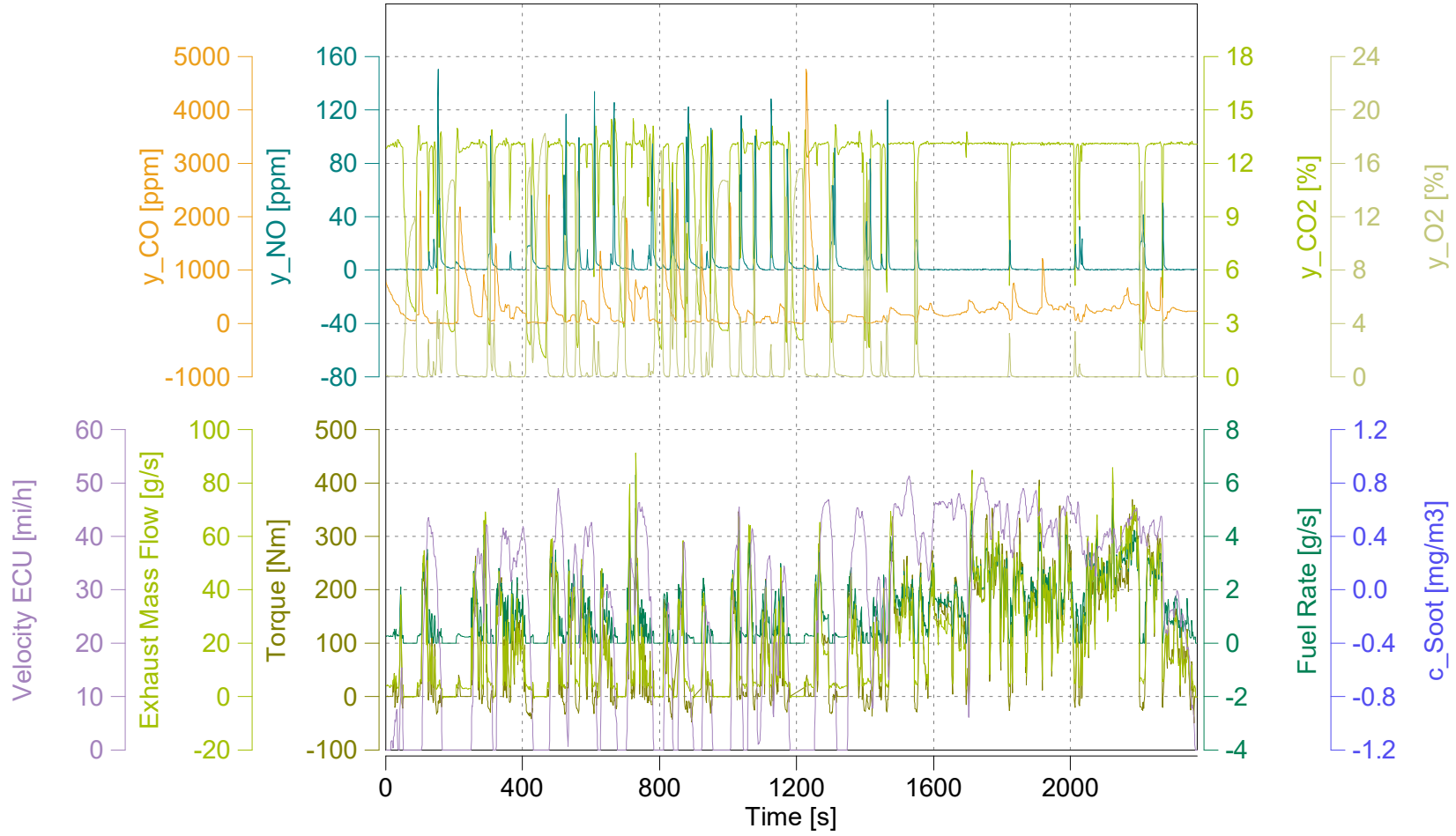
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

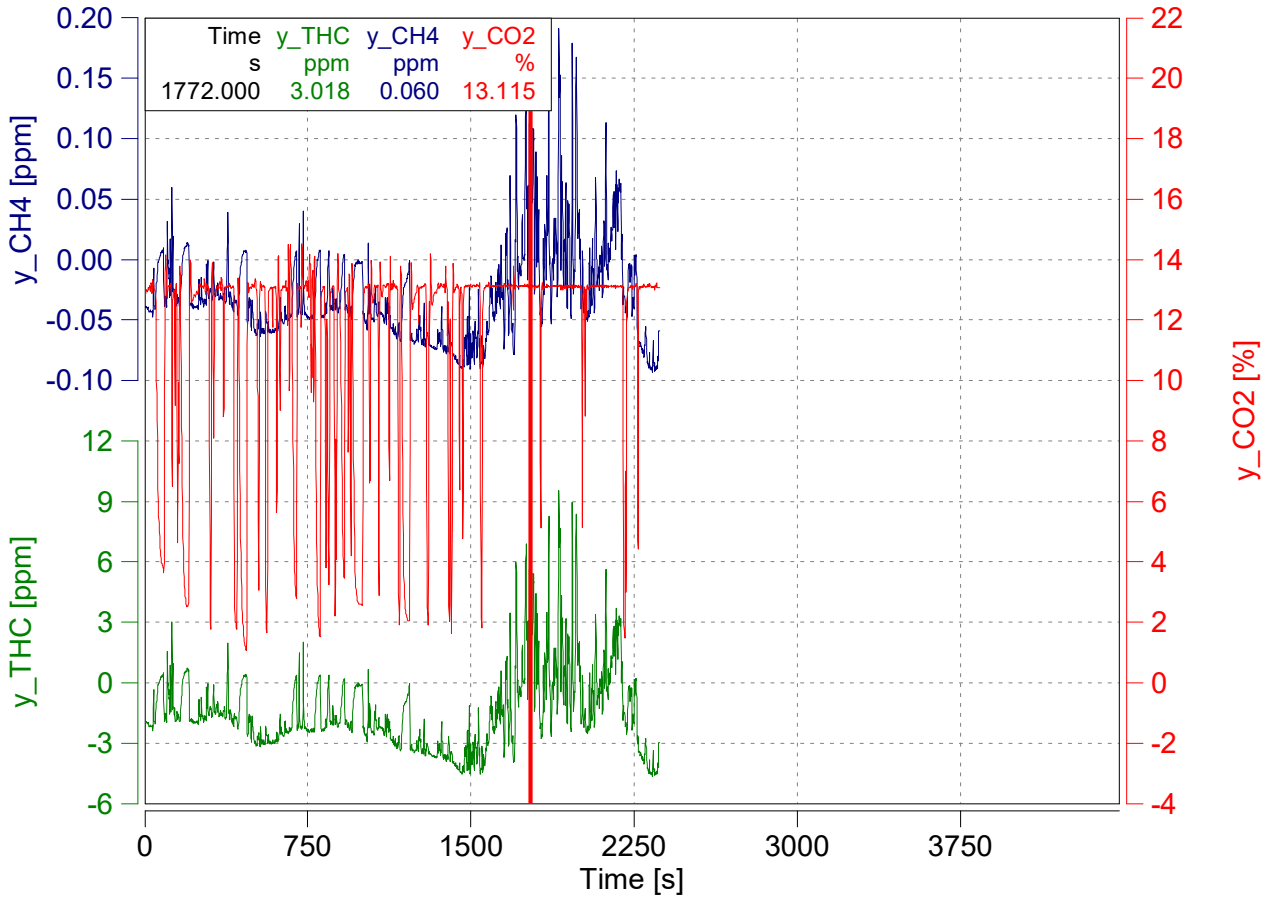
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

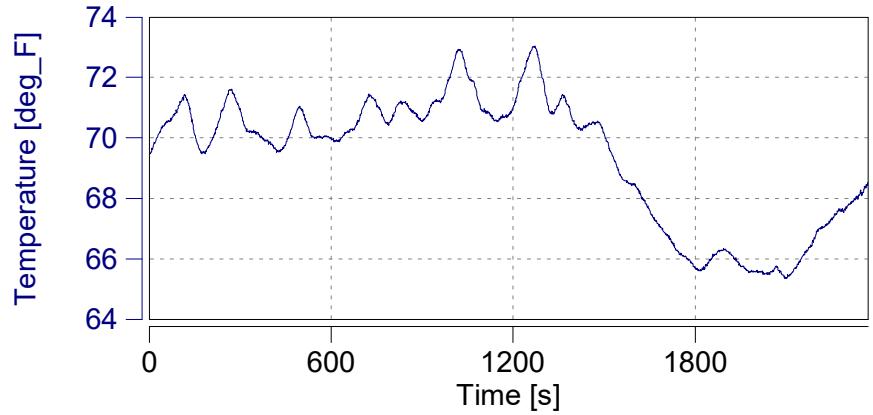
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

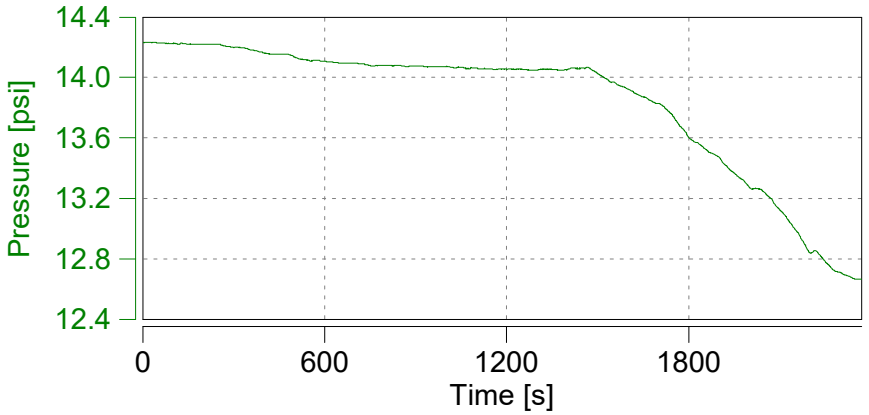
Case: X253-3303

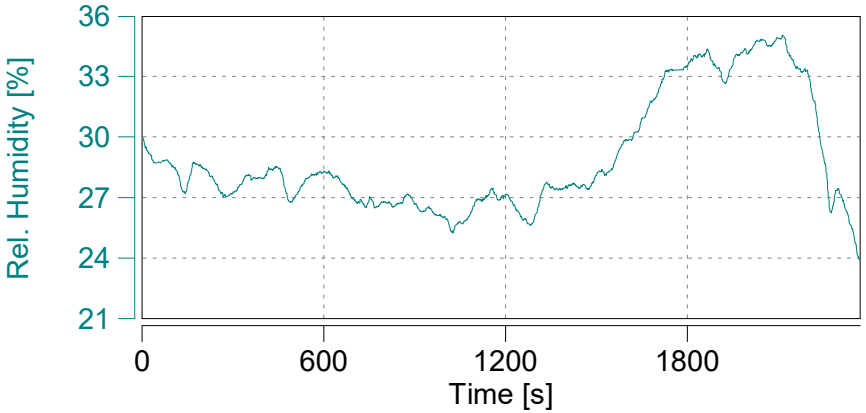
Page: Ambient Conditions

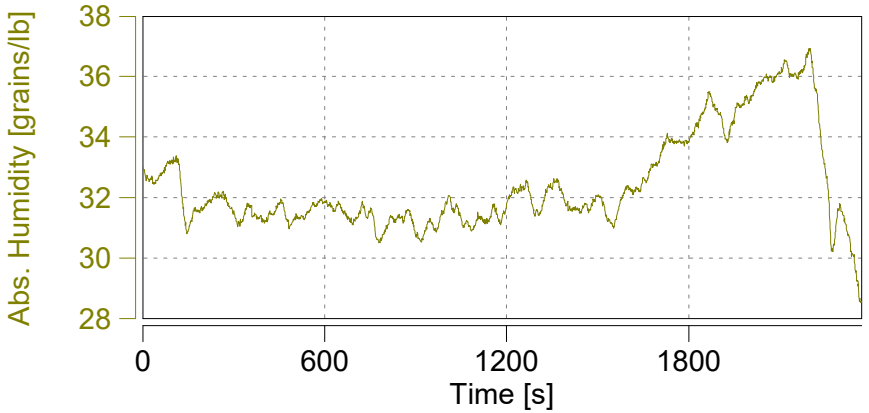
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

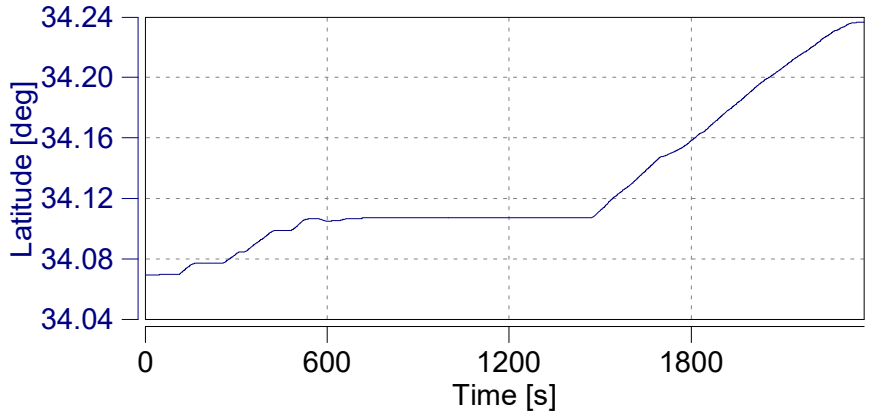
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

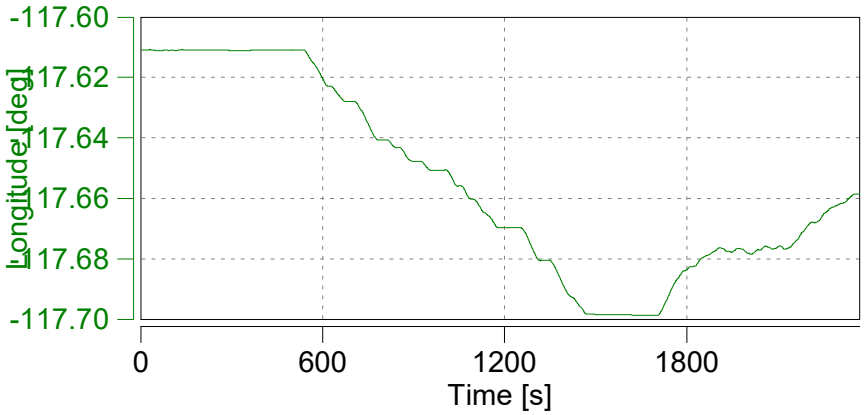
Case: X253-3303

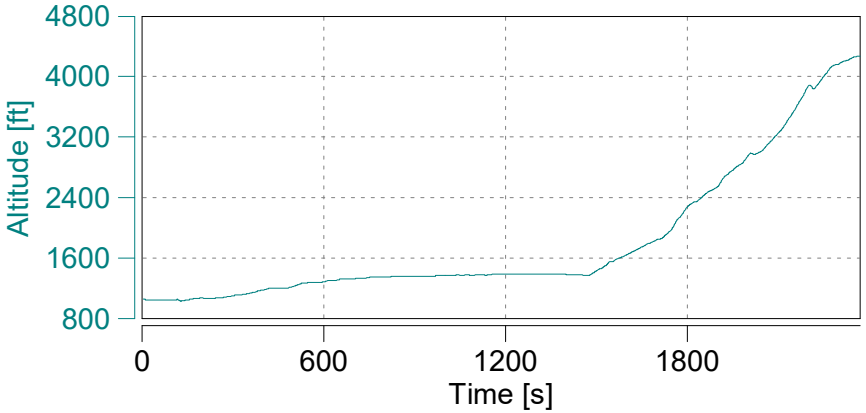
Page: GPS

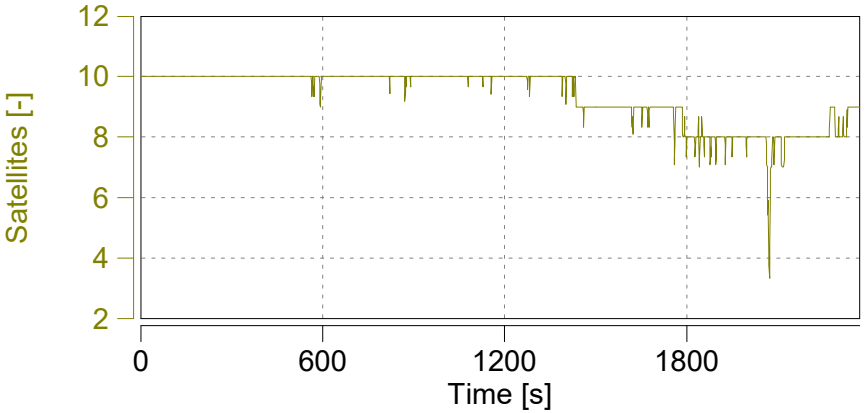
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

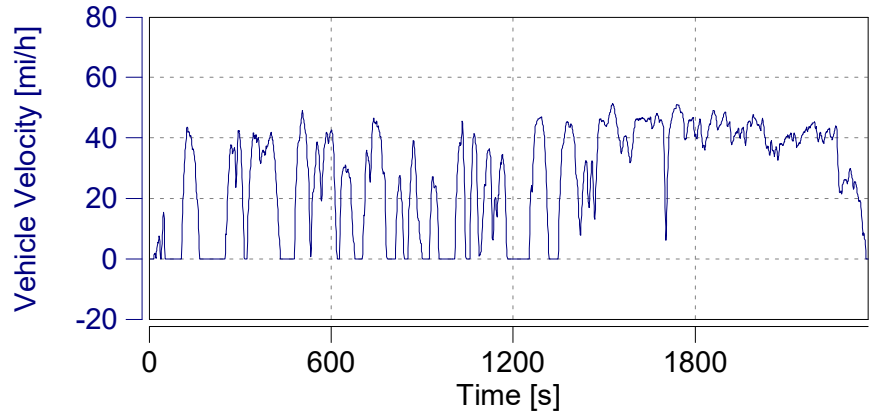
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

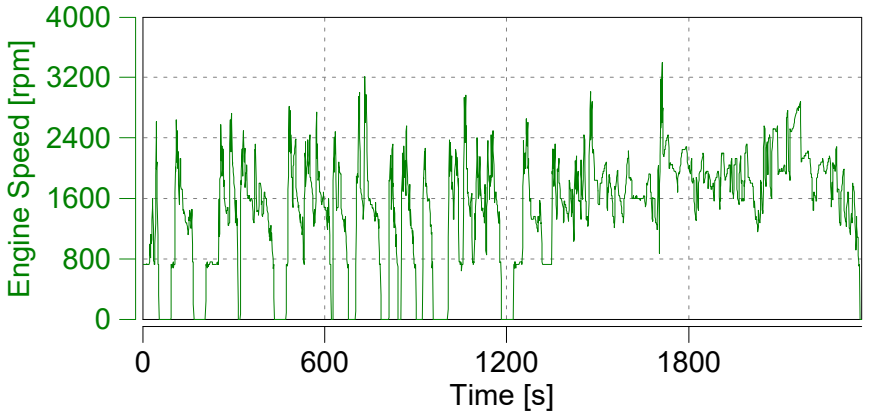
Case: X253-3303

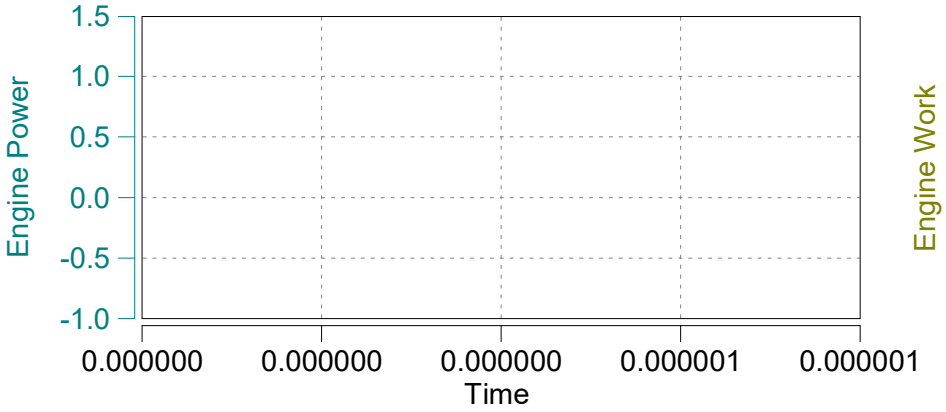
Page: Engine (1)

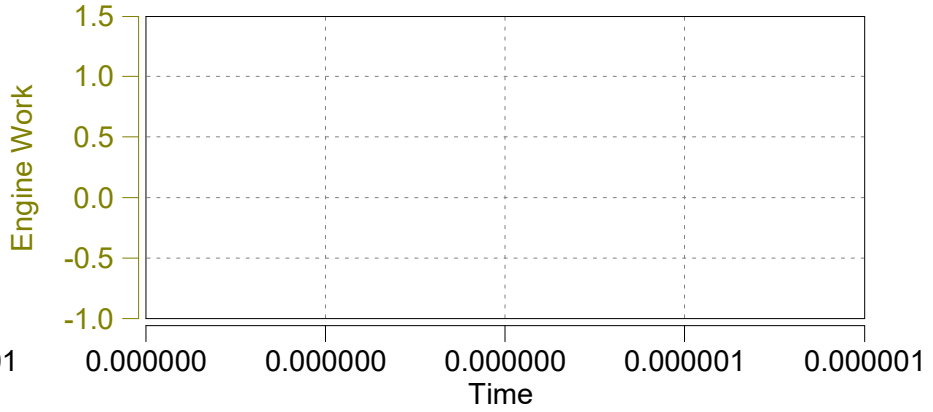
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

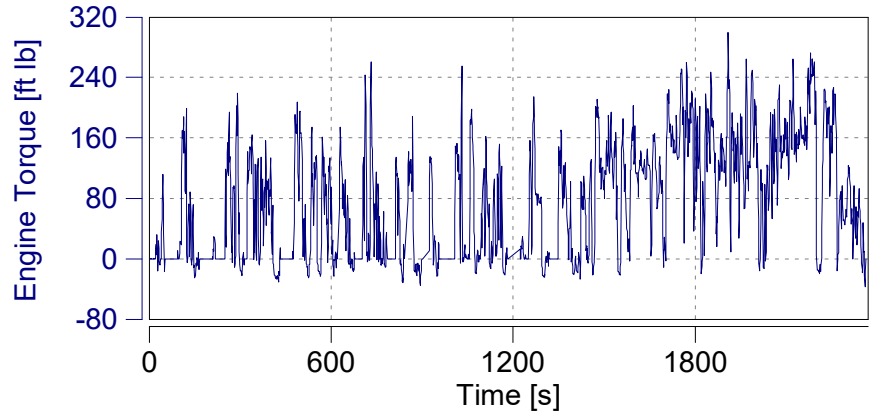
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

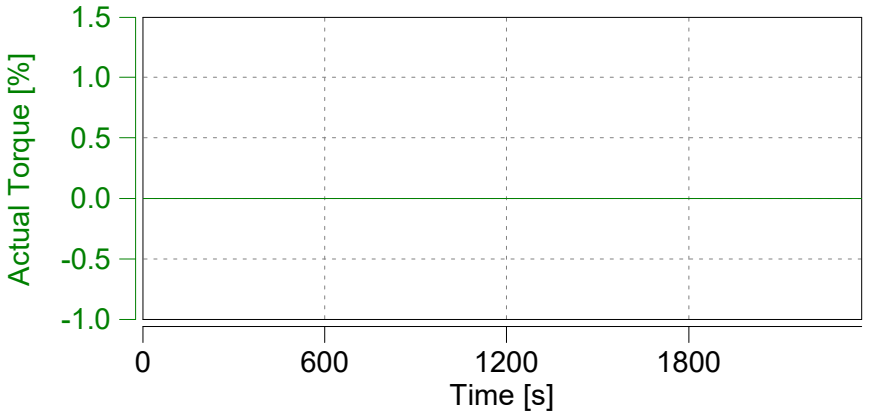
Case: X253-3303

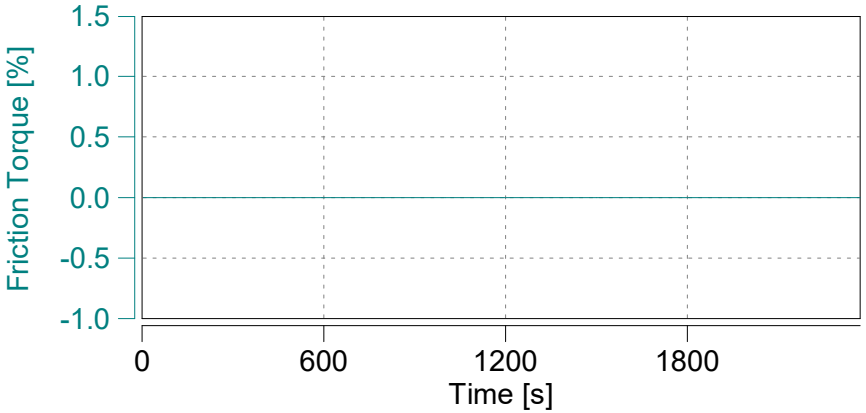
Page: Engine (2)

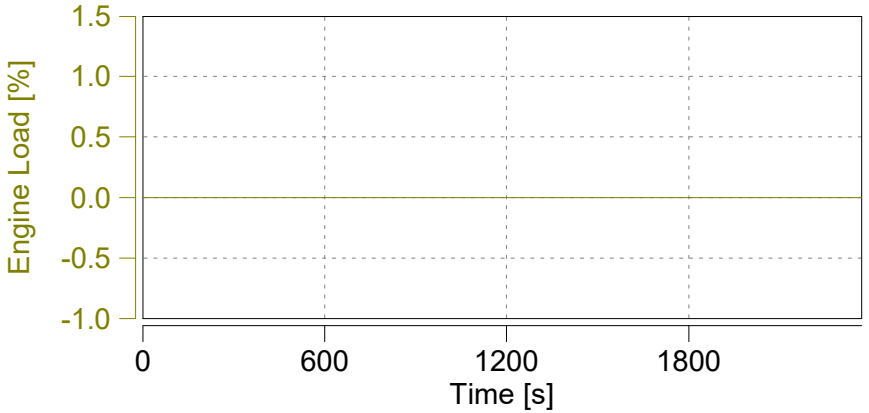
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

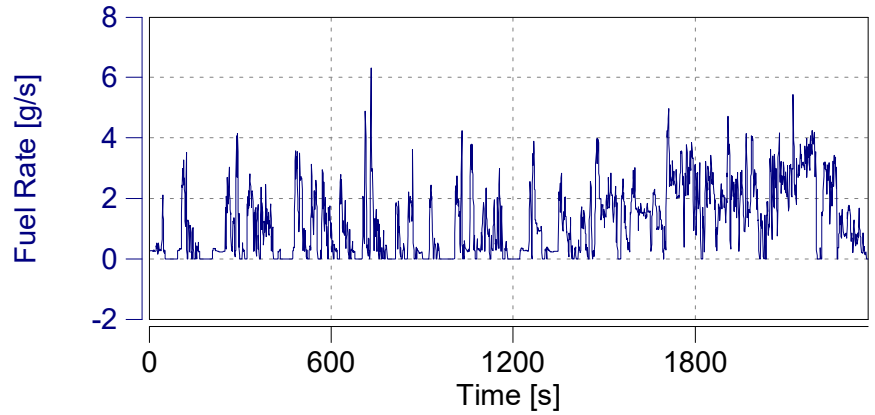
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

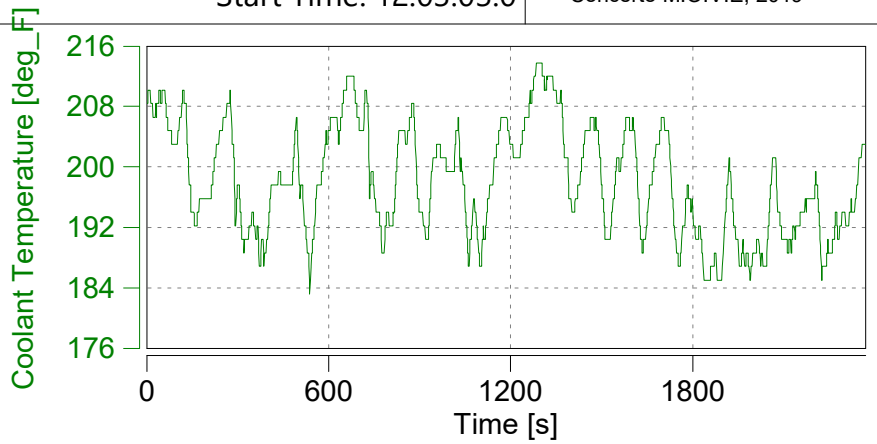
Case: X253-3303

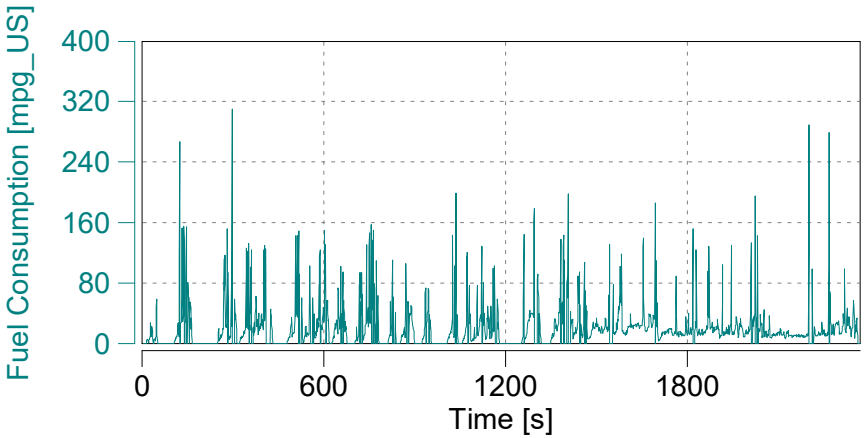
Page: Engine (3)

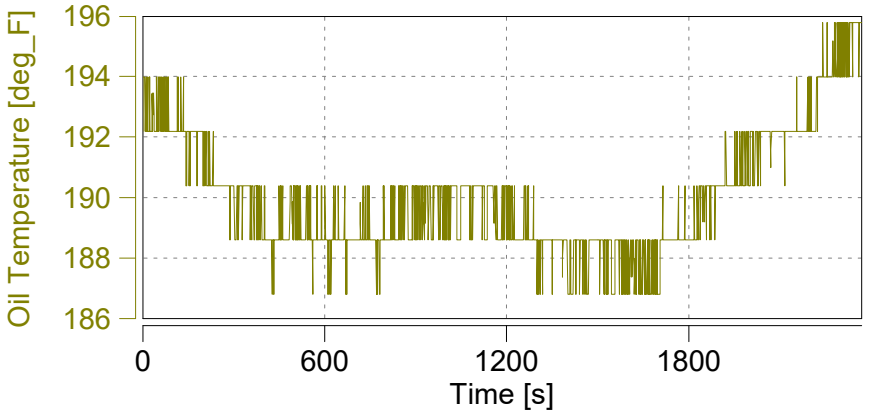
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

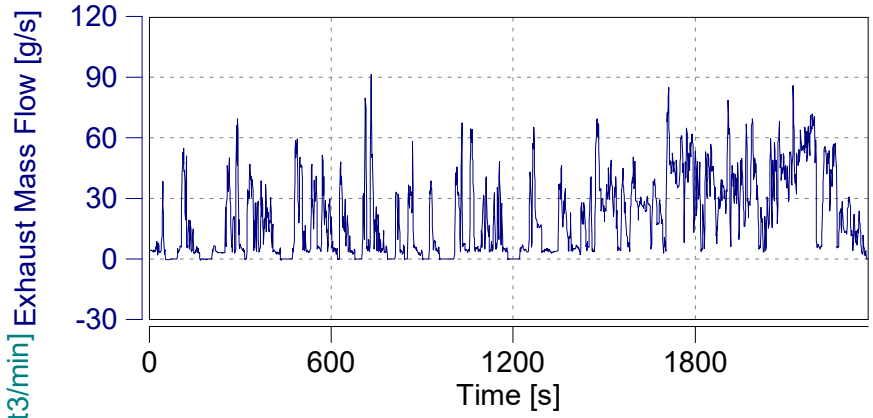
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

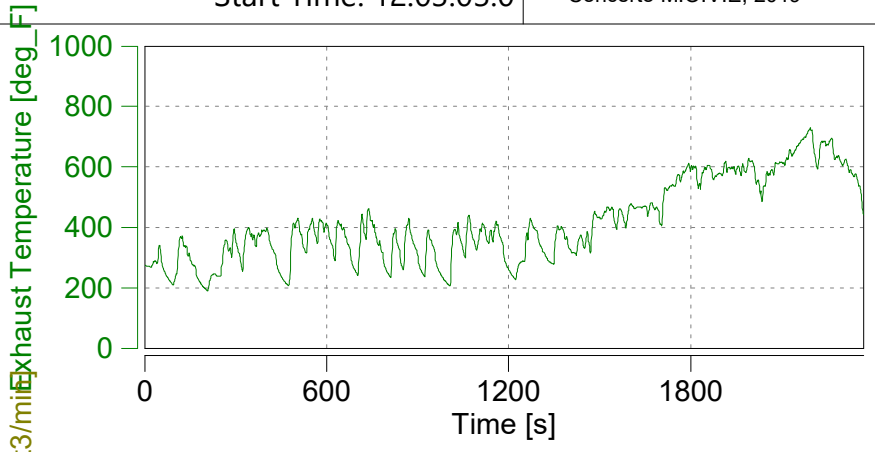
Case: X253-3303

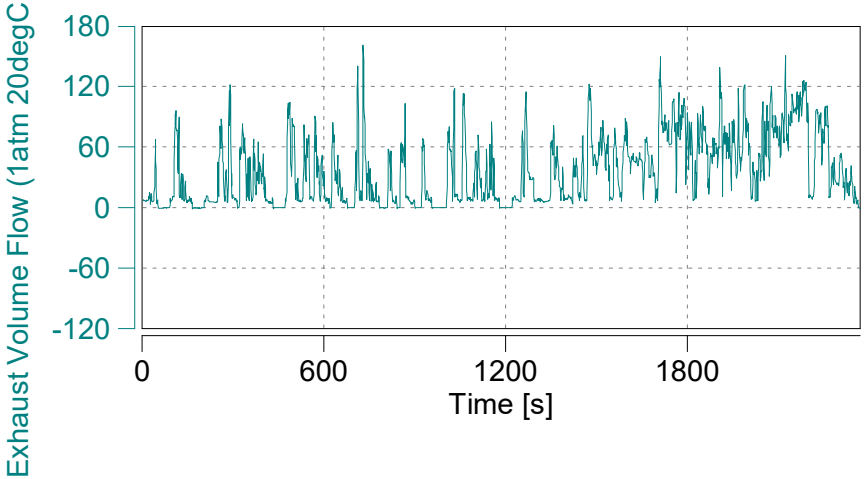
Page: Exhaust Flow (1)

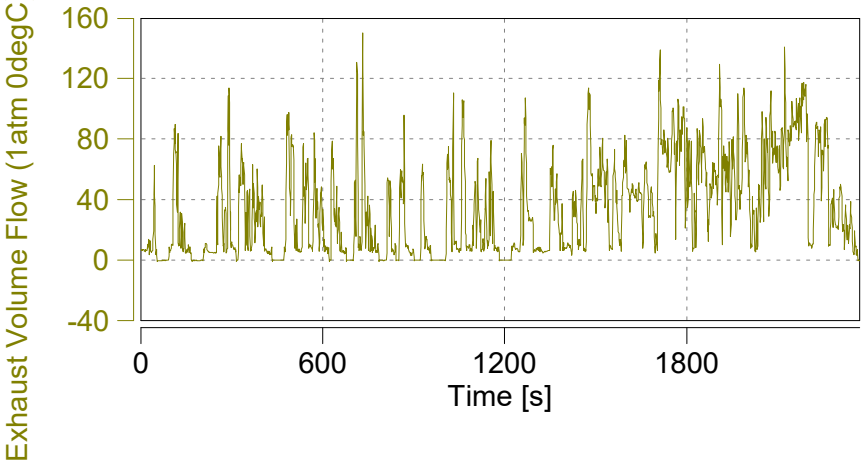
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

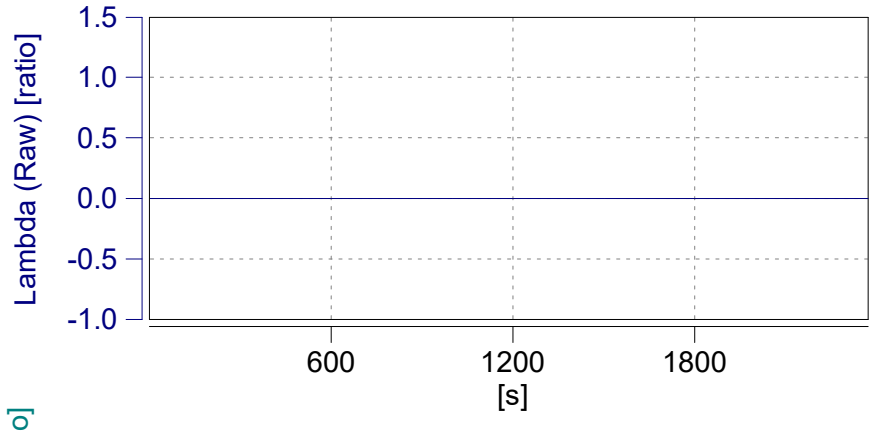
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

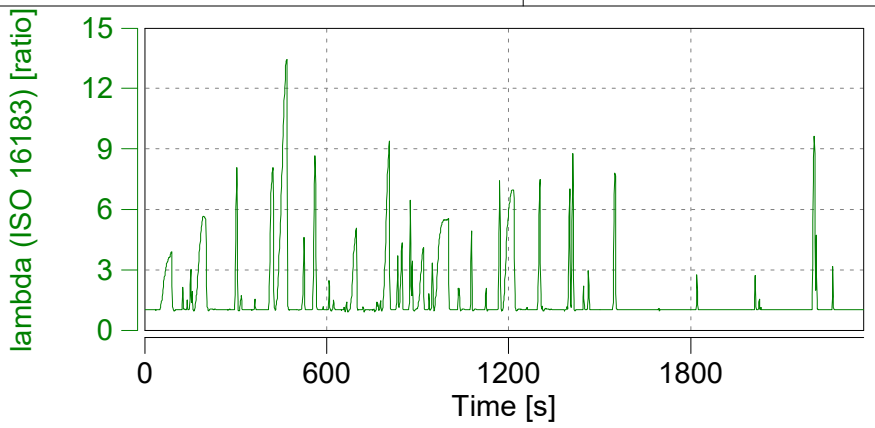
Case: X253-3303

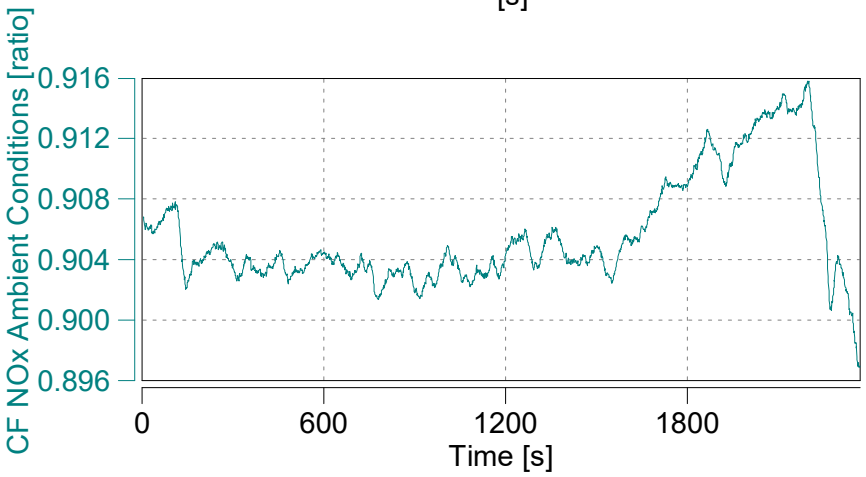
Page: Exhaust Flow (2)

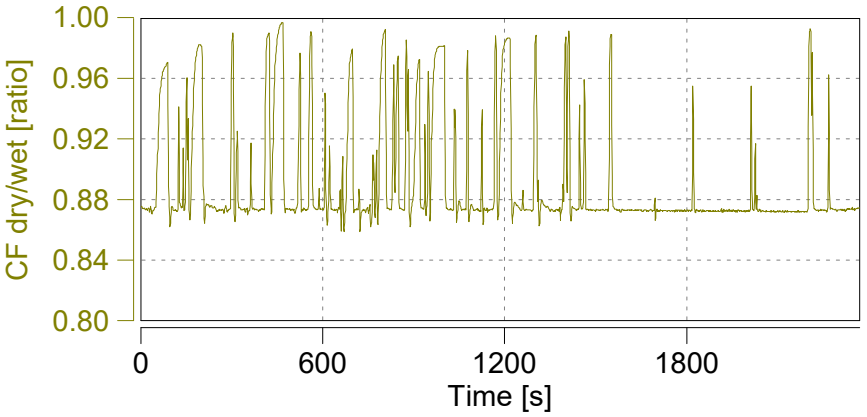
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

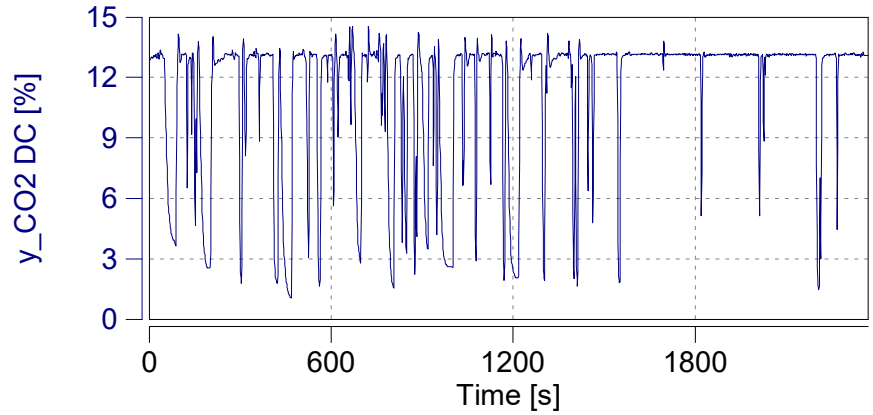
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

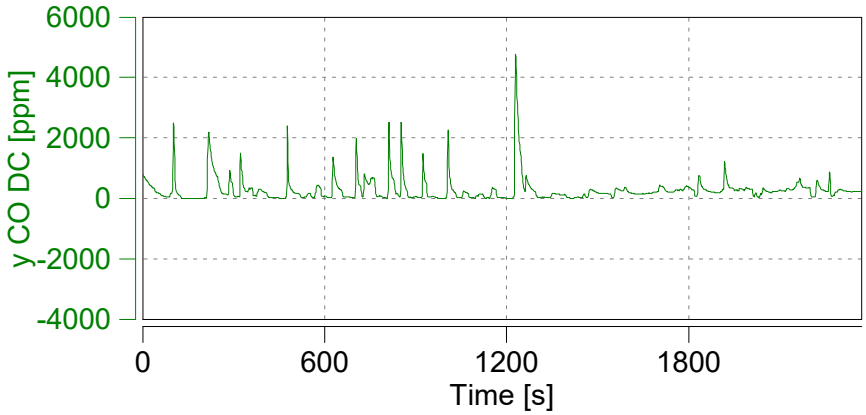
Case: X253-3303

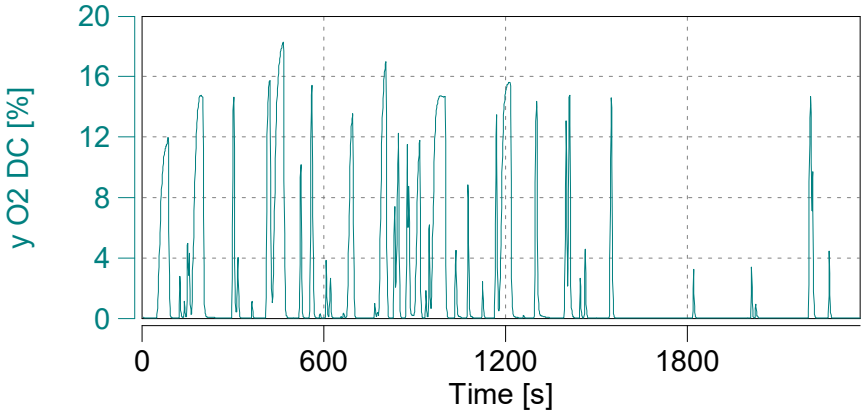
Page: Corrected Emissions (1)

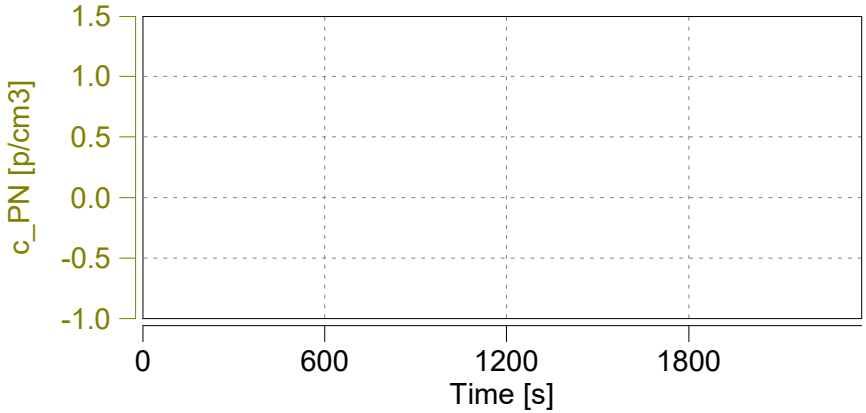
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

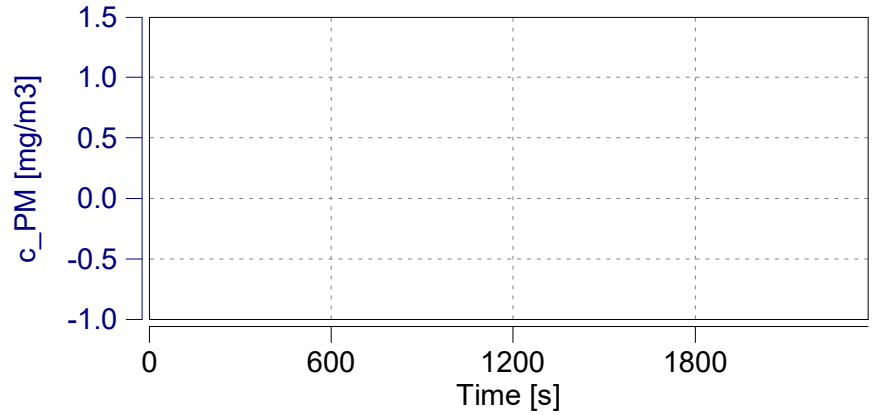
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

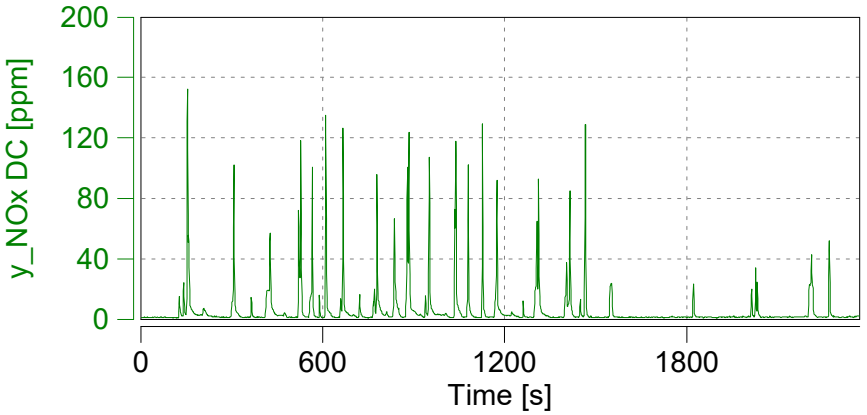
Case: X253-3303

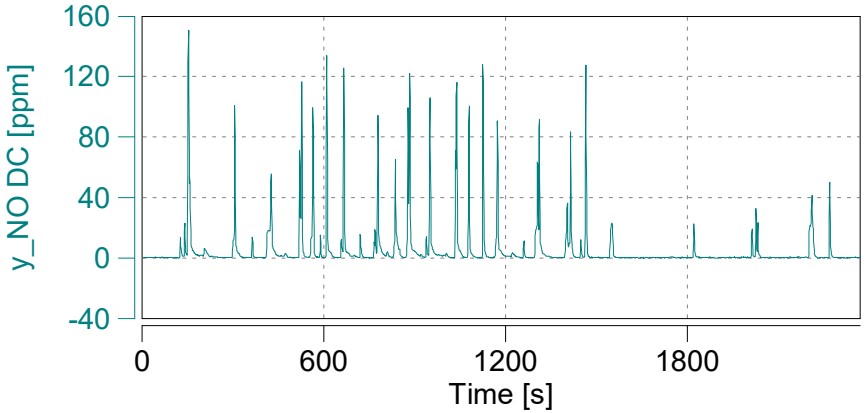
Page: Corrected Emissions (2)

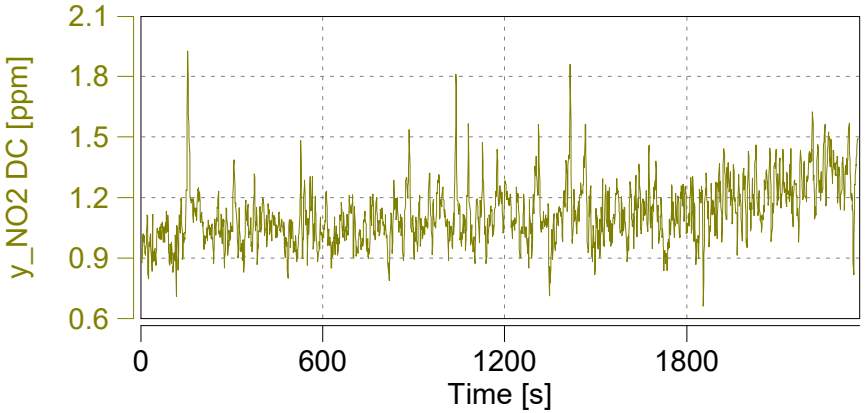
'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

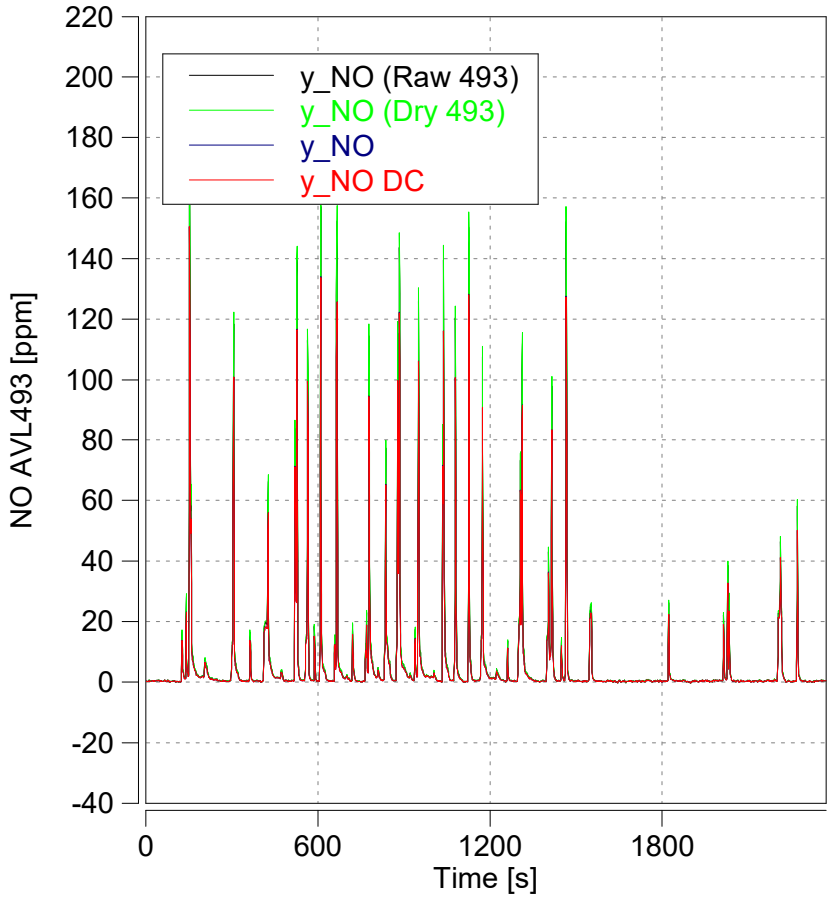
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

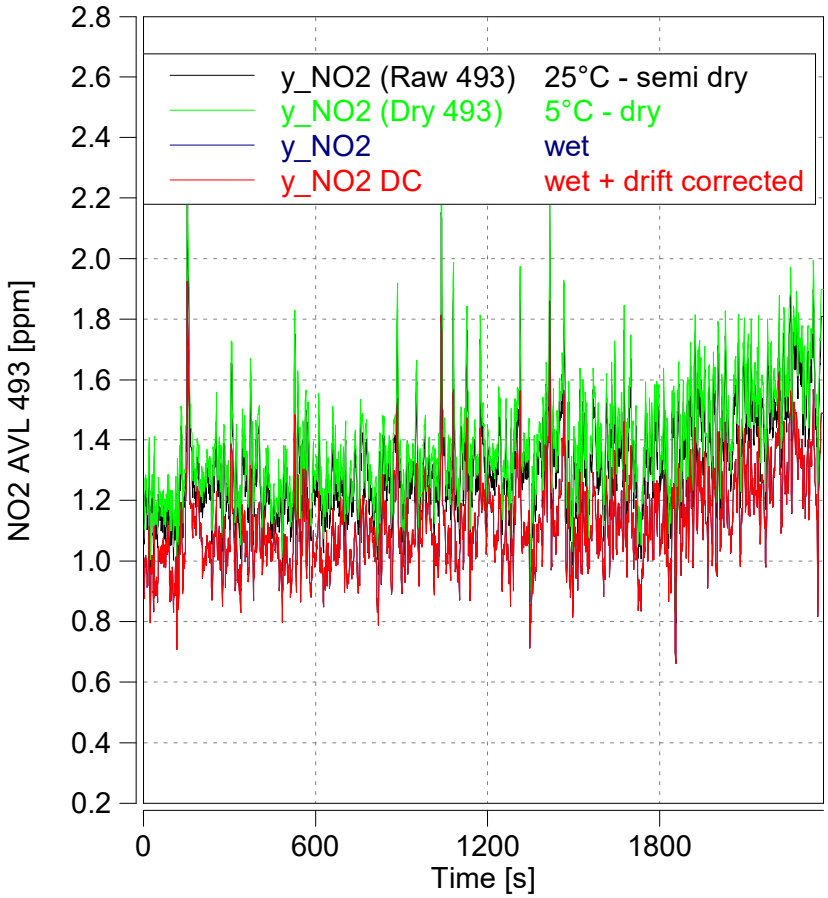
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





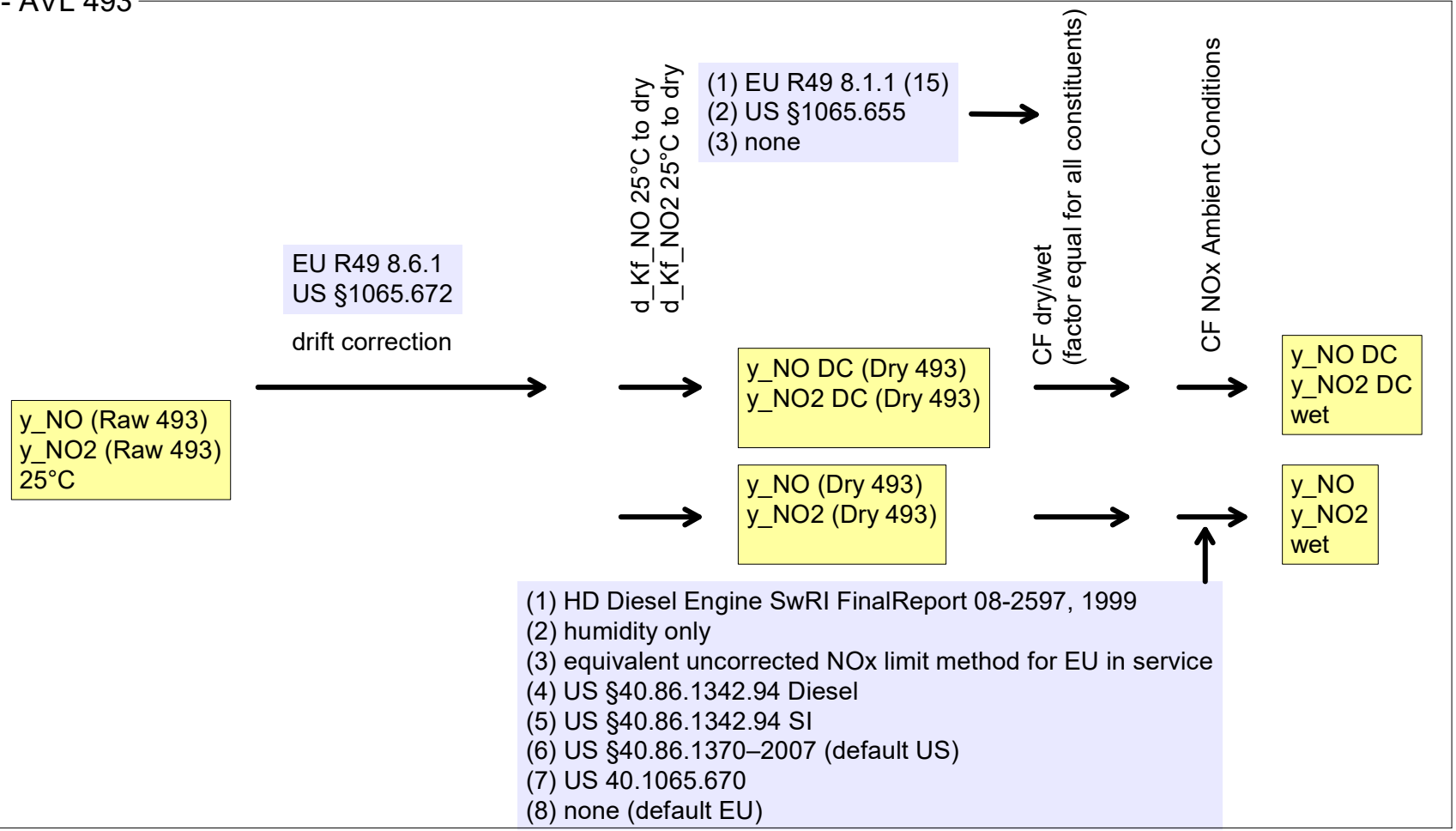
Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019

NOx - AVL 493

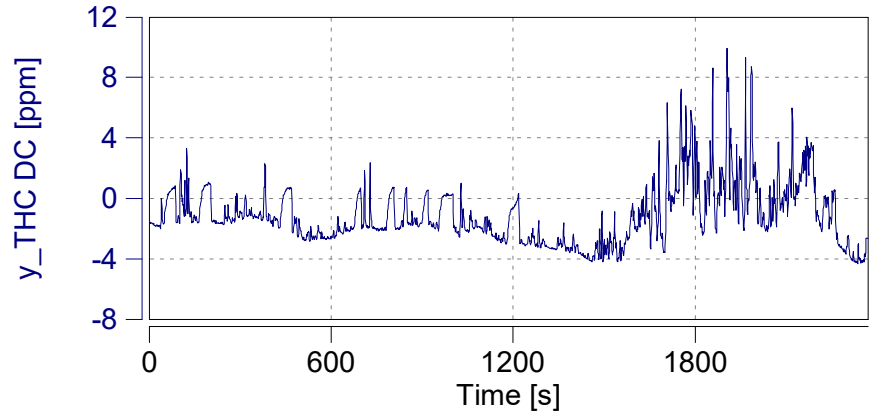


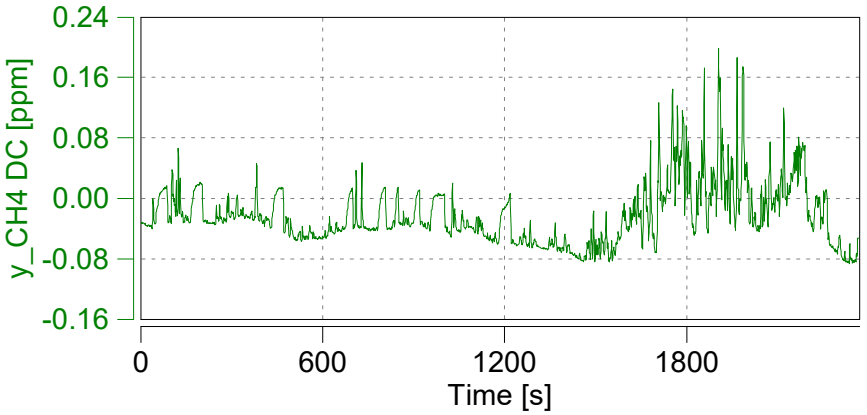
Case: X253-3303

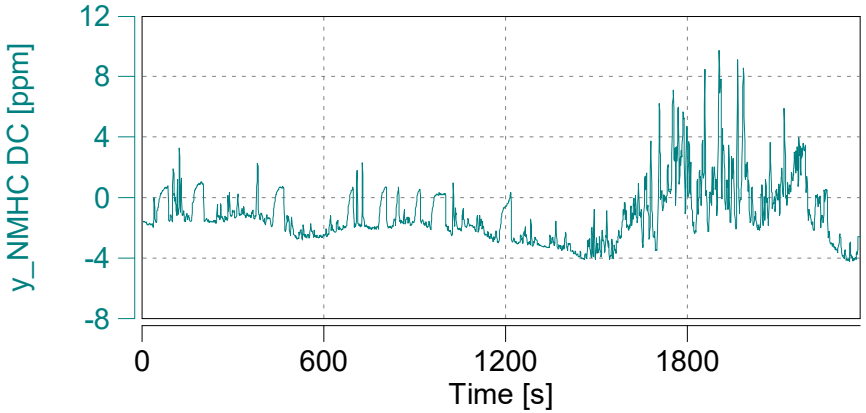
Page: Corrected Emissions (5)

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	58.8	41.2	0.0

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	40.8	%
Decelerating	37.7	%
Cruising	1.0	%
Stop	20.5	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

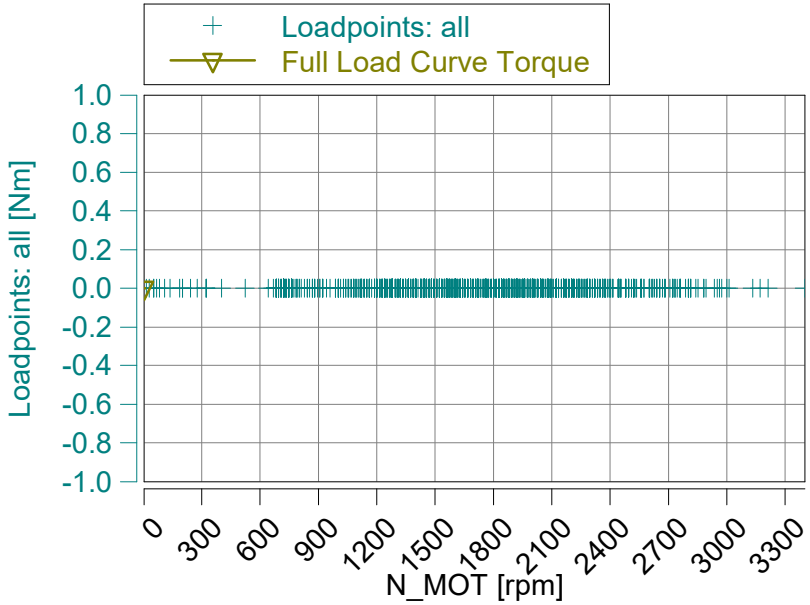
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.11
	r^2 = 0.98

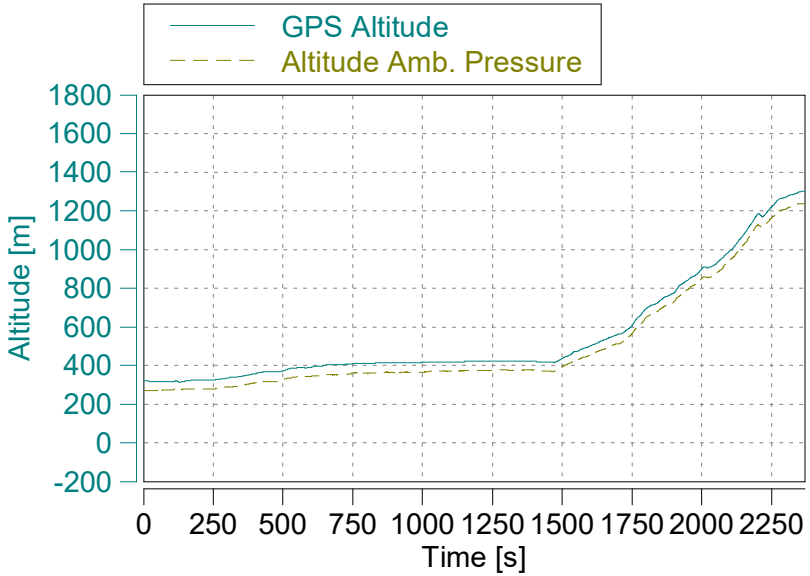
Case: X253-3303

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

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	2370.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	207.6	g/kWh
avg BSFC ISO16183	235.2	g/kWh
Distance ECU	28.2	km
Distance GPS	28.417	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

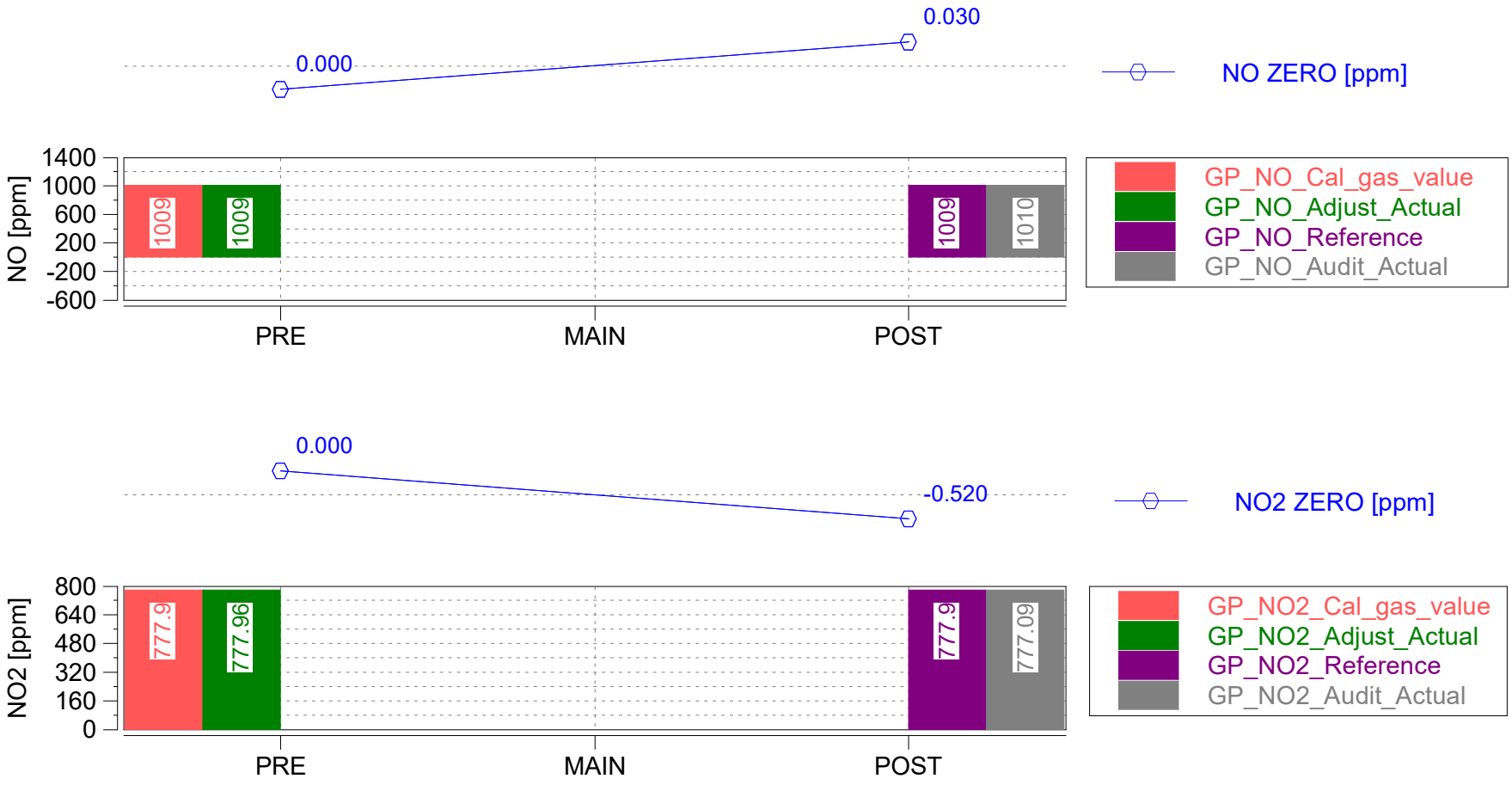
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

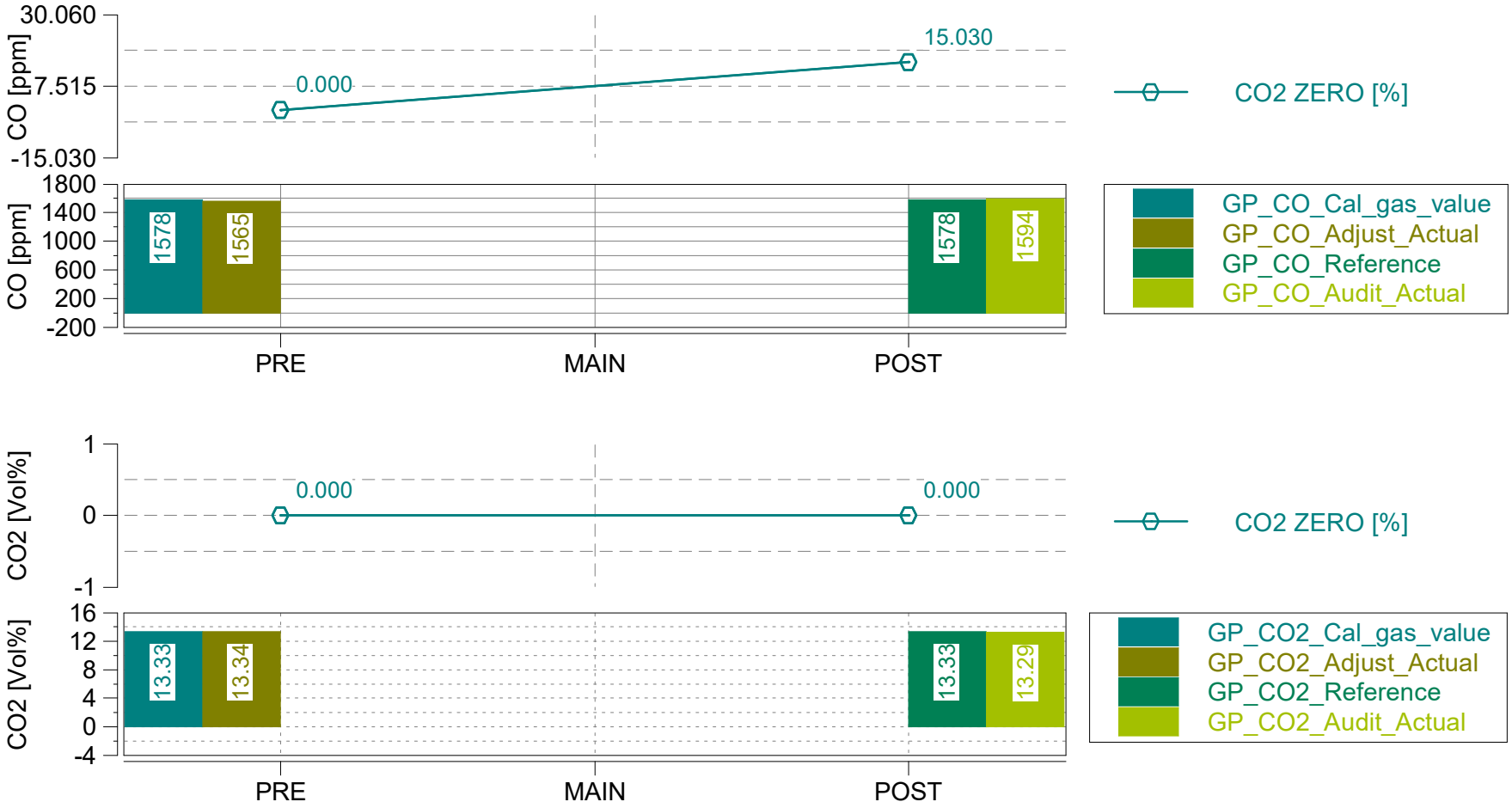
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

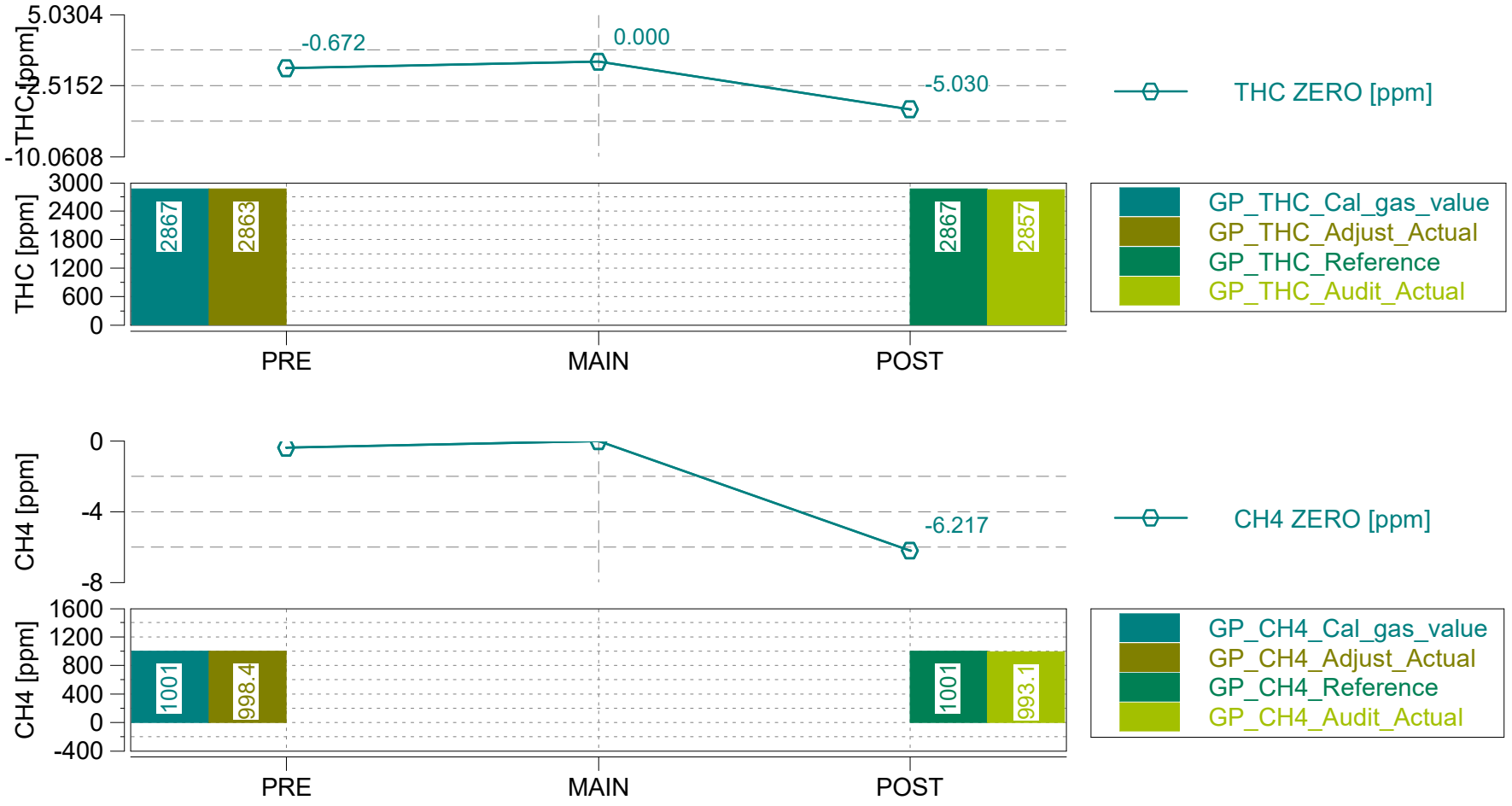
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

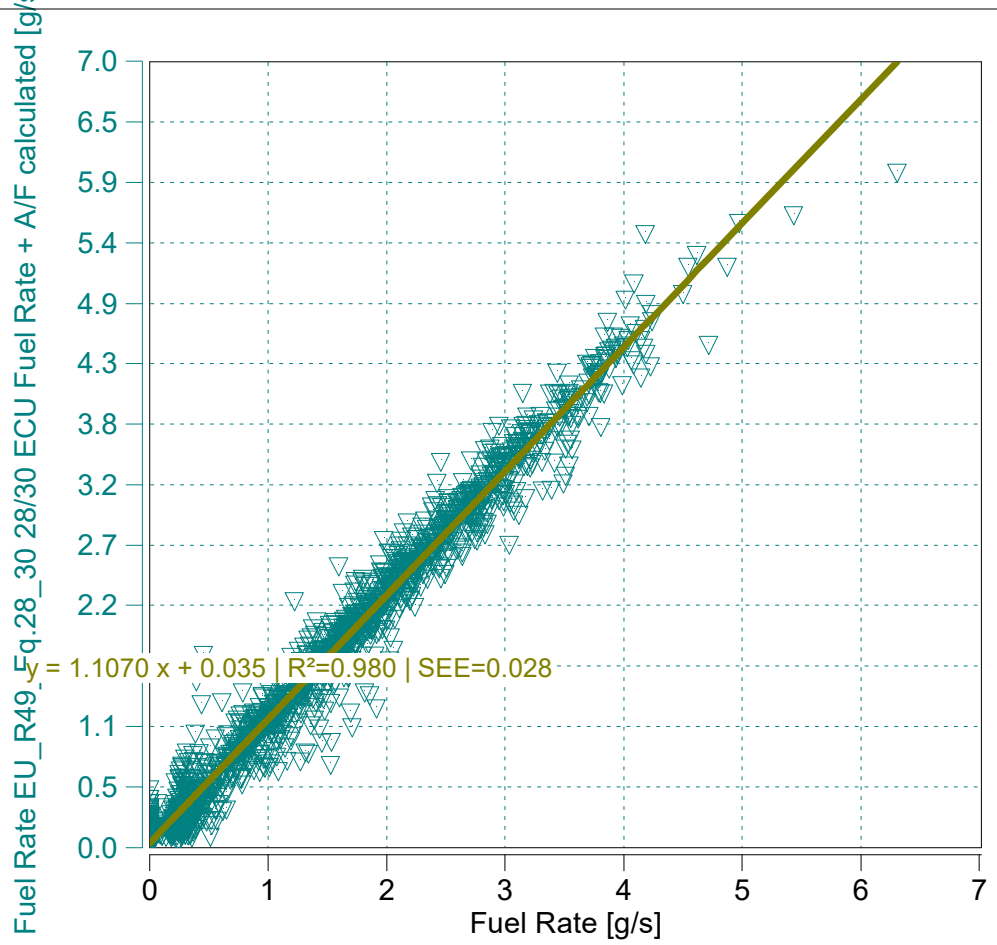
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 A2 Mountain Uphill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.1070 x + 0.035 | R²=0.980 | SEE=0.028
m = 1.11 (0.9 - 1.1 recommended)
R² = 0.98 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary

'X253-3303 B1 Mountain Downhill'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1760.00	s
Trip Duration (a)	1760.00	s
Trip Distance	17.09	mi
Trip Distance (a)	17.09	mi
Trip Fuel Cons. (b)	0.87	kg
Trip Fuel Cons. (ab)	0.87	kg
Trip Fuel Cons. EU (ac)	0.98	kg
Trip Fuel Cons. US (ac)	0.98	kg
Trip Fuel Economy (b)	55.87	mpg_US
Trip Fuel Economy (ab)	55.87	mpg_US
Trip Fuel Economy EU (ac)	49.10	mpg_US
Trip Fuel Economy US (ac)	49.17	mpg_US
Trip Fuel Economy GGE (b)	55.87	mpg_US
Trip Fuel Economy GGE (ab)	55.87	mpg_US
Trip Fuel Economy EU GGE (ac)	49.10	mpg_US
Trip Fuel Economy US GGE (ac)	49.17	mpg_US
Trip Av. Eng. Speed	1485.81	rpm
Trip Av. Torque	23.09	lbft
Trip Av. Power	8.12	hp
Trip Work		
Trip Work (a)	3.97	hphr
Trip Exhaust Mass	19.44	kg
Trip Exhaust Mass EU (ac)	13.84	kg
Trip Exhaust Mass US (ac)	13.96	kg
Trip Av. Amb. Temperature	69.56	deg_F
Trip Av. Humidity	28.62	%
Trip Av. GPS Altitude	592.81	m
Fuel Type	Petrol (E10)	

ave THC	0.49626	ppm
ave NMHC	0.48633	ppm
ave CH4	0.00993	ppm
ave CO	162.60149	ppm
ave CO2	7.27780	%
ave NOx	5.20787	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	-0.00352	g
tot NMHC	-0.00326	g
tot CH4	-0.00008	g
tot CO	4.96420	g
tot CO2	2981.87684	g
tot NO (d)	0.07237	g
tot NO2	0.03275	g
tot NOx	0.10513	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	34.95563	mi/hr
Trip Distance Share Urban	18.37322	% distance
Trip Distance Share Rural	60.49121	% distance
Trip Distance Share Motorway	21.13557	% distance

BS CO2	751.16689	g/hphr
BS CO	1.25054	g/hphr
BS THC	-0.00089	g/hphr
BS NMHC	-0.00082	g/hphr
BS CH4	-0.00002	g/hphr
BS NO (d)	0.01823	g/hphr
BS NO2	0.00825	g/hphr
BS NOx	0.02648	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	174.48674	g/mi
DS CO	0.29048	g/mi
DS THC	-0.00021	g/mi
DS NMHC	-0.00019	g/mi
DS CH4	-0.00000	g/mi
DS NO (d)	0.00423	g/mi
DS NO2	0.00192	g/mi
DS NOx	0.00615	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3445.24905	g/kg
FS CO	5.73562	g/kg
FS THC	-0.00407	g/kg
FS NMHC	-0.00376	g/kg
FS CH4	-0.00009	g/kg
FS NO (d)	0.08362	g/kg
FS NO2	0.03785	g/kg
FS NOx	0.12146	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 B1 Mountain Downhill'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	1760.00	s
Trip Duration (a)	1760.00	s
Trip Distance	17.09	mi
Trip Distance (a)	17.09	mi
Trip Fuel Cons. (b)	0.87	kg
Trip Fuel Cons. (ab)	0.87	kg
Trip Fuel Cons. EU (ac)	0.98	kg
Trip Fuel Cons. US (ac)	0.98	kg
Trip Fuel Economy (b)	55.87	mpg_US
Trip Fuel Economy (ab)	55.87	mpg_US
Trip Fuel Economy EU (ac)	49.10	mpg_US
Trip Fuel Economy US (ac)	49.17	mpg_US
Trip Fuel Economy GGE (b)	55.87	mpg_US
Trip Fuel Economy GGE (ab)	55.87	mpg_US
Trip Fuel Economy EU GGE (ac)	49.10	mpg_US
Trip Fuel Economy US GGE (ac)	49.17	mpg_US
Trip Av. Eng. Speed	1485.81	rpm
Trip Av. Torque	23.09	lbft
Trip Av. Power	8.12	hp
Trip Work		
Trip Work (a)	3.97	hphr
Trip Exhaust Mass	19.44	kg
Trip Exhaust Mass EU (ac)	13.84	kg
Trip Exhaust Mass US (ac)	13.96	kg
Trip Av. Amb. Temperature	69.56	deg_F
Trip Av. Humidity	28.62	%
Trip Av. GPS Altitude	592.81	m
Fuel Type	Petrol (E10)	

ave THC DC	0.83417	ppm
ave NMHC DC	0.81749	ppm
ave CH4 DC	0.01668	ppm
ave CO DC	162.39259	ppm
ave CO2 DC	7.28600	%
ave NOx DC	5.20445	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	-0.00026	g
tot NMHC DC	-0.00024	g
tot CH4 DC	-0.00001	g
tot CO DC	4.95783	g
tot CO2 DC	2985.23607	g
tot NO DC (d)	0.07230	g
tot NO2 DC	0.03277	g
tot NOx DC	0.10507	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	34.95563	mi/hr
Trip Distance Share Urban	18.37322	% distance
Trip Distance Share Rural	60.49121	% distance
Trip Distance Share Motorway	21.13557	% distance

BS CO2 DC	752.01312	g/hphr
BS CO DC	1.24893	g/hphr
BS THC DC	-0.00007	g/hphr
BS NMHC DC	-0.00006	g/hphr
BS CH4 DC	-0.00000	g/hphr
BS NO DC (d)	0.01821	g/hphr
BS NO2 DC	0.00826	g/hphr
BS NOx DC	0.02647	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	174.68331	g/mi
DS CO DC	0.29011	g/mi
DS THC DC	-0.00002	g/mi
DS NMHC DC	-0.00001	g/mi
DS CH4 DC	-0.00000	g/mi
DS NO DC (d)	0.00423	g/mi
DS NO2 DC	0.00192	g/mi
DS NOx DC	0.00615	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3449.13030	g/kg
FS CO DC	5.72825	g/kg
FS THC DC	-0.00030	g/kg
FS NMHC DC	-0.00028	g/kg
FS CH4 DC	-0.00001	g/kg
FS NO DC (d)	0.08353	g/kg
FS NO2 DC	0.03786	g/kg
FS NOx DC	0.12140	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

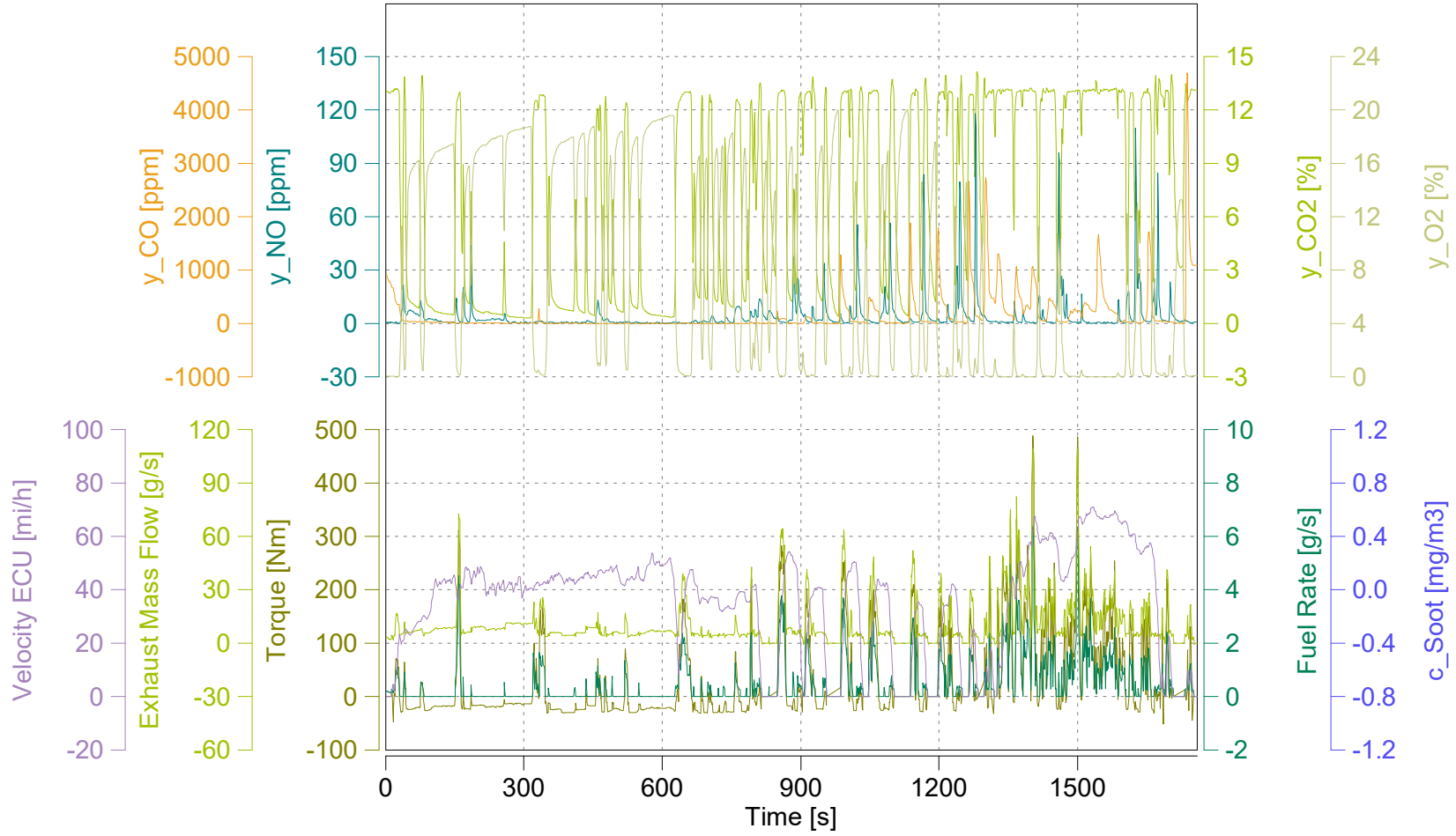
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

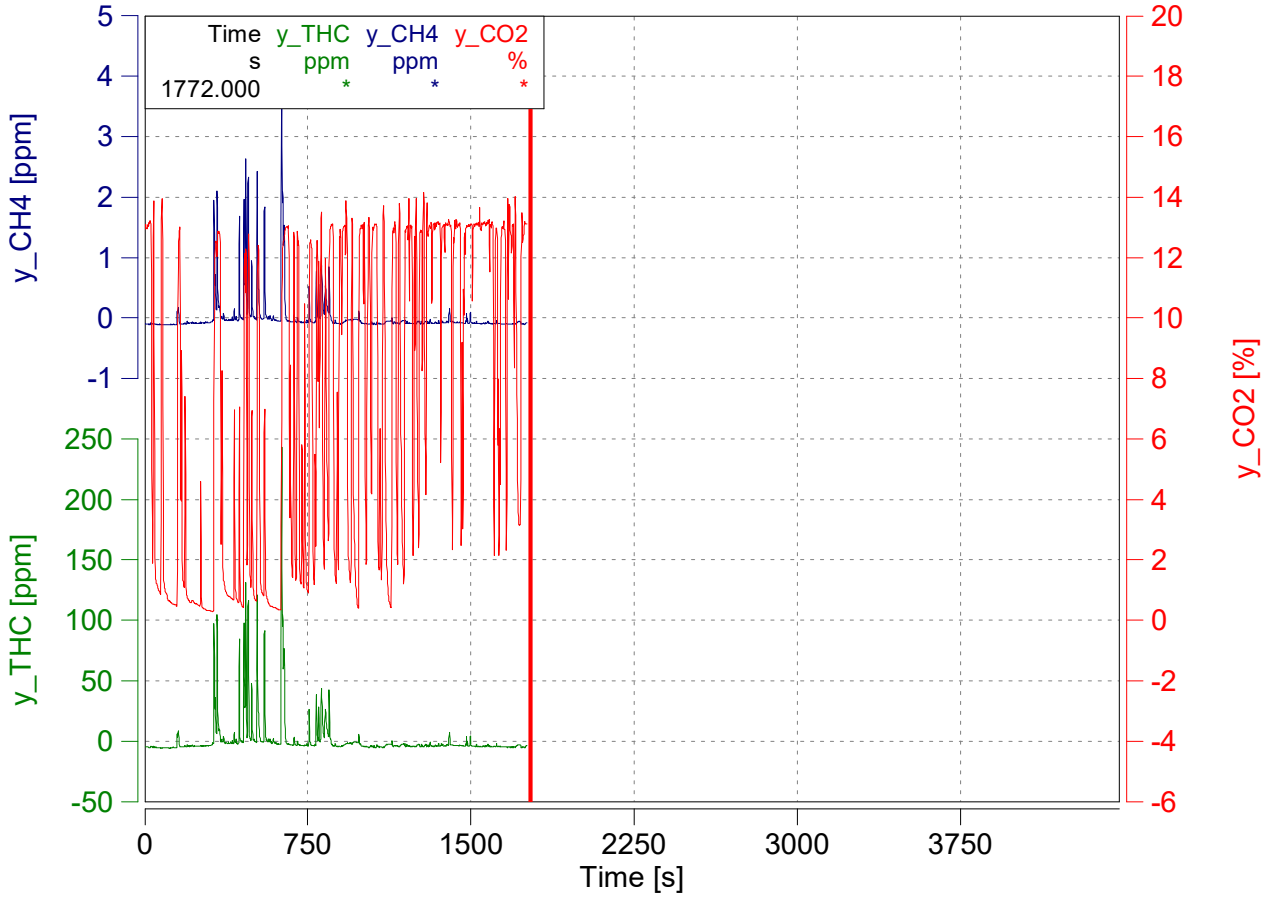
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

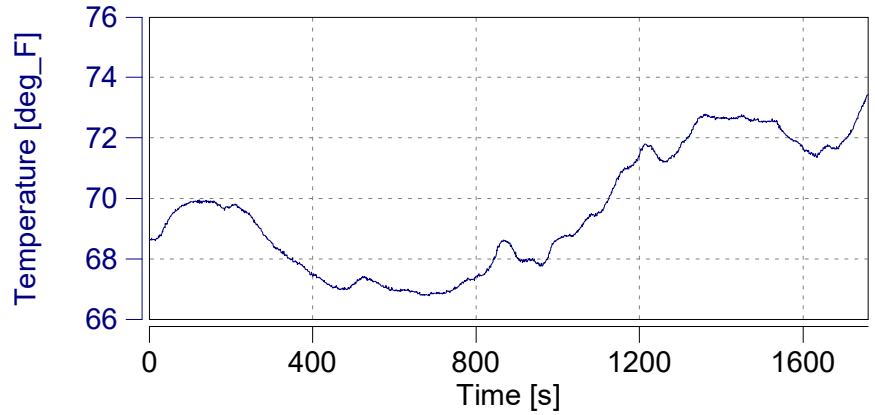
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

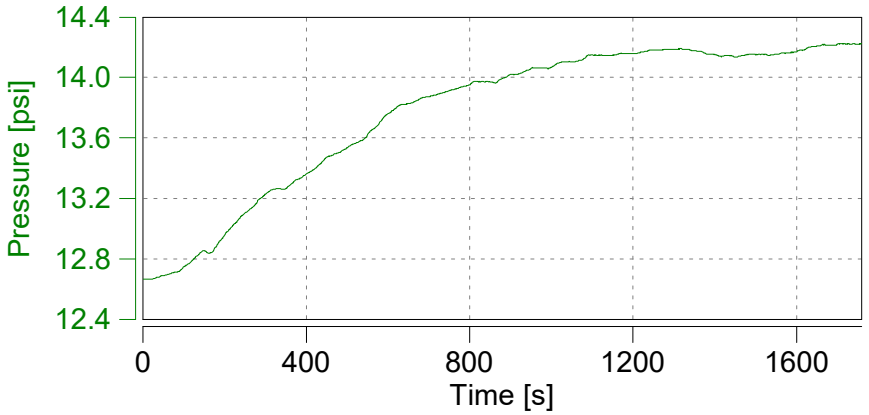
Case: X253-3303

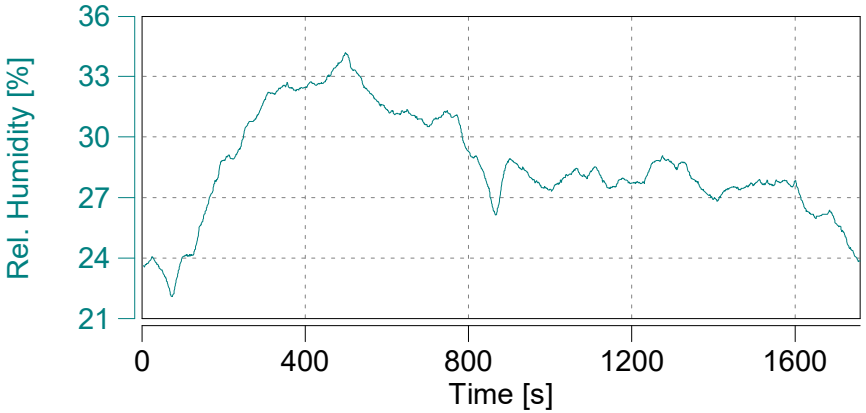
Page: Ambient Conditions

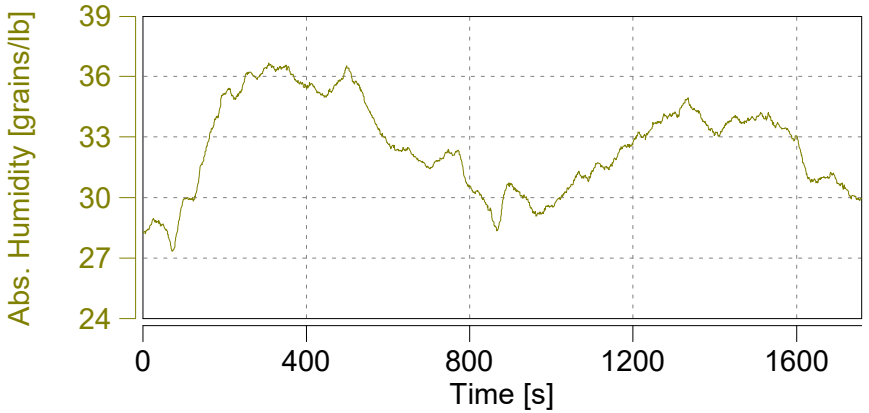
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

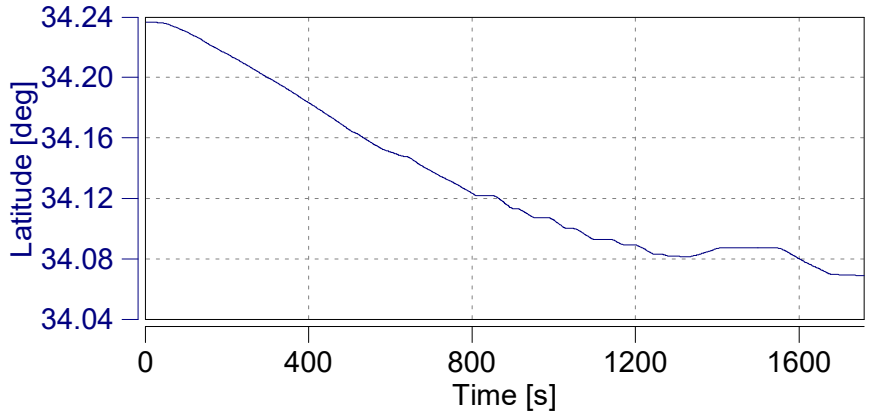
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

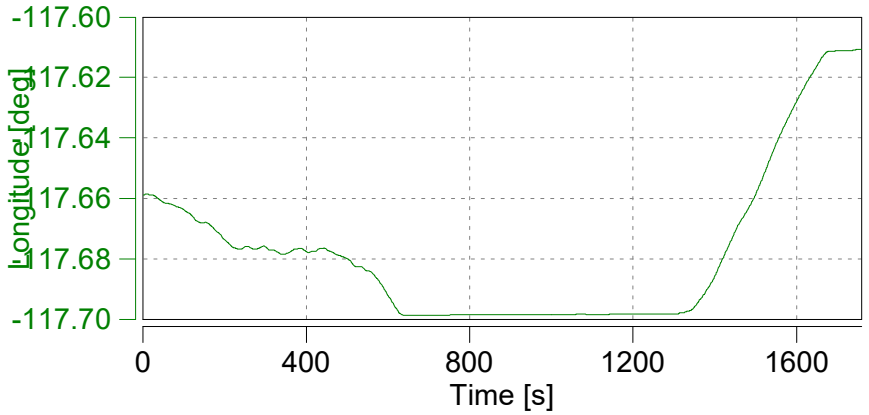
Case: X253-3303

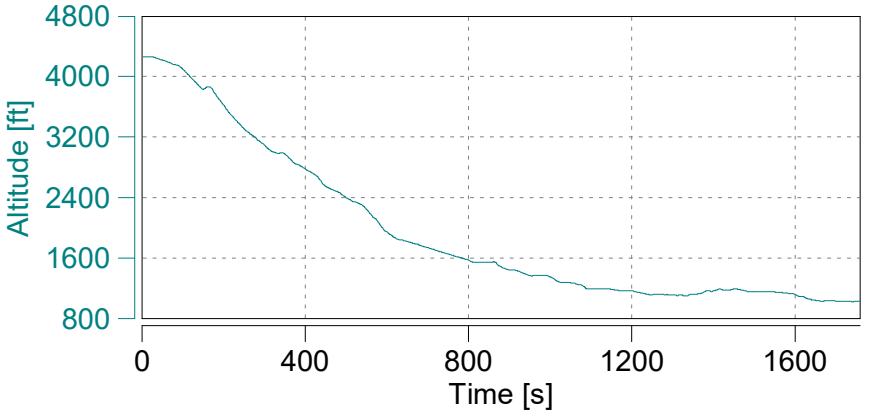
Page: GPS

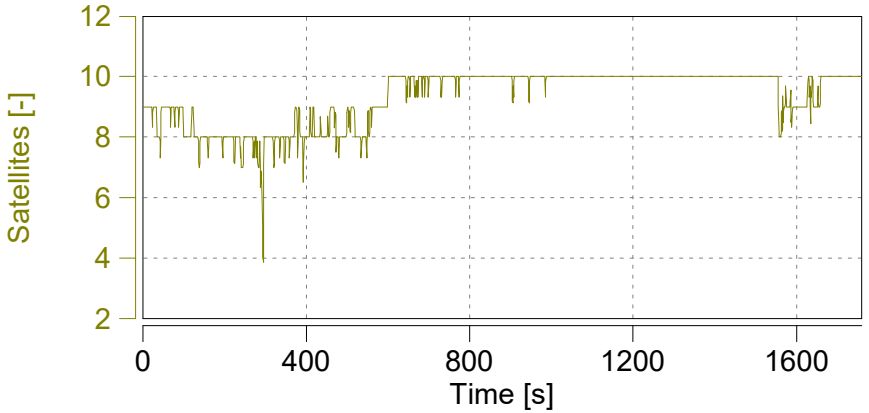
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

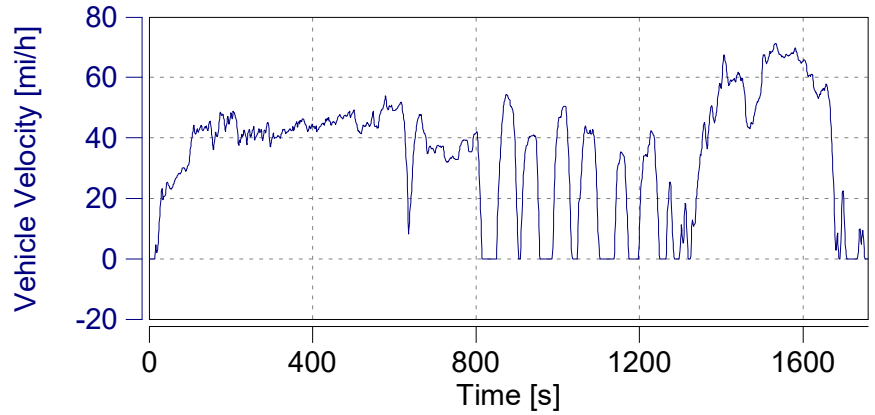
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

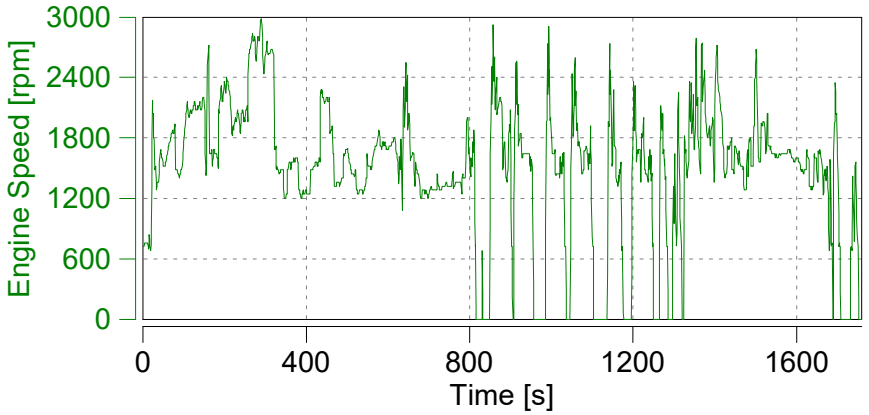
Case: X253-3303

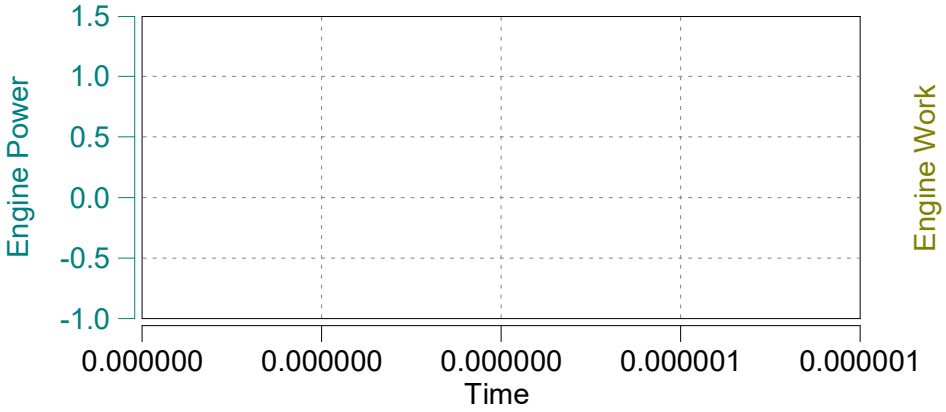
Page: Engine (1)

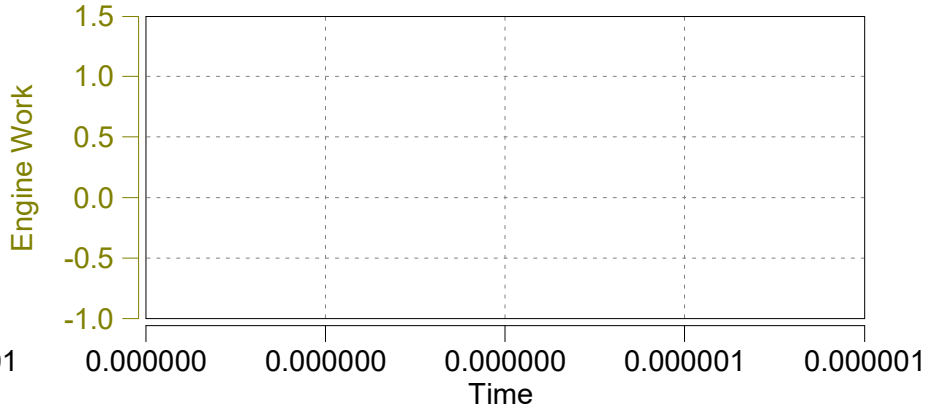
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

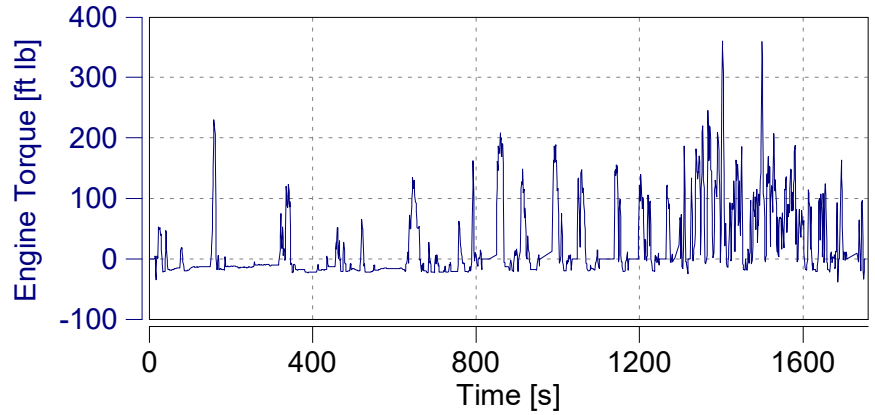
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

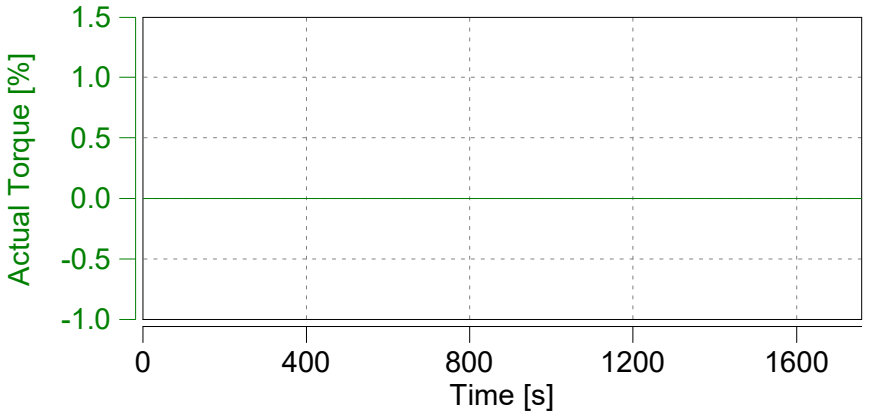
Case: X253-3303

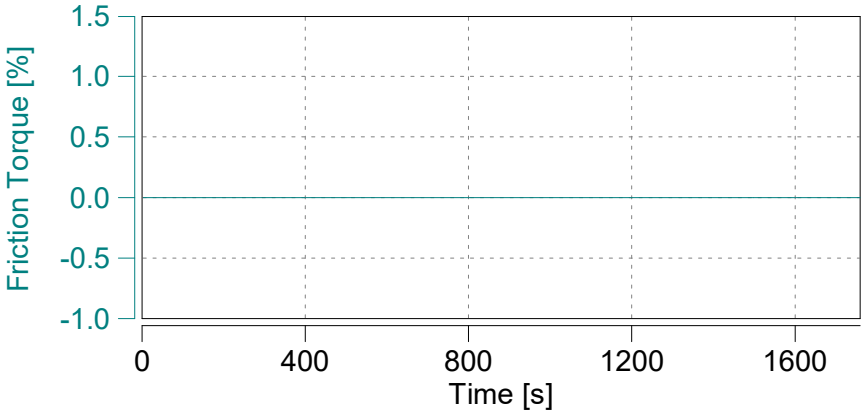
Page: Engine (2)

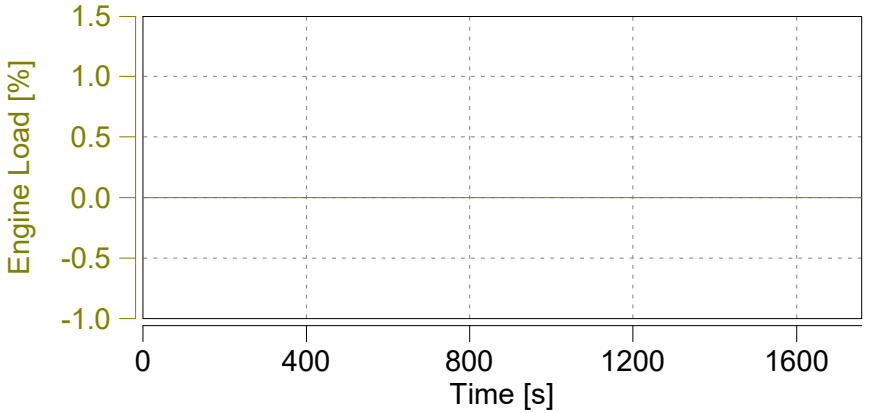
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

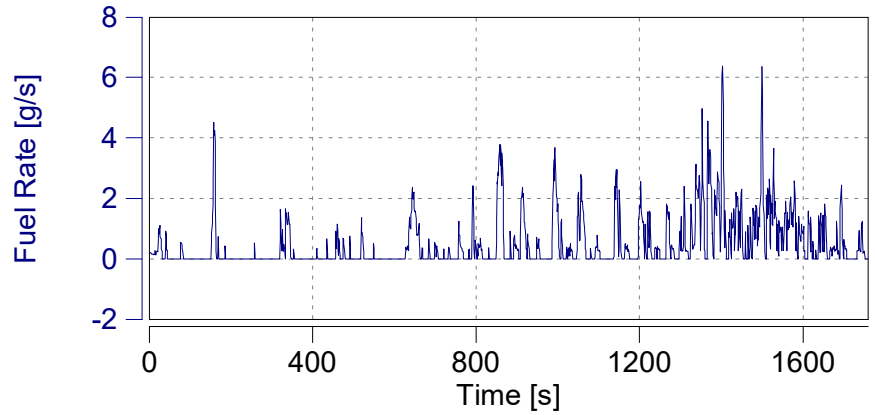
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

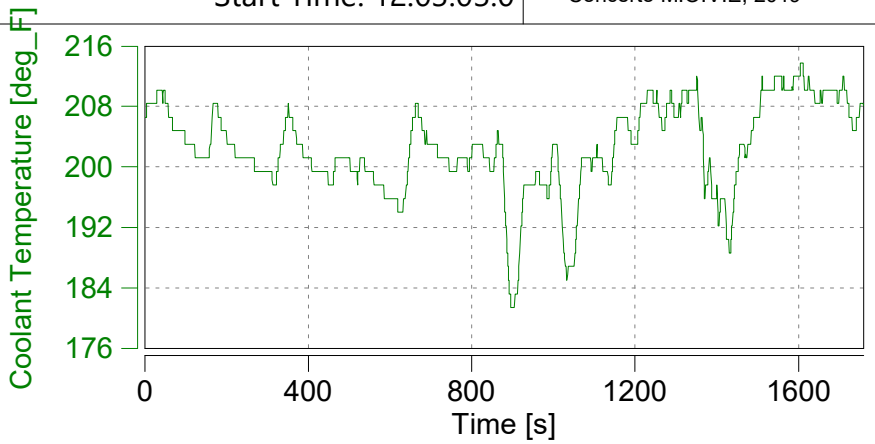
Case: X253-3303

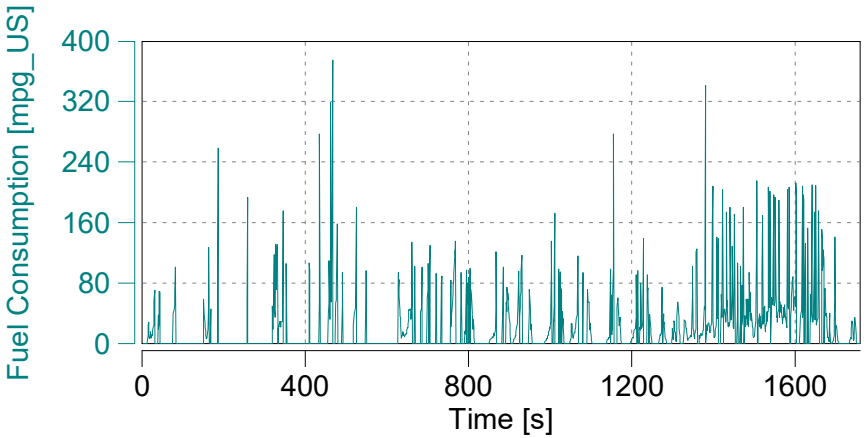
Page: Engine (3)

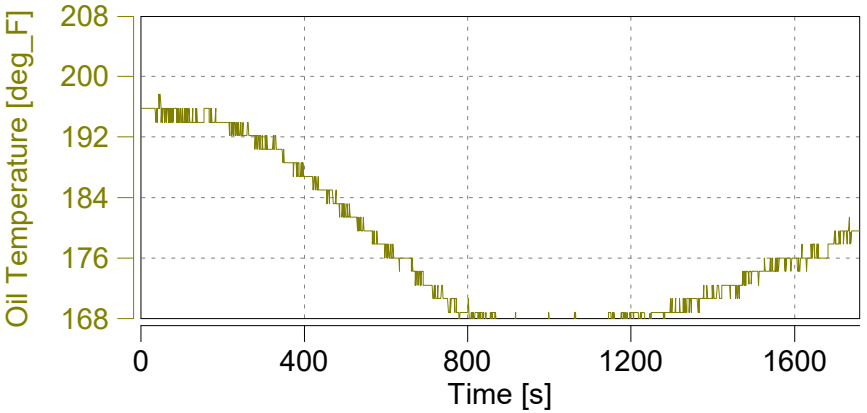
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

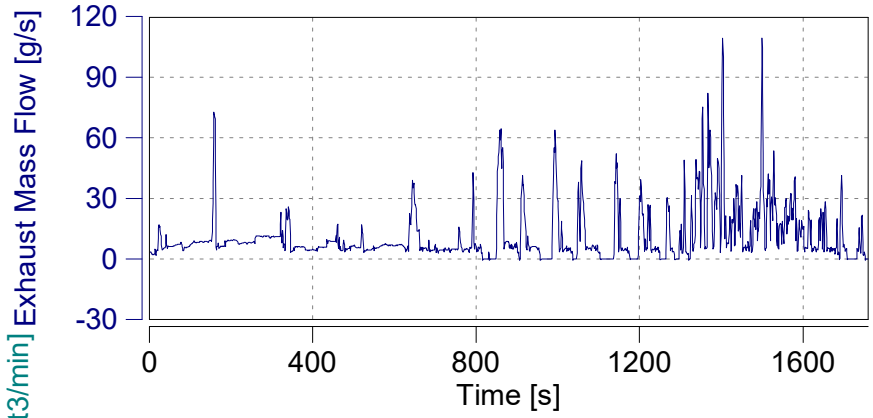
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

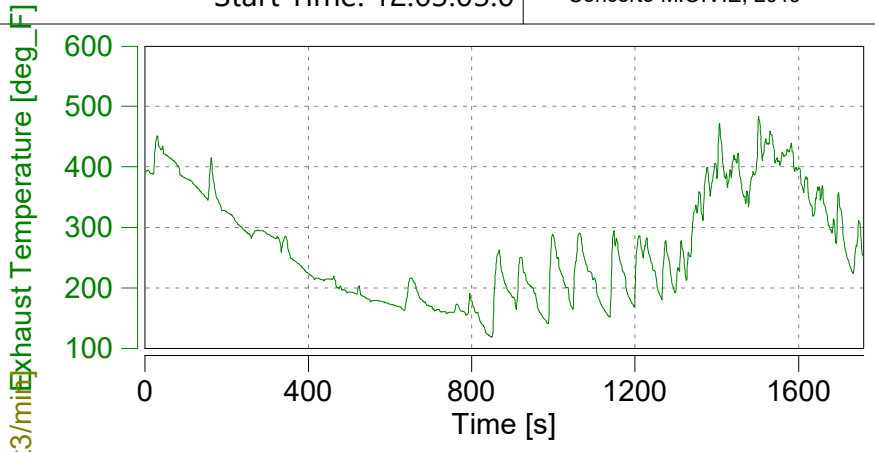
Case: X253-3303

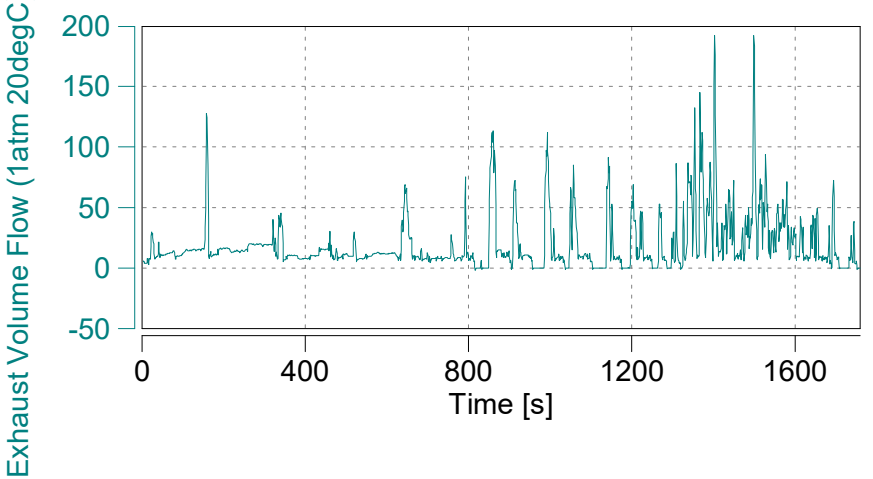
Page: Exhaust Flow (1)

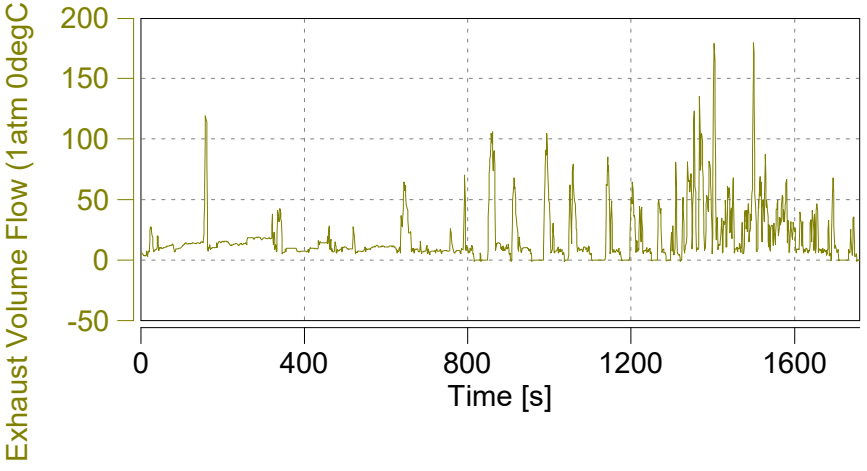
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

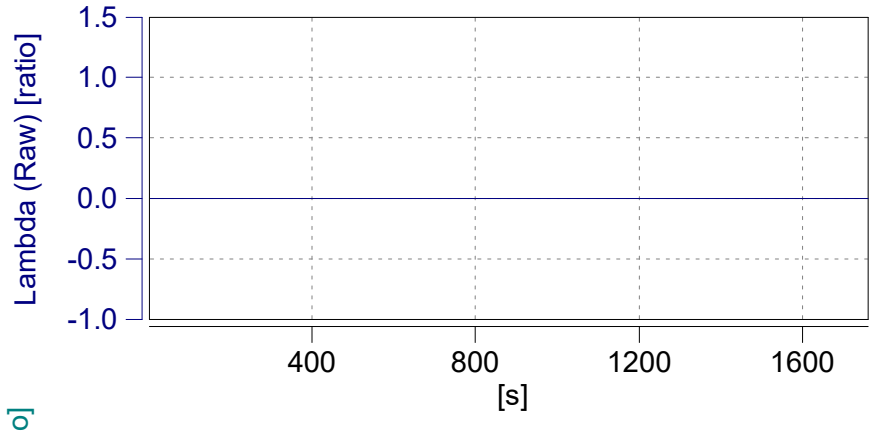
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

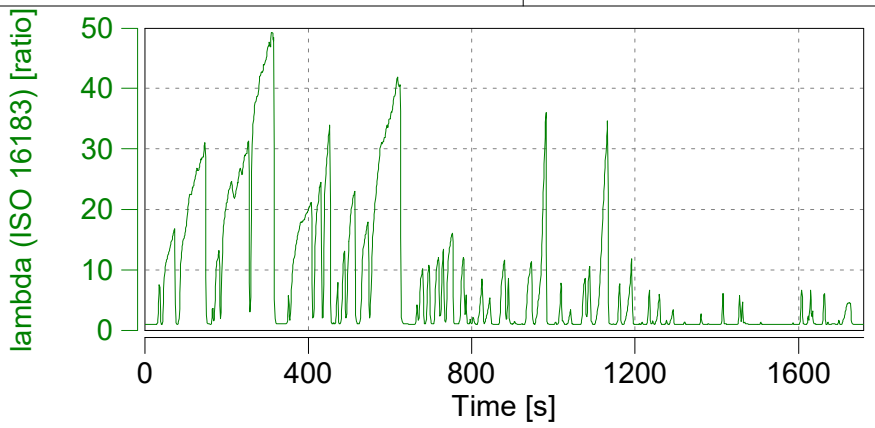
Case: X253-3303

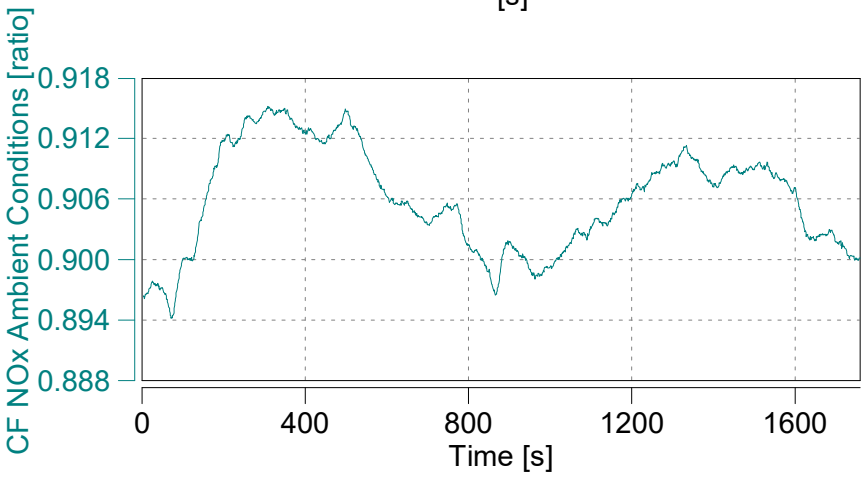
Page: Exhaust Flow (2)

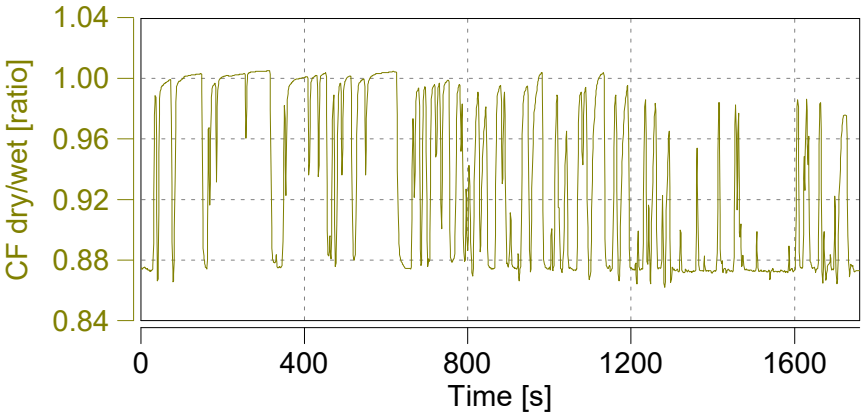
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

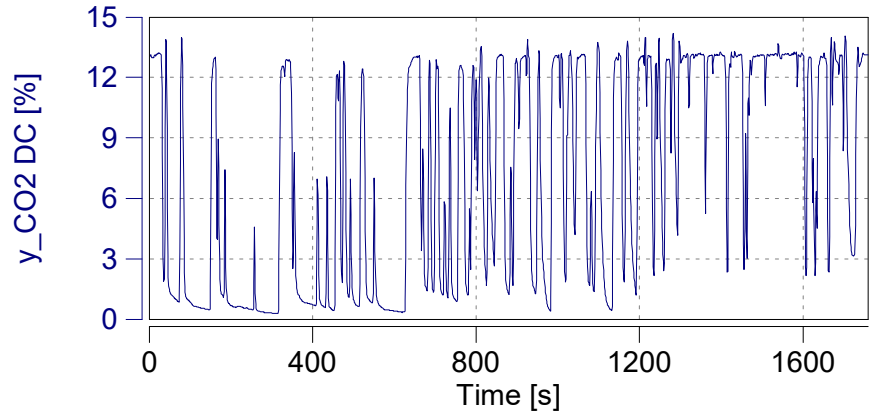
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

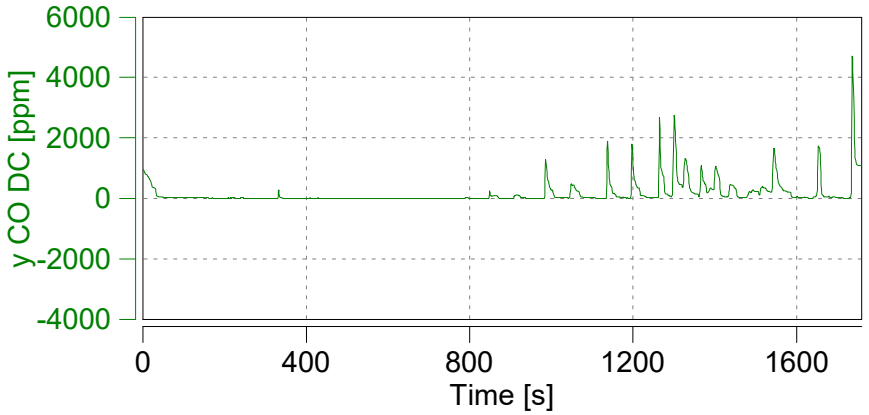
Case: X253-3303

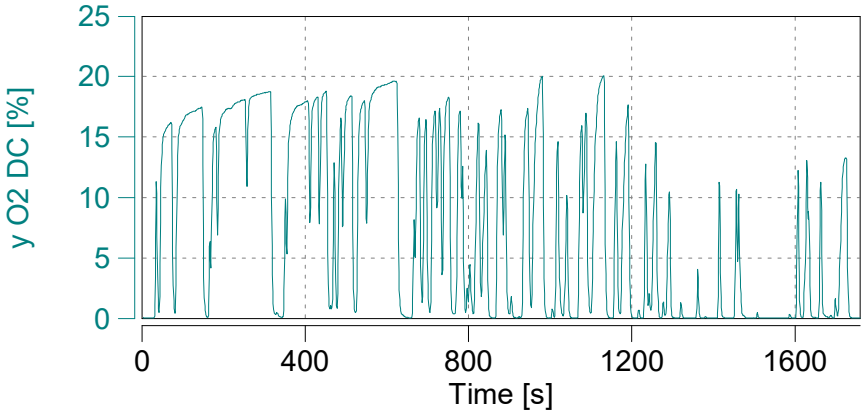
Page: Corrected Emissions (1)

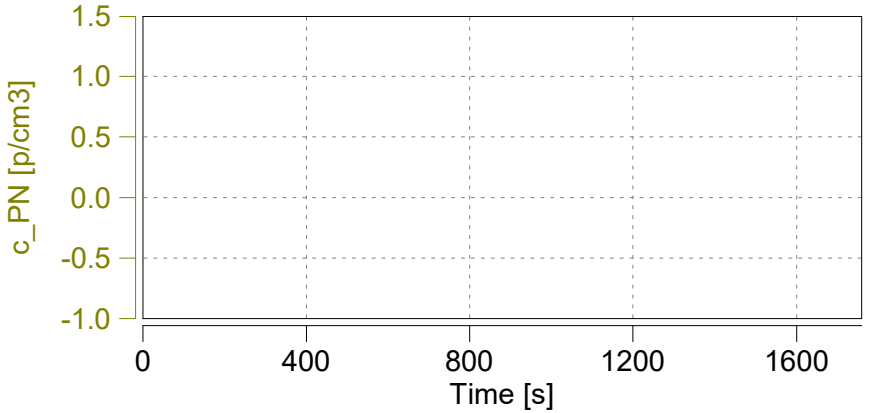
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

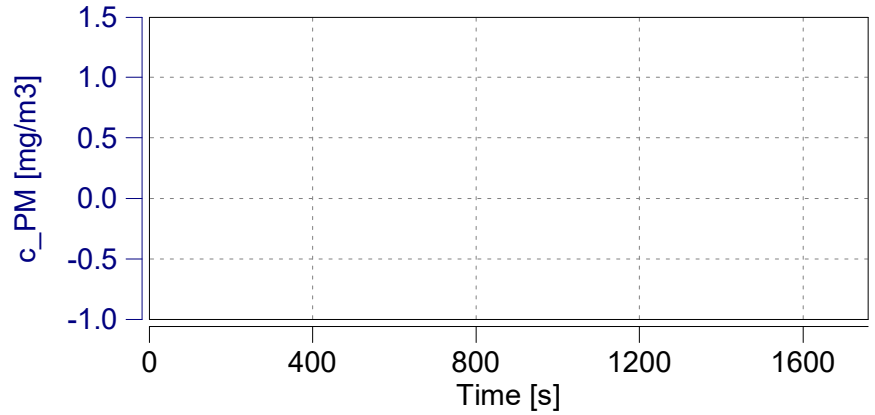
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

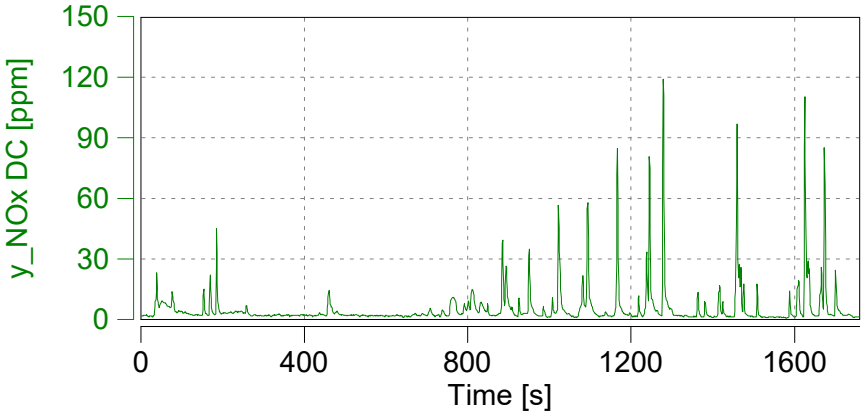
Case: X253-3303

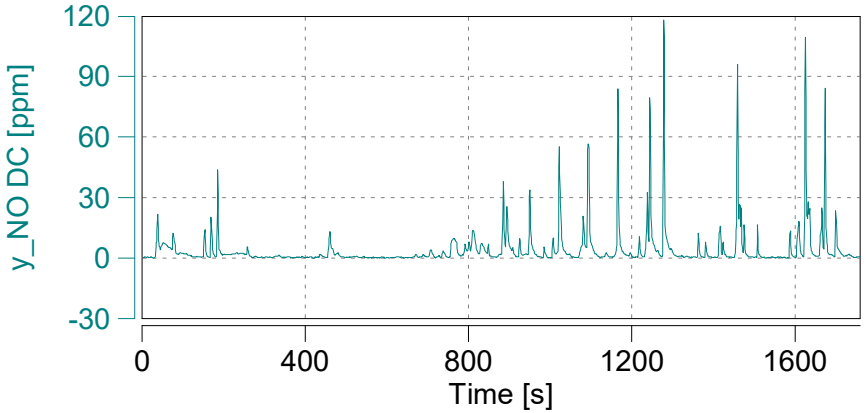
Page: Corrected Emissions (2)

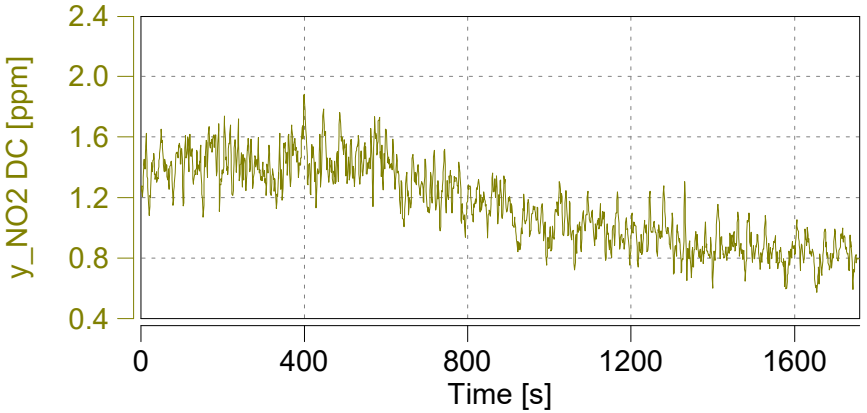
'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

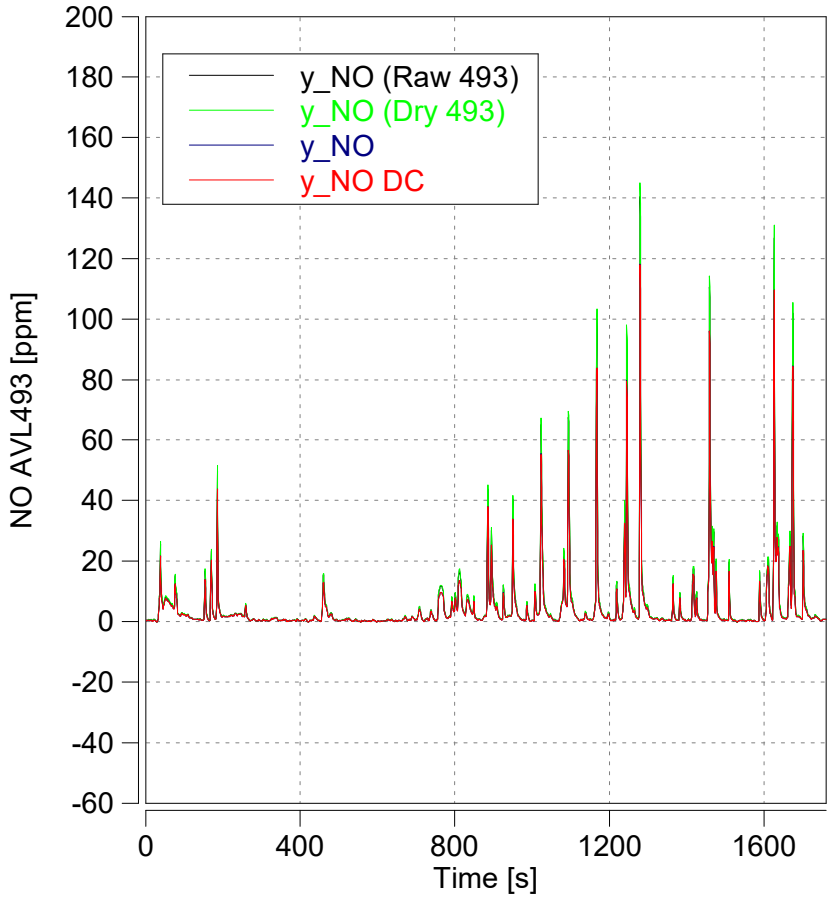
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

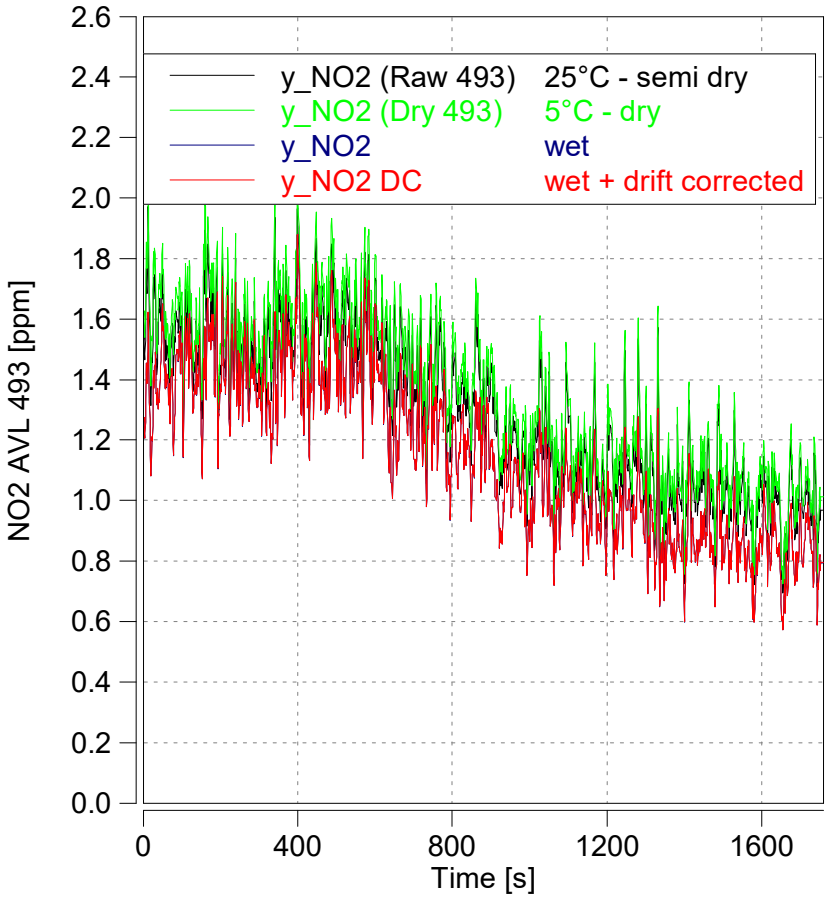
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019

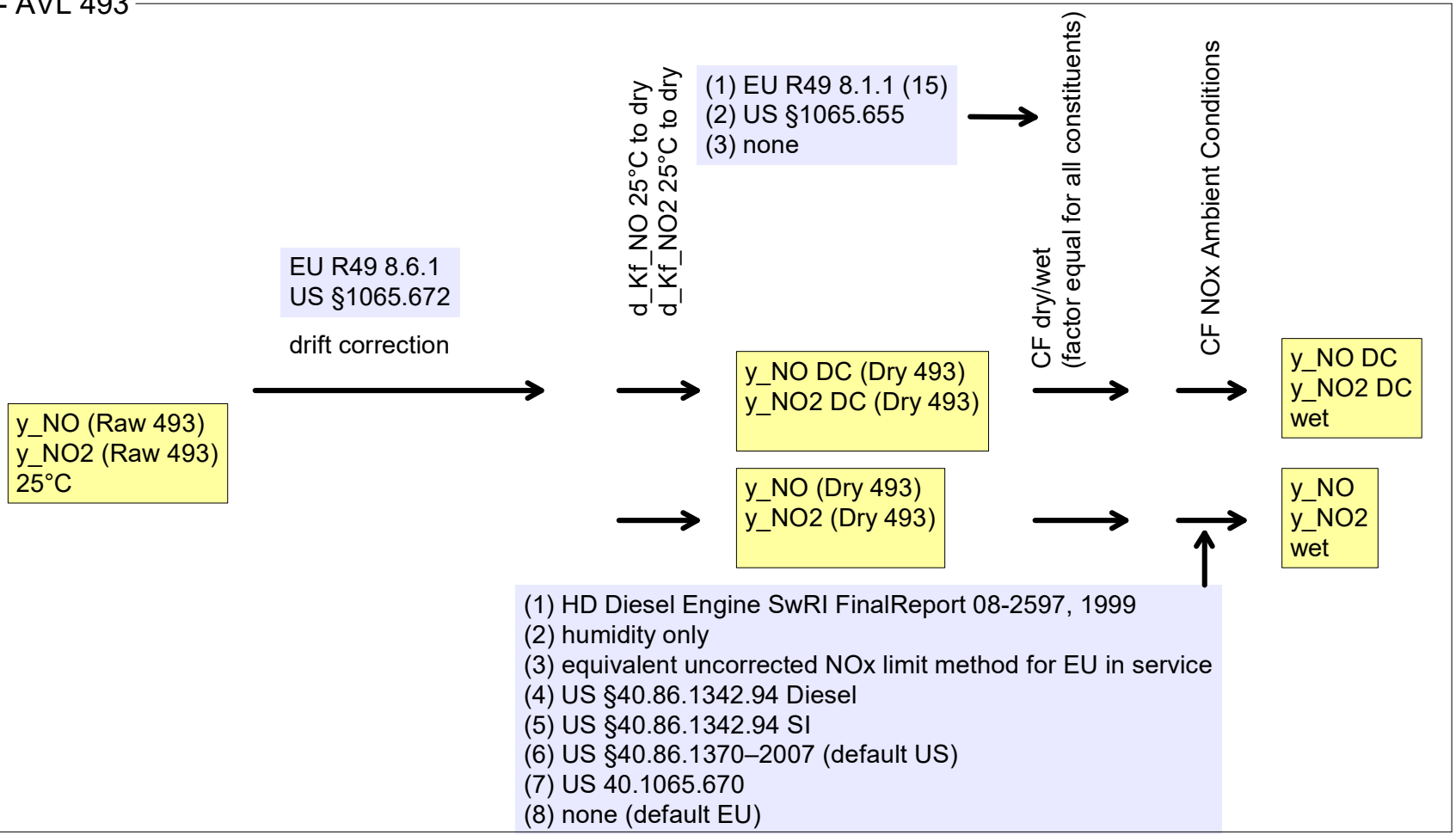




Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

NOx - AVL 493

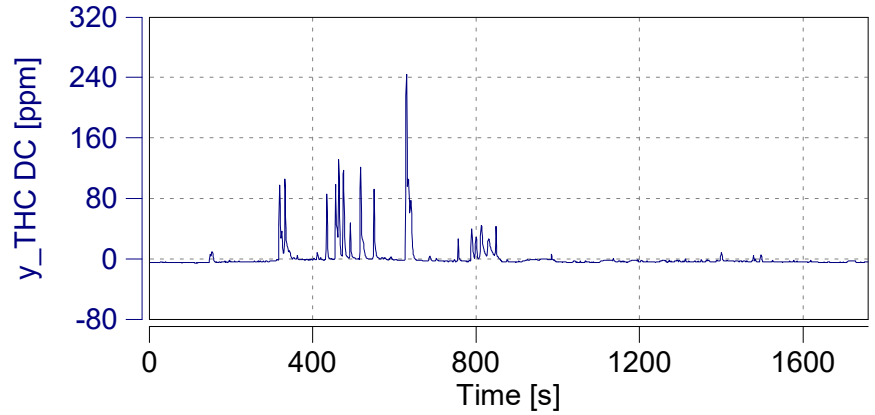

y_NO (Raw 493)
y_NO2 (Raw 493)
25°C
EU R49 8.6.1
US §1065.672
drift correction
d_Kf_NO 25°C to dry
d_Kf_NO2 25°C to dry
(1) EU R49 8.1.1 (15)
(2) US §1065.655
(3) none
y_NO DC (Dry 493)
y_NO2 DC (Dry 493)
y_NO (Dry 493)
y_NO2 (Dry 493)
CF dry/wet
(factor equal for all constituents)
CF NOx Ambient Conditions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

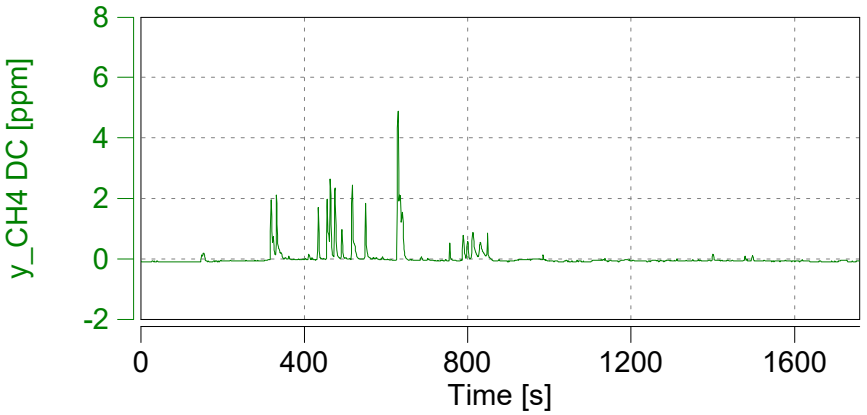
Case: X253-3303

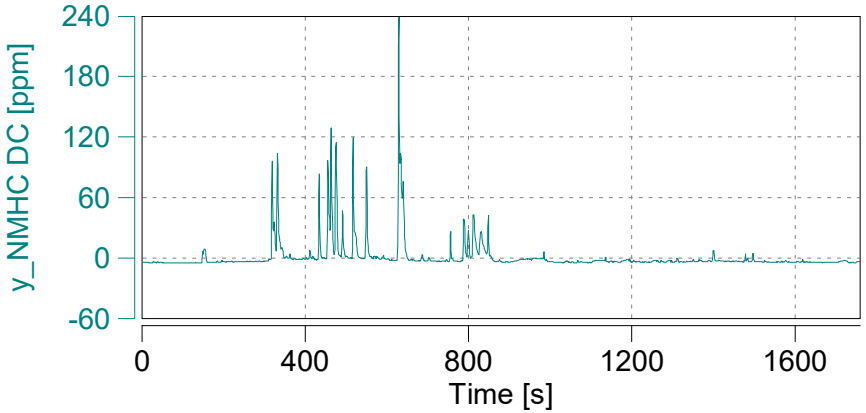
Page: Corrected Emissions (5)

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	41.1	47.3	11.6

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	46.3	%
Decelerating	39.4	%
Cruising	1.3	%
Stop	13.1	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

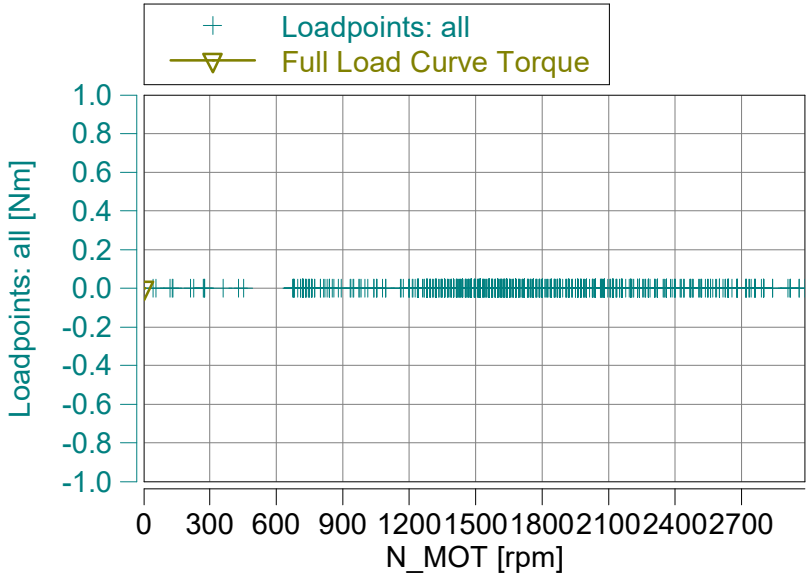
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.06
	r^2 = 0.94

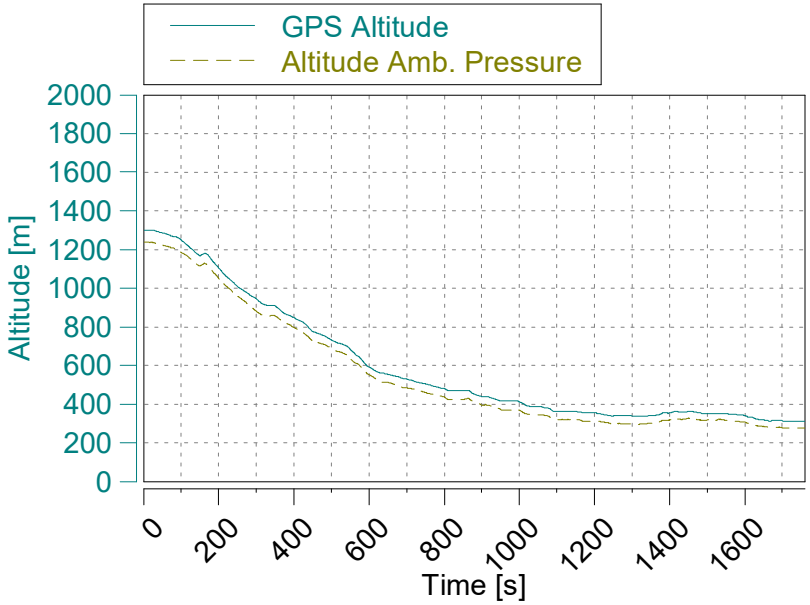
Case: X253-3303

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

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	1760.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	292.4	g/kWh
avg BSFC ISO16183	332.7	g/kWh
Distance ECU	27.5	km
Distance GPS	27.855	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

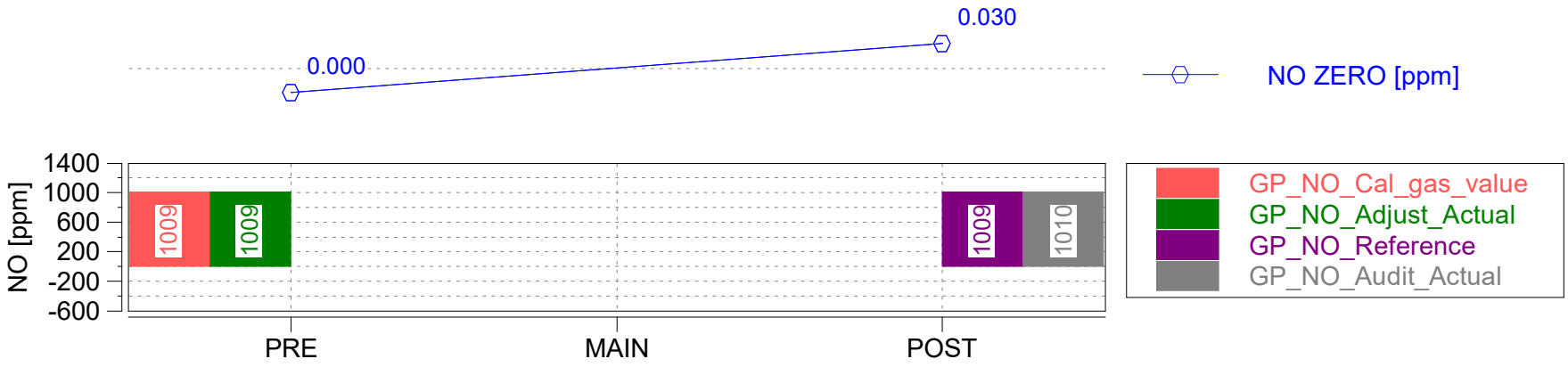
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

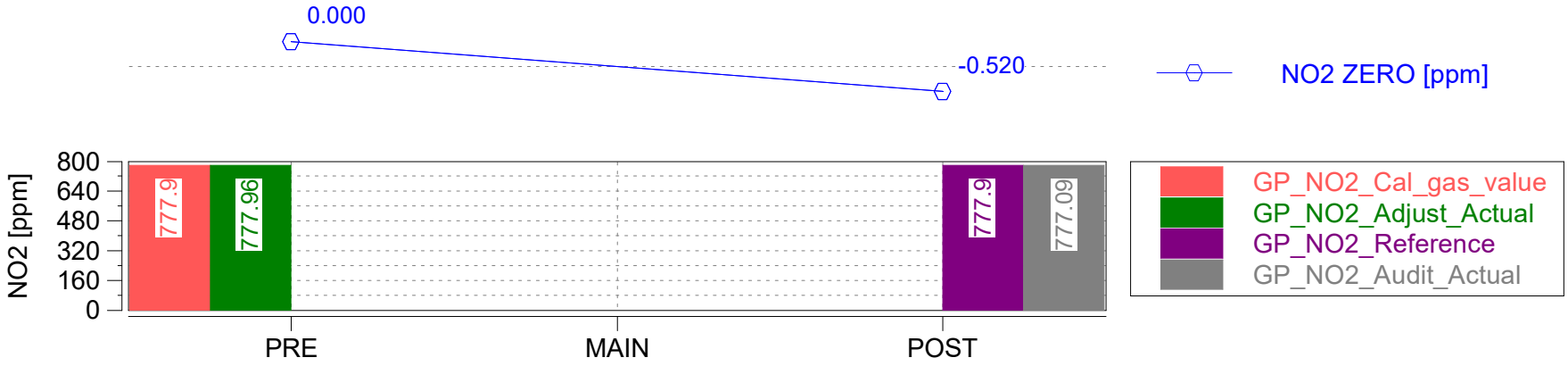
Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

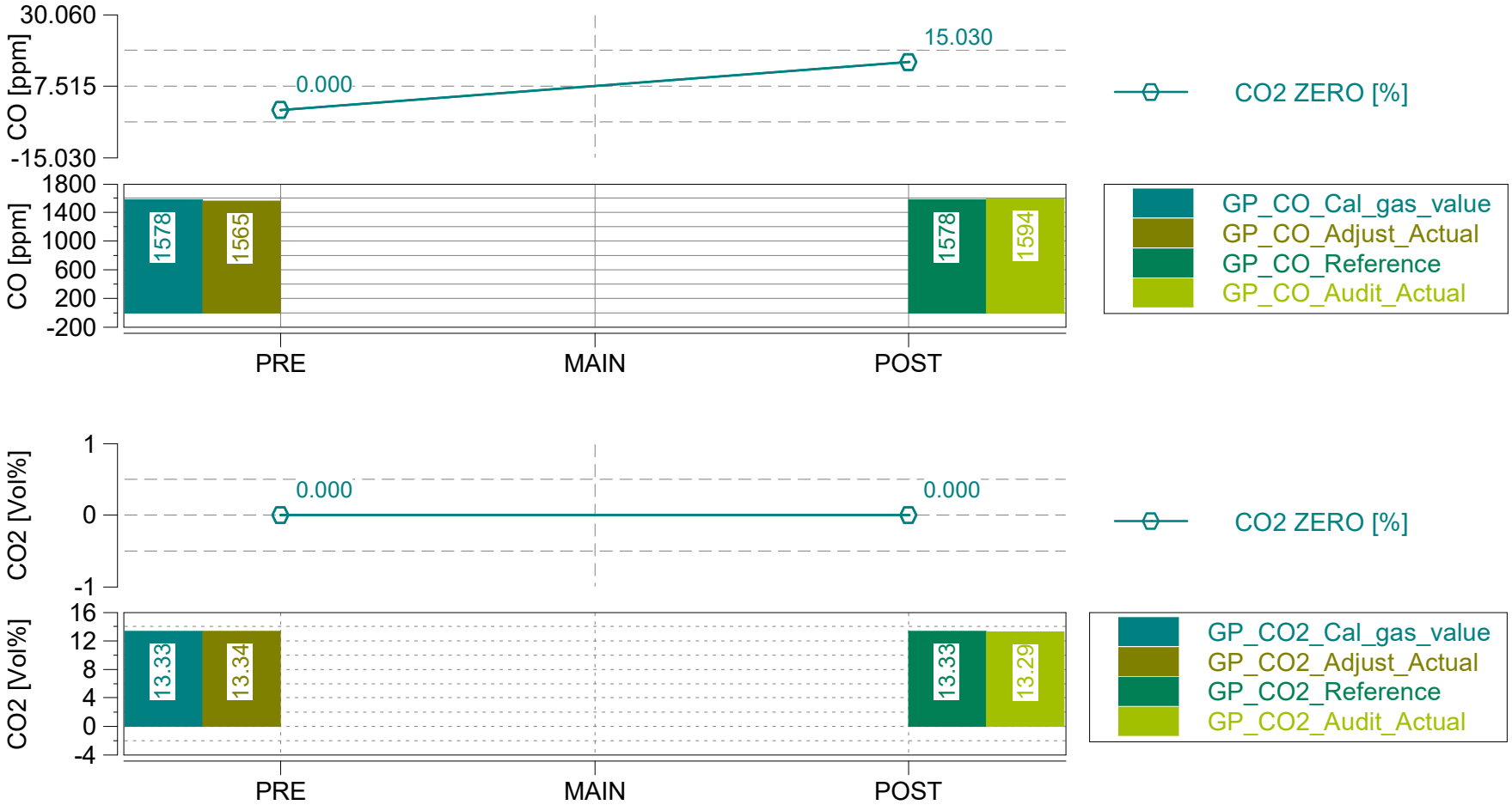
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

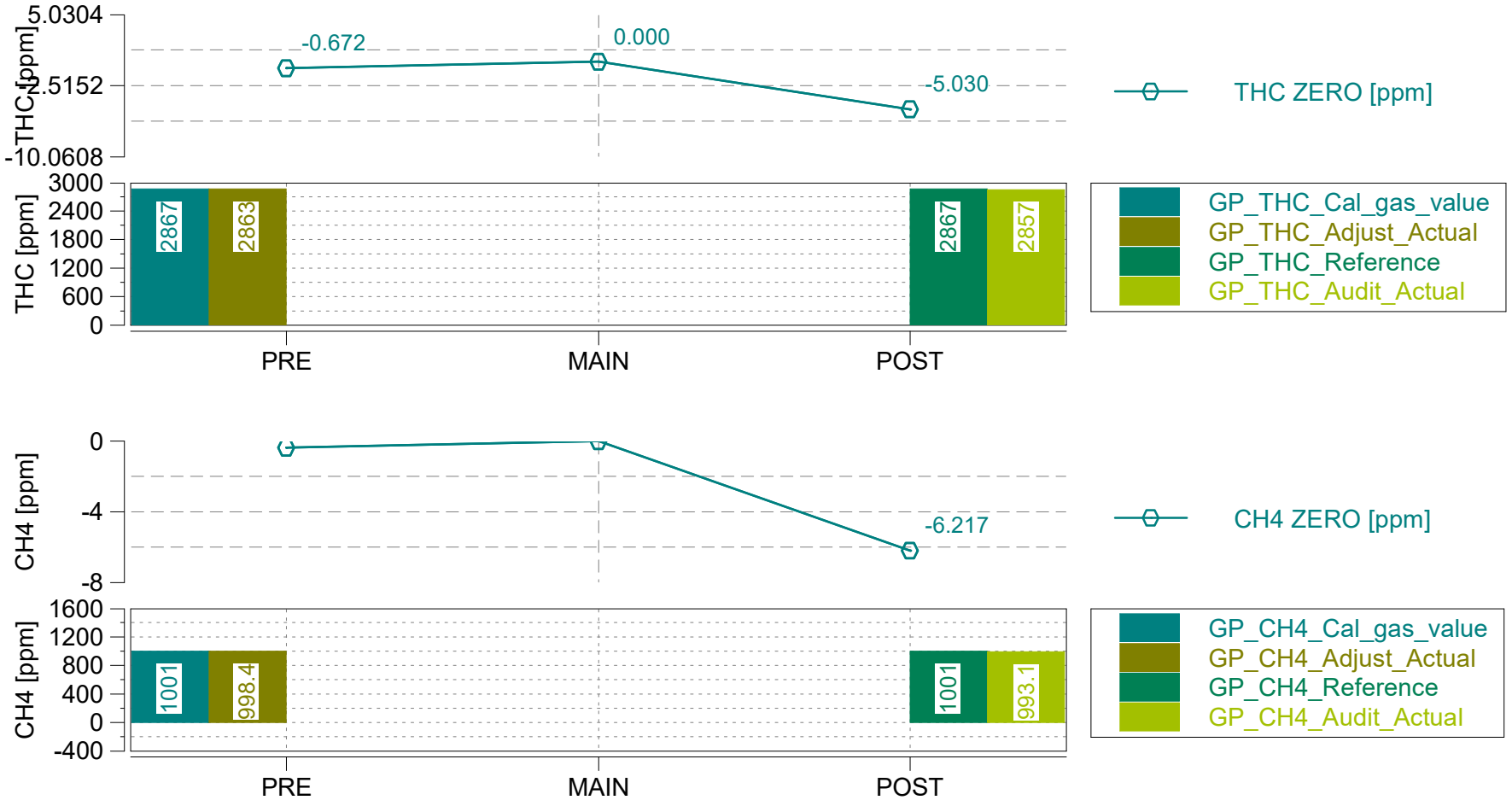
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

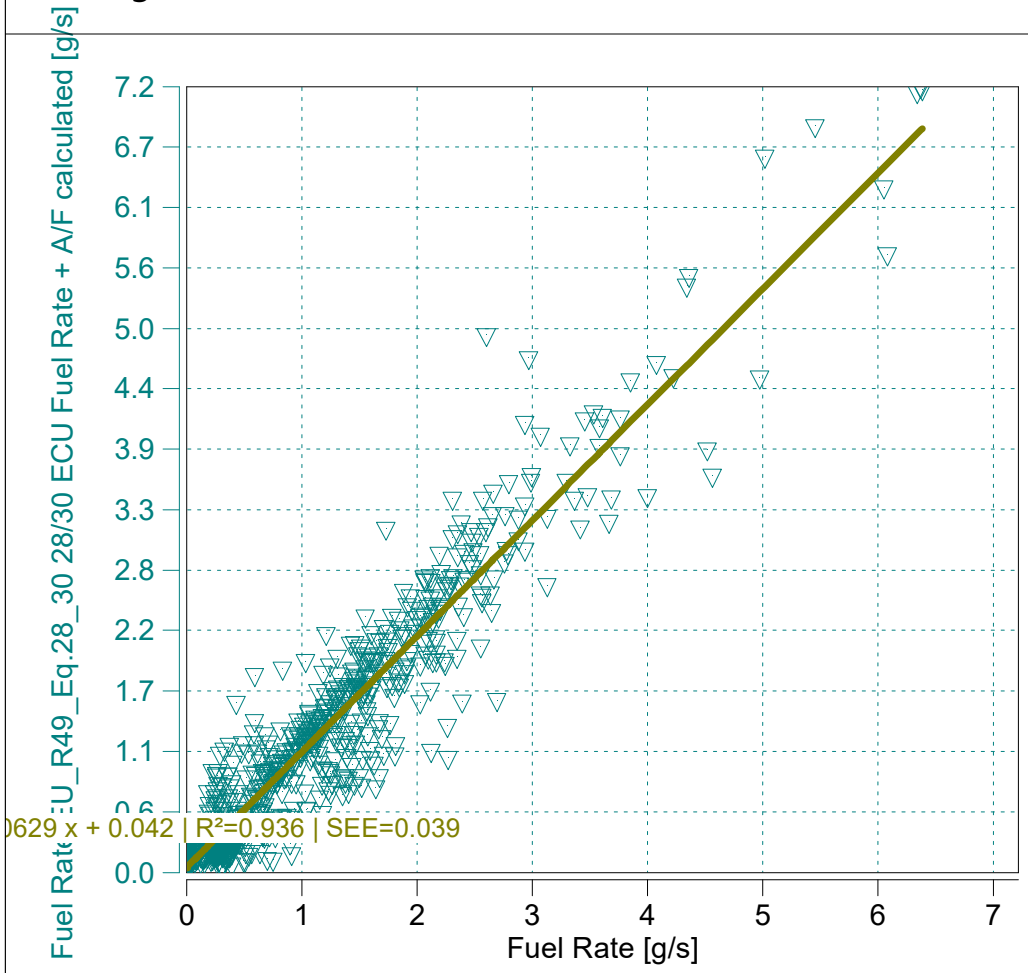
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 B1 Mountain Downhill'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.0629 x + 0.042 | R²=0.936 | SEE=0.039
m = 1.06 (0.9 - 1.1 recommended)
R² = 0.94 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 | 100

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary

'X253-3303 A0 LATC>CARB'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	2097.00	s
Trip Duration (a)	2097.00	s
Trip Distance	23.63	mi
Trip Distance (a)	23.63	mi
Trip Fuel Cons. (b)	2.26	kg
Trip Fuel Cons. (ab)	2.26	kg
Trip Fuel Cons. EU (ac)	2.59	kg
Trip Fuel Cons. US (ac)	2.58	kg
Trip Fuel Economy (b)	29.62	mpg_US
Trip Fuel Economy (ab)	29.62	mpg_US
Trip Fuel Economy EU (ac)	25.84	mpg_US
Trip Fuel Economy US (ac)	25.91	mpg_US
Trip Fuel Economy GGE (b)	29.62	mpg_US
Trip Fuel Economy GGE (ab)	29.62	mpg_US
Trip Fuel Economy EU GGE (ac)	25.84	mpg_US
Trip Fuel Economy US GGE (ac)	25.91	mpg_US
Trip Av. Eng. Speed	1586.09	rpm
Trip Av. Torque	68.16	lbft
Trip Av. Power	24.23	hp
Trip Work		
Trip Work (a)	14.11	hphr
Trip Exhaust Mass	40.41	kg
Trip Exhaust Mass EU (ac)	34.72	kg
Trip Exhaust Mass US (ac)	34.85	kg
Trip Av. Amb. Temperature	67.15	deg_F
Trip Av. Humidity	37.60	%
Trip Av. GPS Altitude	61.35	m
Fuel Type	Petrol (E10)	

ave THC	42.04405	ppm
ave NMHC	41.20316	ppm
ave CH4	0.84088	ppm
ave CO	277.55658	ppm
ave CO2	11.82552	%
ave NOx	6.81603	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	0.33174	g
tot NMHC	0.30686	g
tot CH4	0.00735	g
tot CO	14.31516	g
tot CO2	7820.59299	g
tot NO (d)	0.14083	g
tot NO2	0.06979	g
tot NOx	0.21062	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	40.56366	mi/hr
Trip Distance Share Urban	17.45542	% distance
Trip Distance Share Rural	38.37507	% distance
Trip Distance Share Motorway	44.16951	% distance

BS CO2	554.19010	g/hphr
BS CO	1.01441	g/hphr
BS THC	0.02351	g/hphr
BS NMHC	0.02174	g/hphr
BS CH4	0.00052	g/hphr
BS NO (d)	0.00998	g/hphr
BS NO2	0.00495	g/hphr
BS NOx	0.01493	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	330.98369	g/mi
DS CO	0.60585	g/mi
DS THC	0.01404	g/mi
DS NMHC	0.01299	g/mi
DS CH4	0.00031	g/mi
DS NO (d)	0.00596	g/mi
DS NO2	0.00295	g/mi
DS NOx	0.00891	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3465.06859	g/kg
FS CO	6.34262	g/kg
FS THC	0.14698	g/kg
FS NMHC	0.13596	g/kg
FS CH4	0.00326	g/kg
FS NO (d)	0.06240	g/kg
FS NO2	0.03092	g/kg
FS NOx	0.09332	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 A0 LATC>CARB'

Start Date: 02/07/2020

Start Time: 12:03:03.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	2097.00	s
Trip Duration (a)	2097.00	s
Trip Distance	23.63	mi
Trip Distance (a)	23.63	mi
Trip Fuel Cons. (b)	2.26	kg
Trip Fuel Cons. (ab)	2.26	kg
Trip Fuel Cons. EU (ac)	2.59	kg
Trip Fuel Cons. US (ac)	2.58	kg
Trip Fuel Economy (b)	29.62	mpg_US
Trip Fuel Economy (ab)	29.62	mpg_US
Trip Fuel Economy EU (ac)	25.84	mpg_US
Trip Fuel Economy US (ac)	25.91	mpg_US
Trip Fuel Economy GGE (b)	29.62	mpg_US
Trip Fuel Economy GGE (ab)	29.62	mpg_US
Trip Fuel Economy EU GGE (ac)	25.84	mpg_US
Trip Fuel Economy US GGE (ac)	25.91	mpg_US
Trip Av. Eng. Speed	1586.09	rpm
Trip Av. Torque	68.16	lbft
Trip Av. Power	24.23	hp
Trip Work		
Trip Work (a)	14.11	hphr
Trip Exhaust Mass	40.41	kg
Trip Exhaust Mass EU (ac)	34.72	kg
Trip Exhaust Mass US (ac)	34.85	kg
Trip Av. Amb. Temperature	67.15	deg_F
Trip Av. Humidity	37.60	%
Trip Av. GPS Altitude	61.35	m
Fuel Type	Petrol (E10)	

ave THC DC	43.41892	ppm
ave NMHC DC	42.55054	ppm
ave CH4 DC	0.86838	ppm
ave CO DC	274.86620	ppm
ave CO2 DC	11.83884	%
ave NOx DC	6.89625	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	0.35830	g
tot NMHC DC	0.33143	g
tot CH4 DC	0.00794	g
tot CO DC	14.21669	g
tot CO2 DC	7829.40327	g
tot NO DC (d)	0.14037	g
tot NO2 DC	0.07555	g
tot NOx DC	0.21592	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	40.56366	mi/hr
Trip Distance Share Urban	17.45542	% distance
Trip Distance Share Rural	38.37507	% distance
Trip Distance Share Motorway	44.16951	% distance

BS CO2 DC	554.81443	g/hphr
BS CO DC	1.00744	g/hphr
BS THC DC	0.02539	g/hphr
BS NMHC DC	0.02349	g/hphr
BS CH4 DC	0.00056	g/hphr
BS NO DC (d)	0.00995	g/hphr
BS NO2 DC	0.00535	g/hphr
BS NOx DC	0.01530	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	331.35656	g/mi
DS CO DC	0.60168	g/mi
DS THC DC	0.01516	g/mi
DS NMHC DC	0.01403	g/mi
DS CH4 DC	0.00034	g/mi
DS NO DC (d)	0.00594	g/mi
DS NO2 DC	0.00320	g/mi
DS NOx DC	0.00914	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3468.97216	g/kg
FS CO DC	6.29899	g/kg
FS THC DC	0.15875	g/kg
FS NMHC DC	0.14685	g/kg
FS CH4 DC	0.00352	g/kg
FS NO DC (d)	0.06219	g/kg
FS NO2 DC	0.03348	g/kg
FS NOx DC	0.09567	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

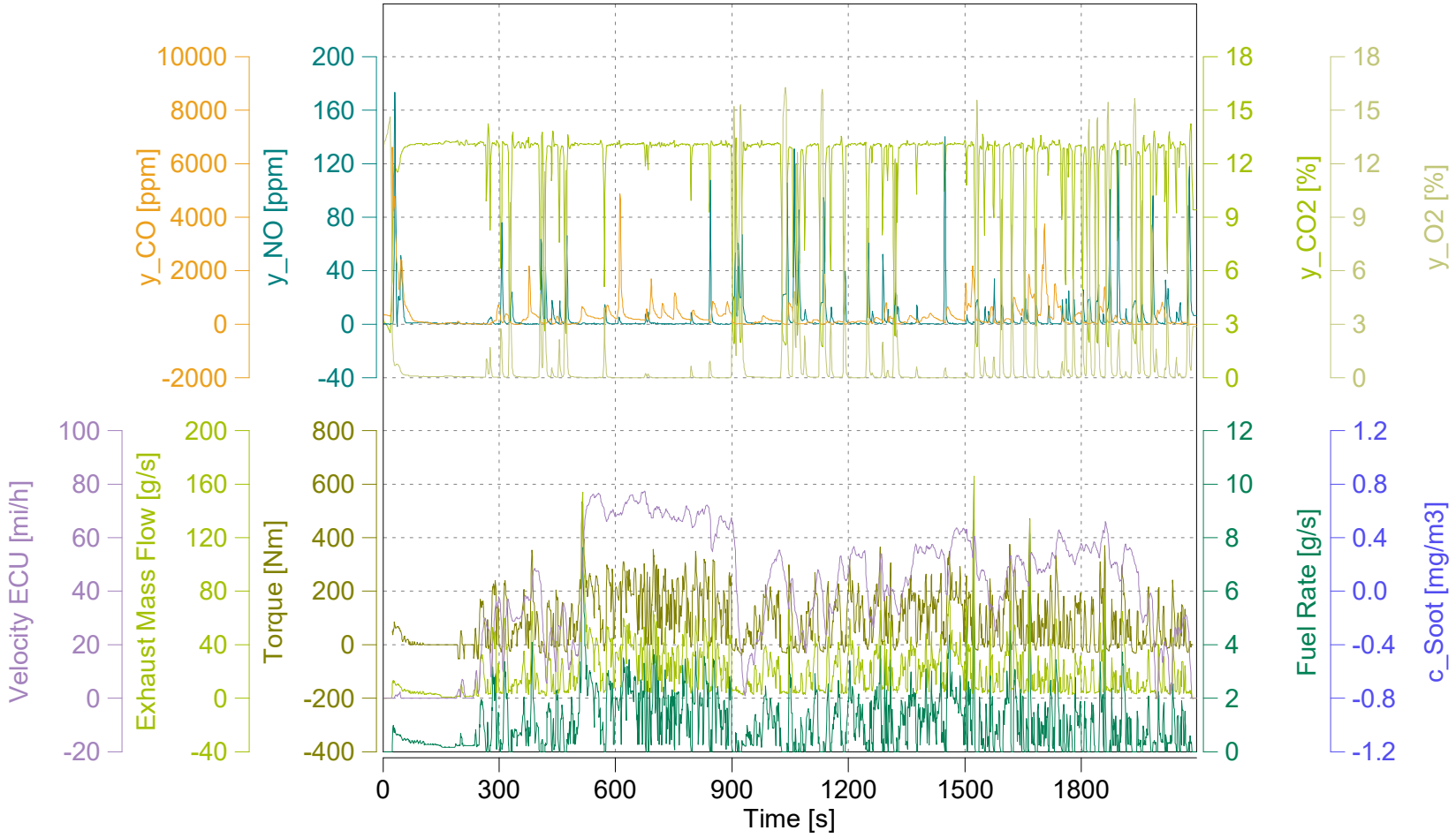
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

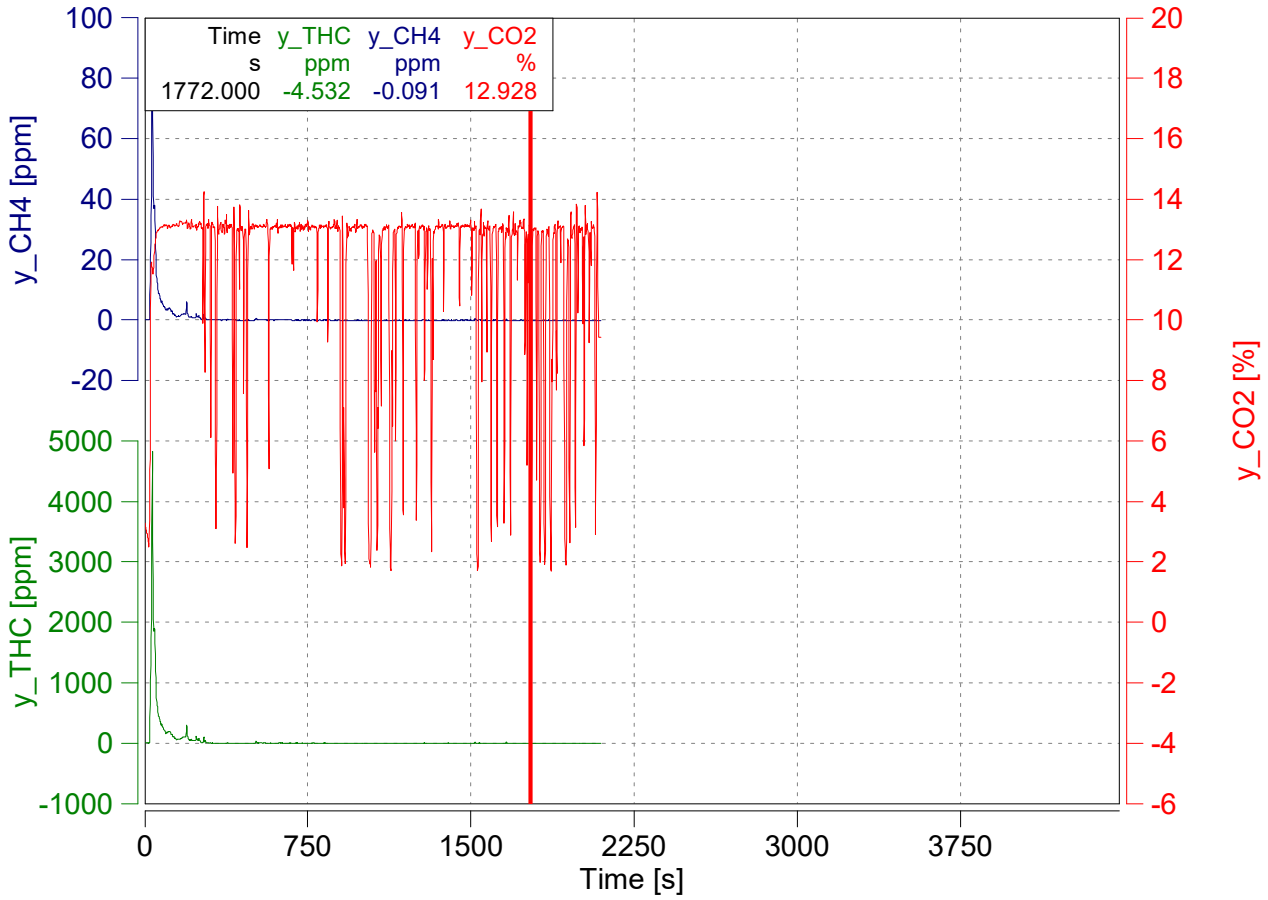
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

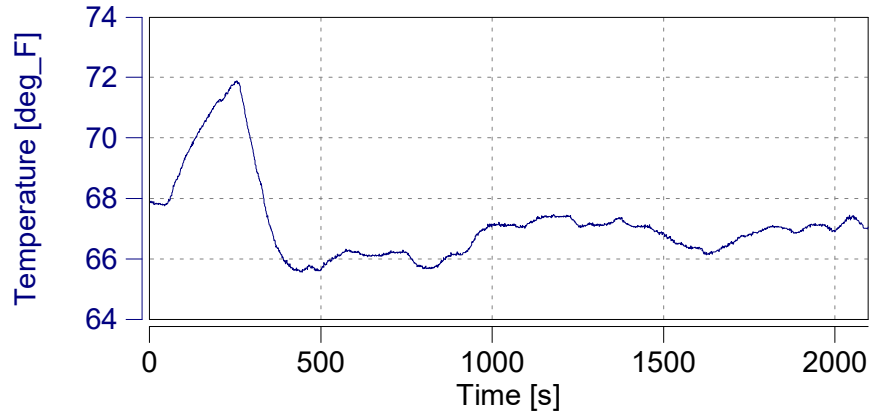
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

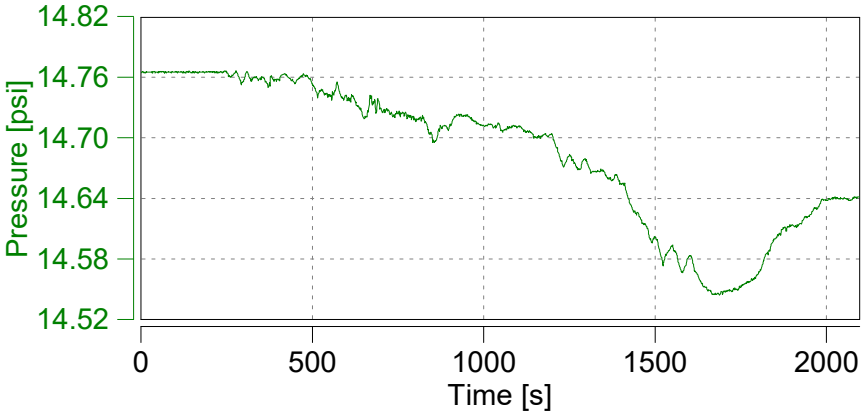
Case: X253-3303

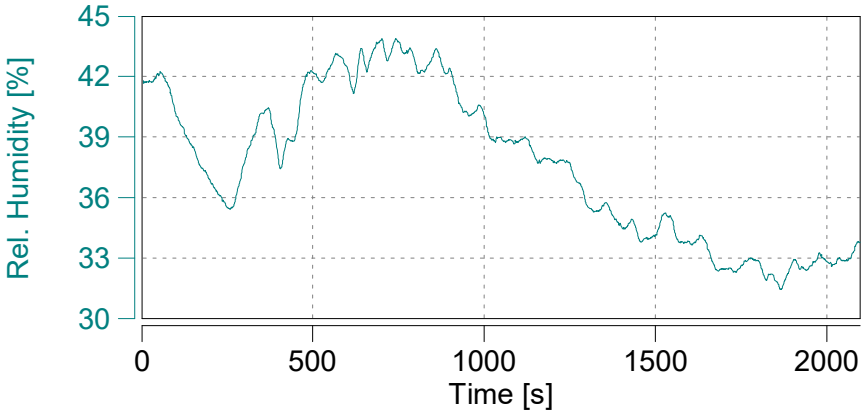
Page: Ambient Conditions

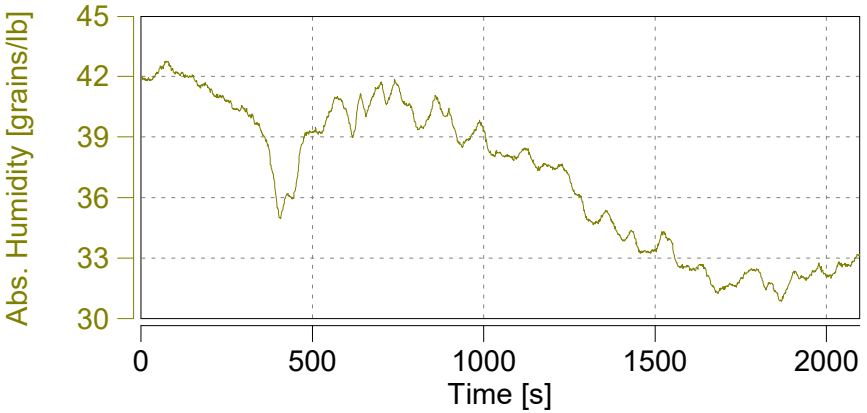
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

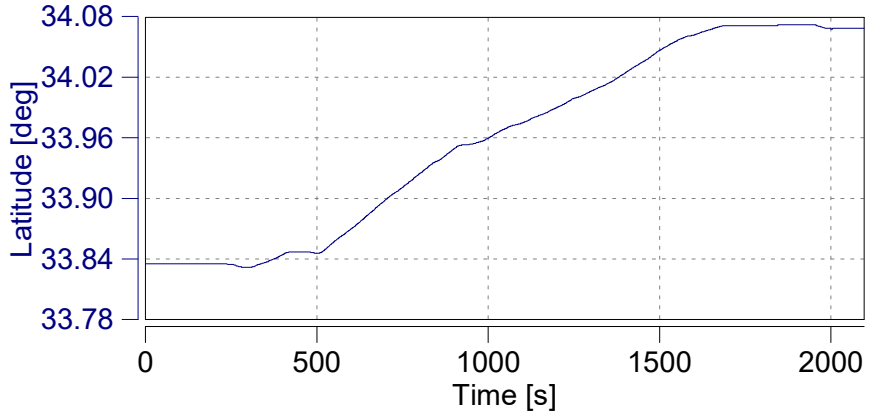
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

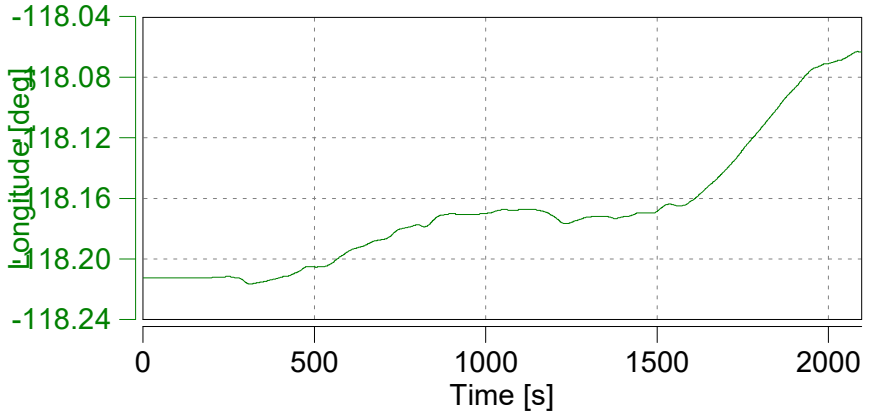
Case: X253-3303

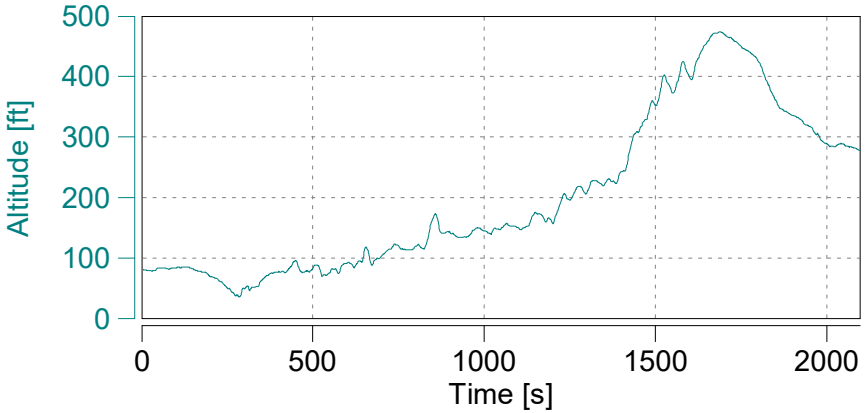
Page: GPS

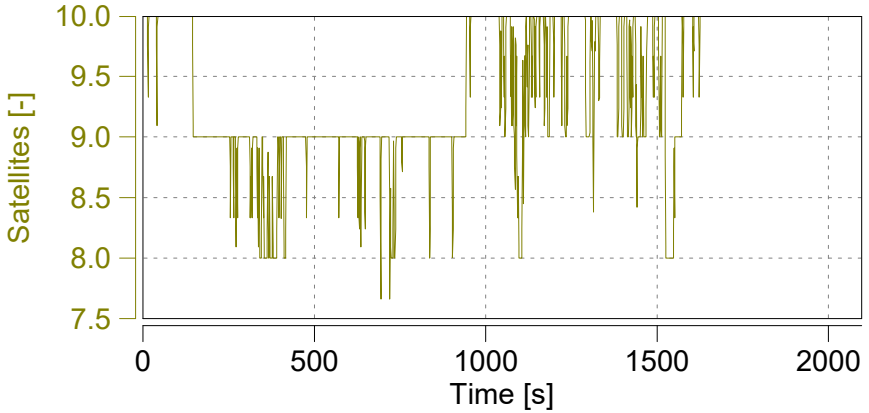
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

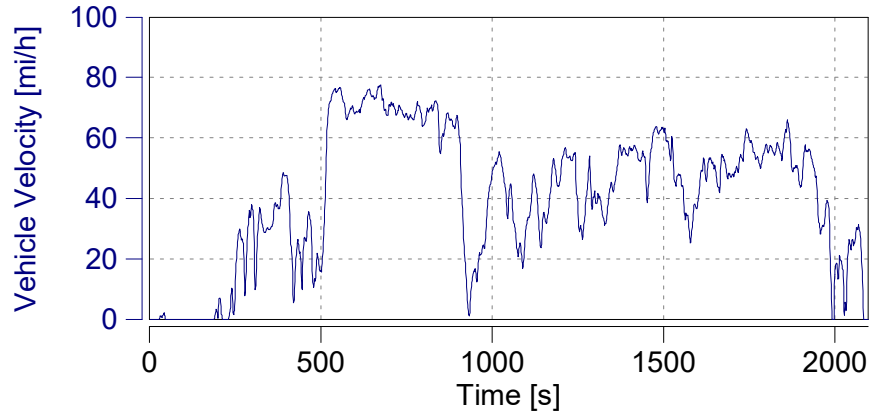
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

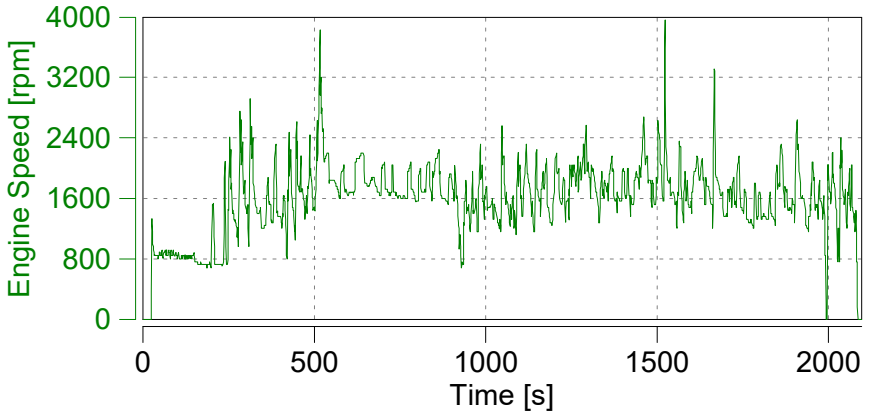
Case: X253-3303

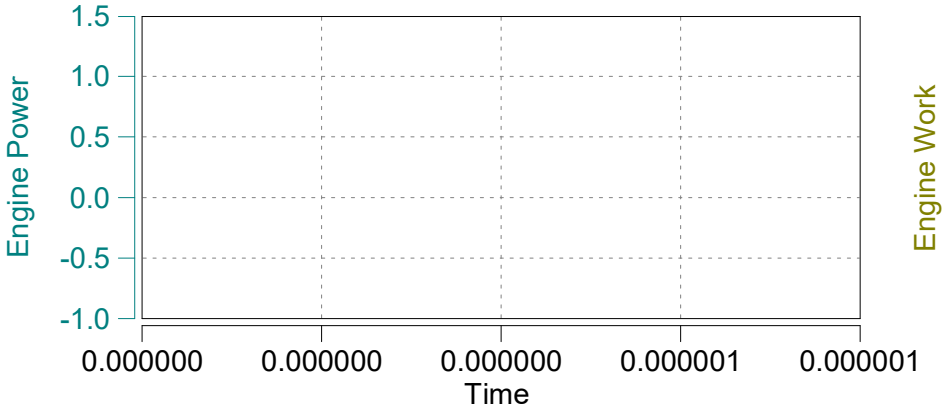
Page: Engine (1)

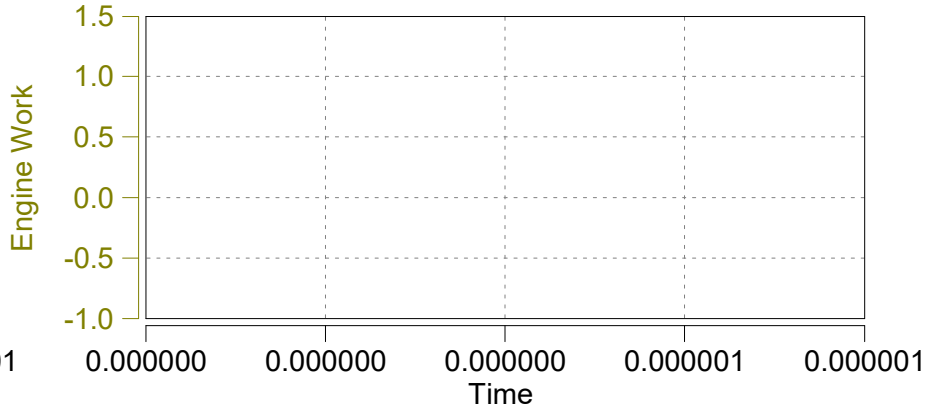
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

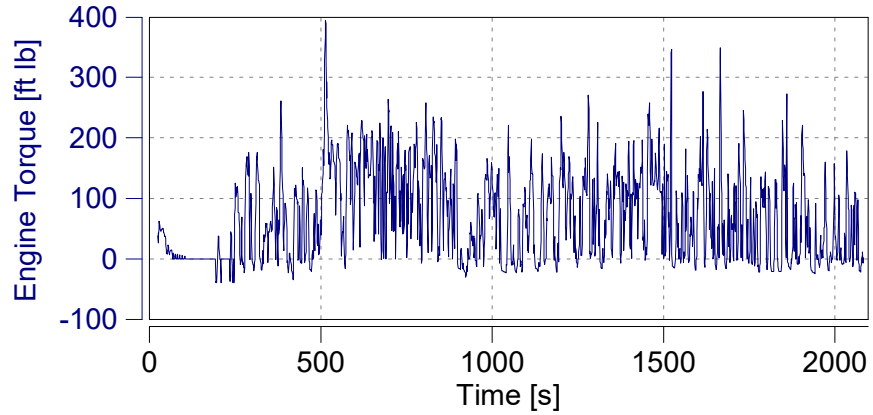
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

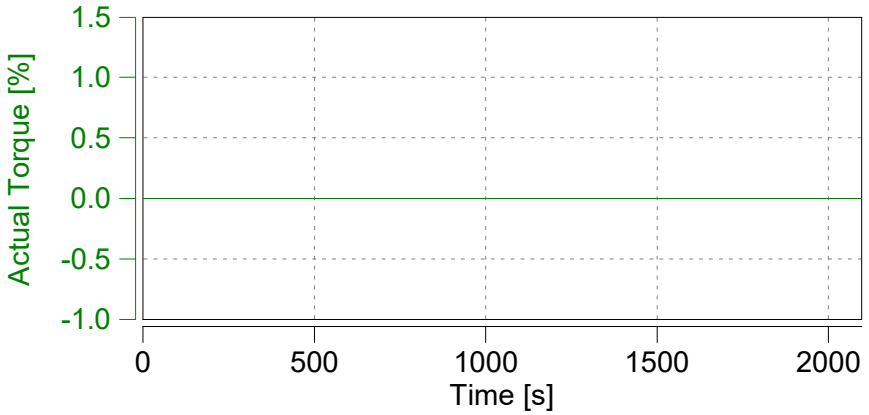
Case: X253-3303

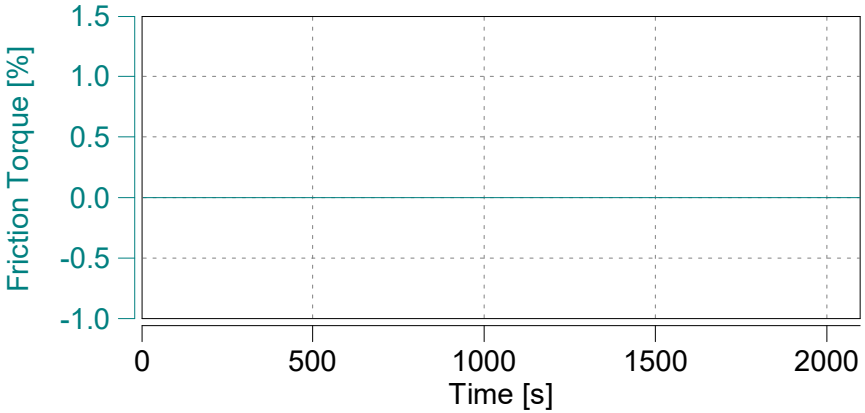
Page: Engine (2)

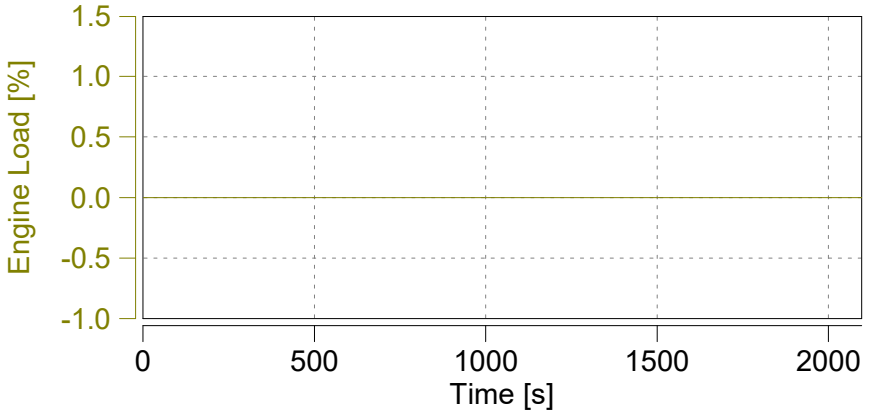
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
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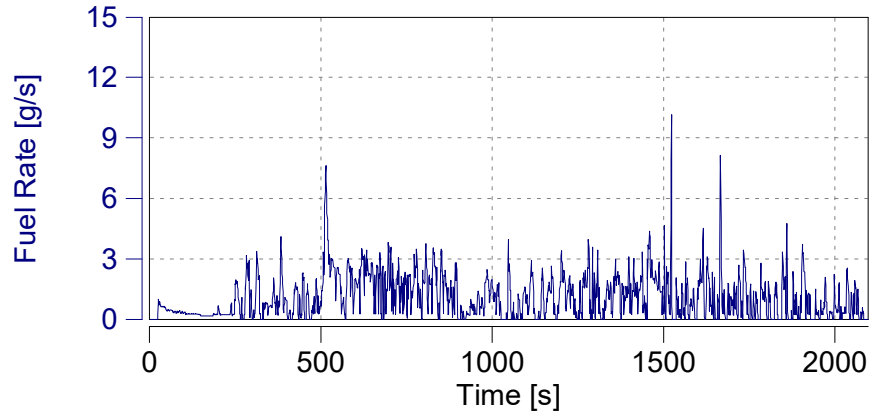
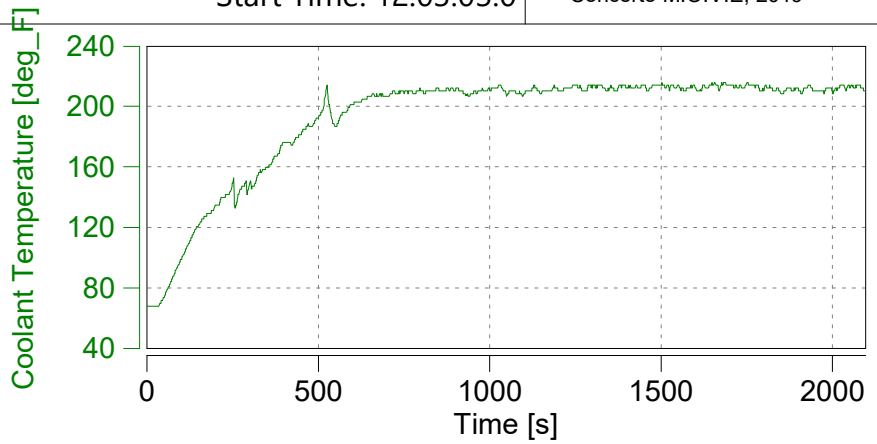
Case: X253-3303

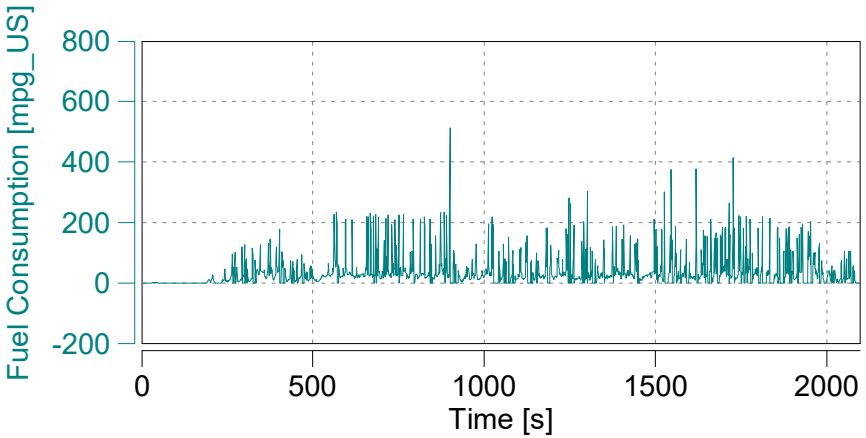
Page: Engine (3)

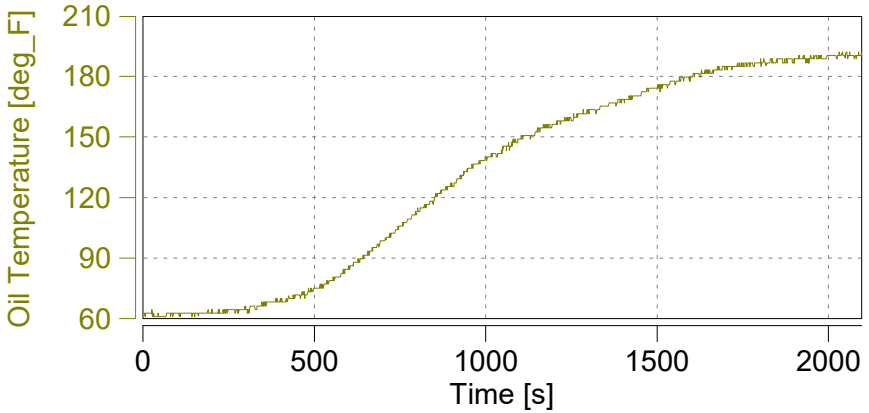
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
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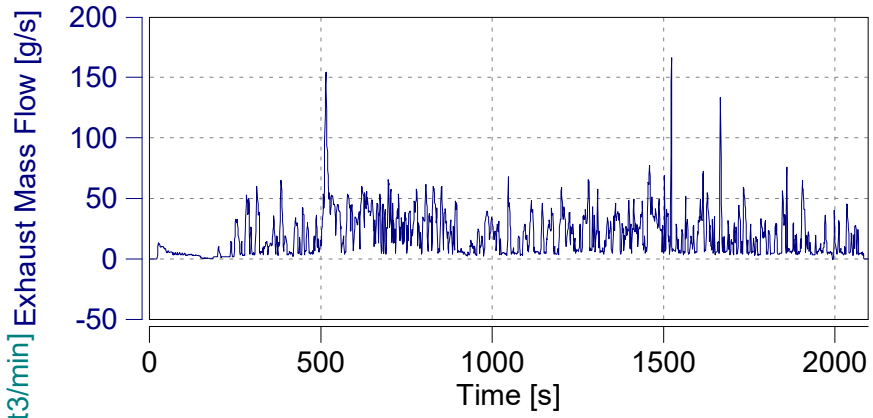
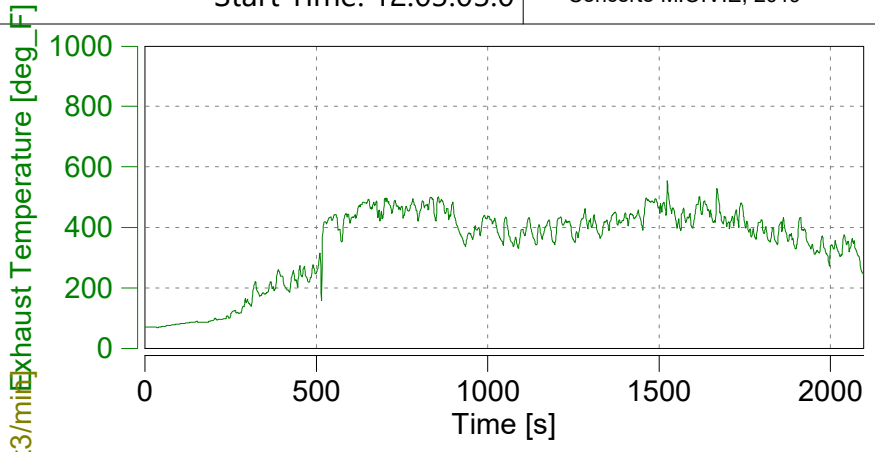
Case: X253-3303

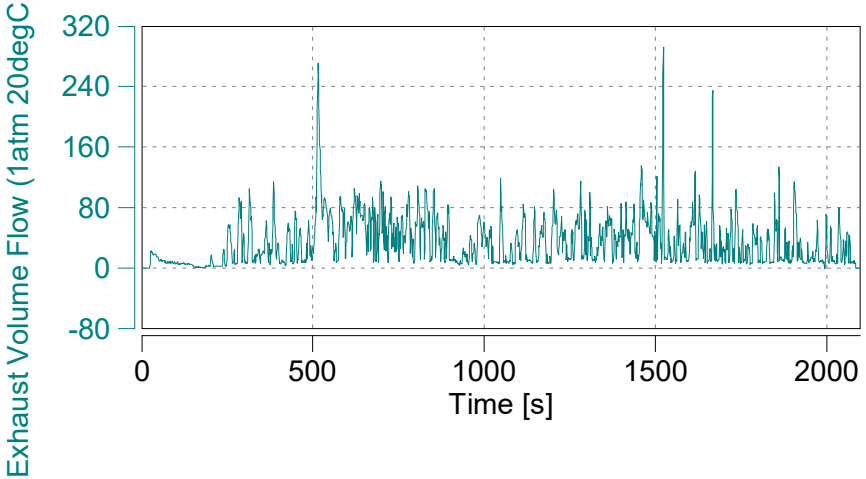
Page: Exhaust Flow (1)

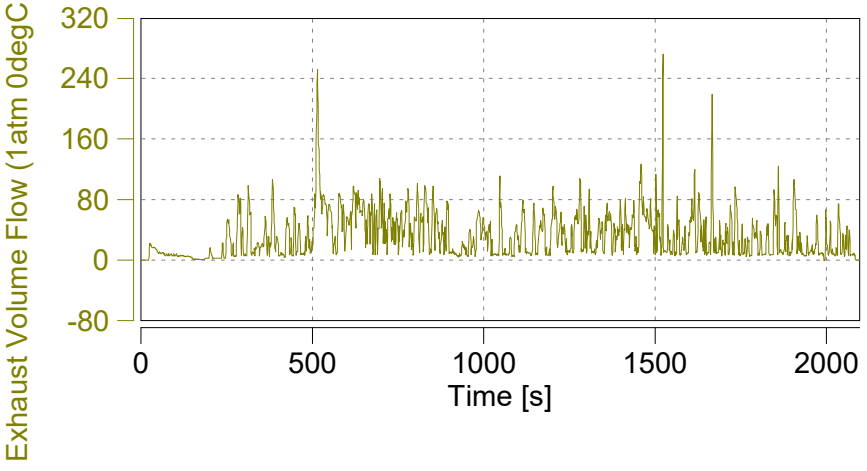
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
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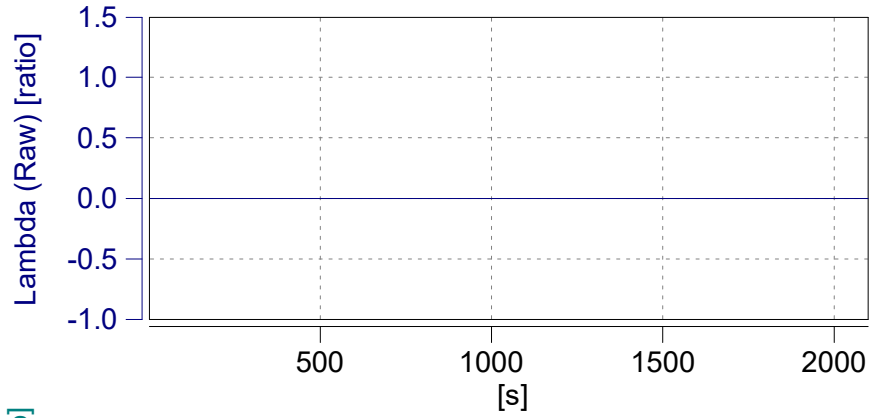
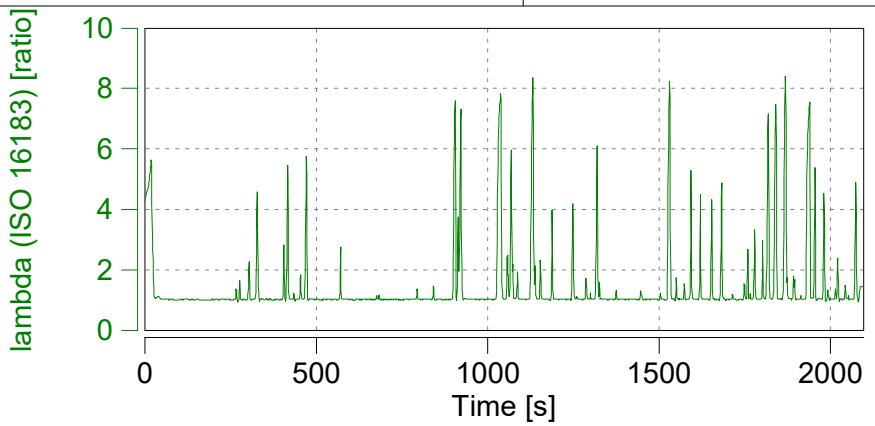
Case: X253-3303

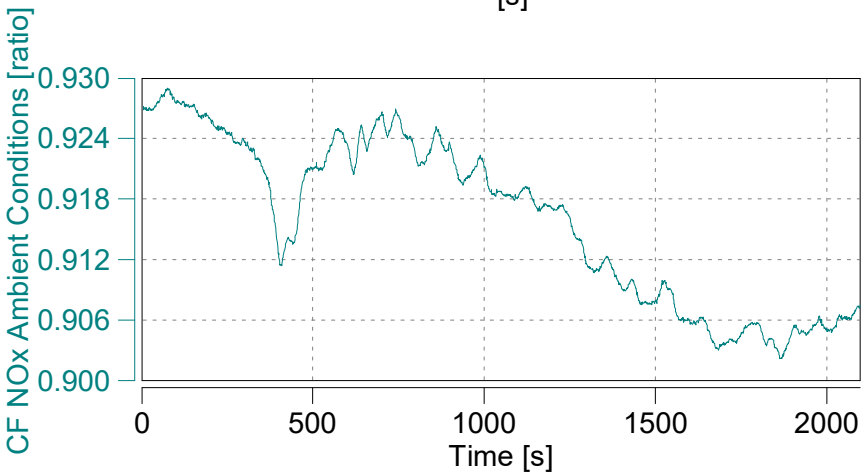
Page: Exhaust Flow (2)

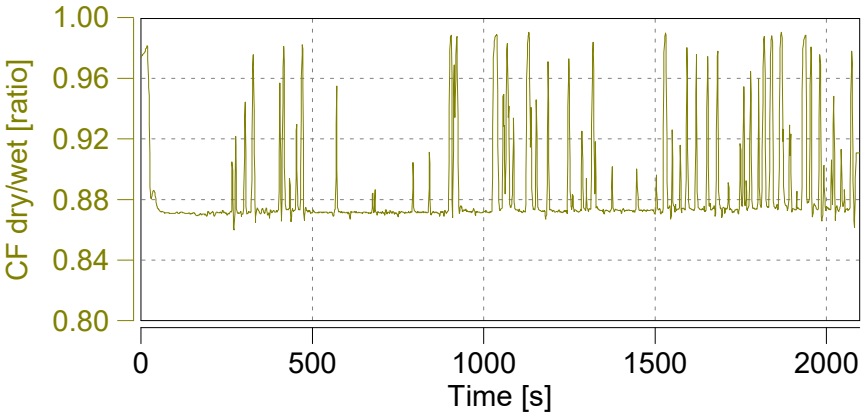
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
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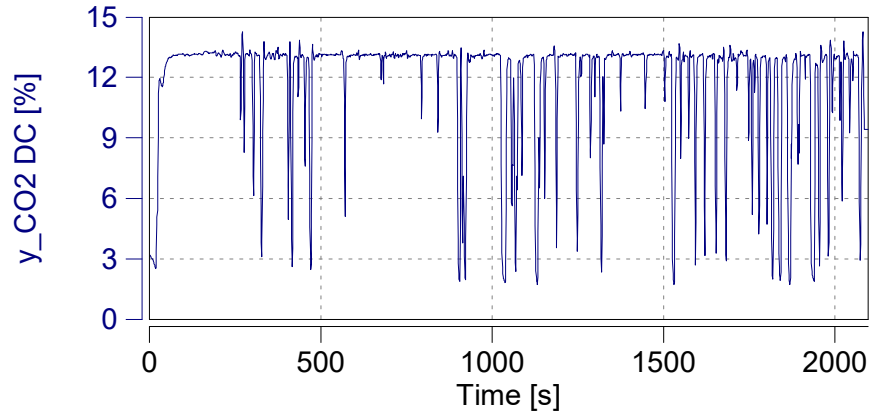
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

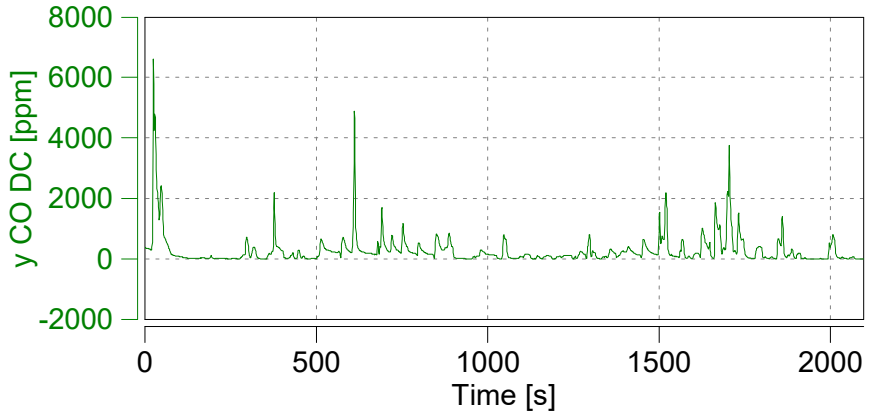
Case: X253-3303

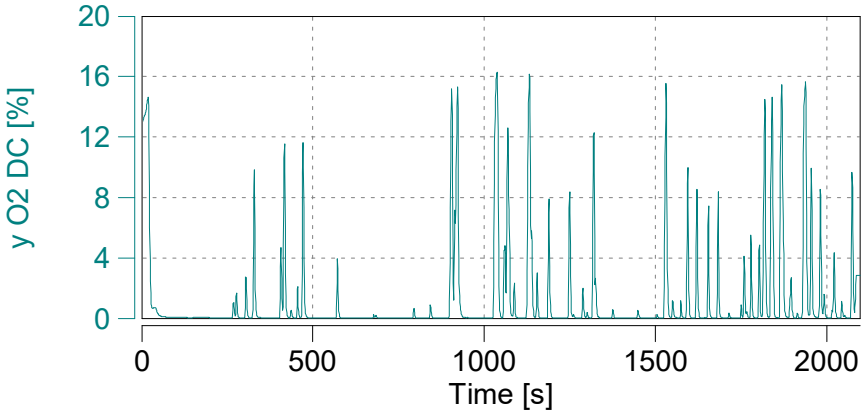
Page: Corrected Emissions (1)

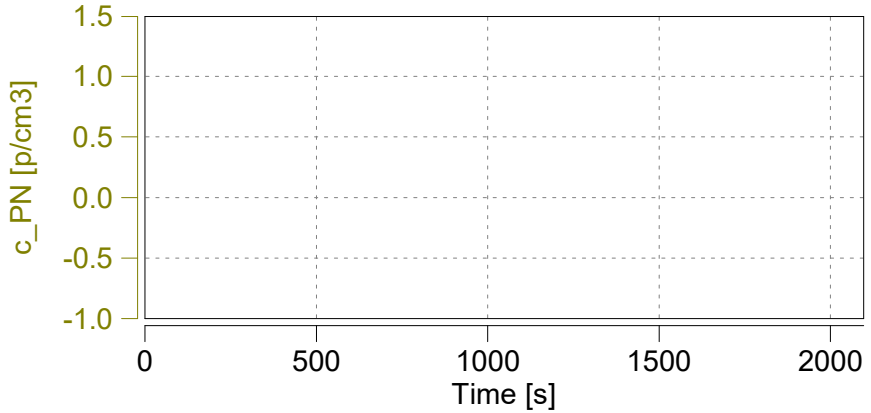
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

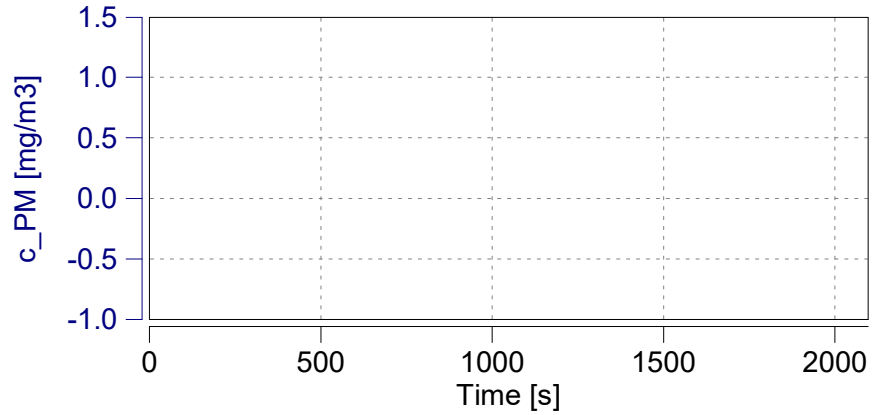
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

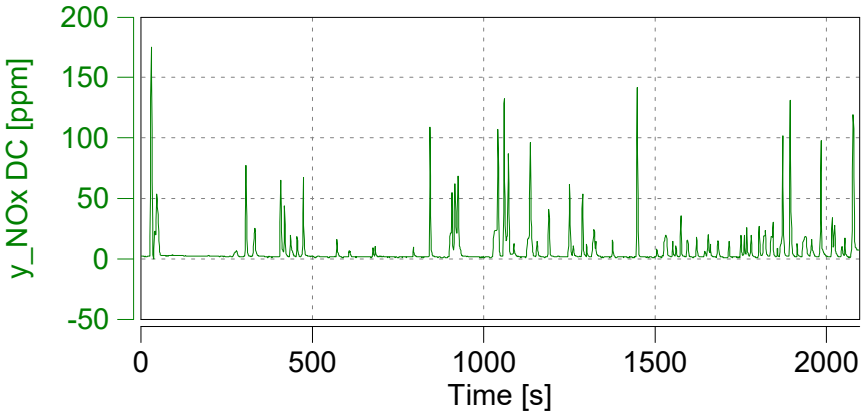
Case: X253-3303

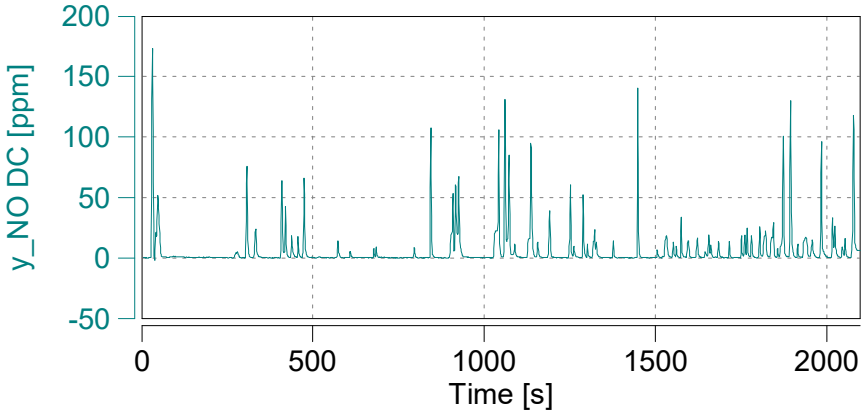
Page: Corrected Emissions (2)

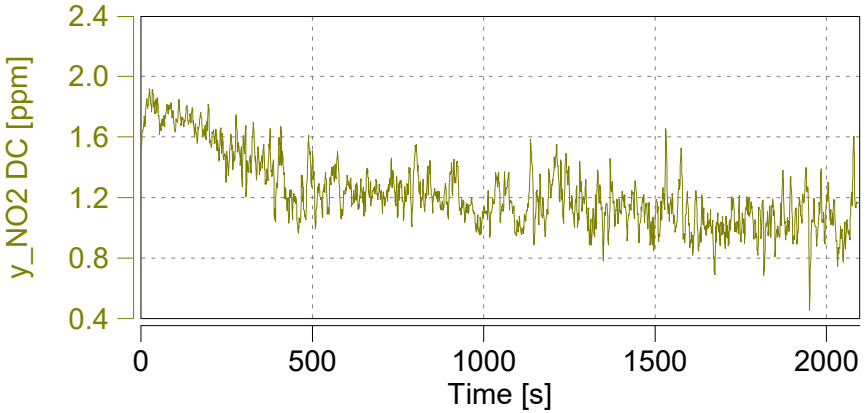
'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

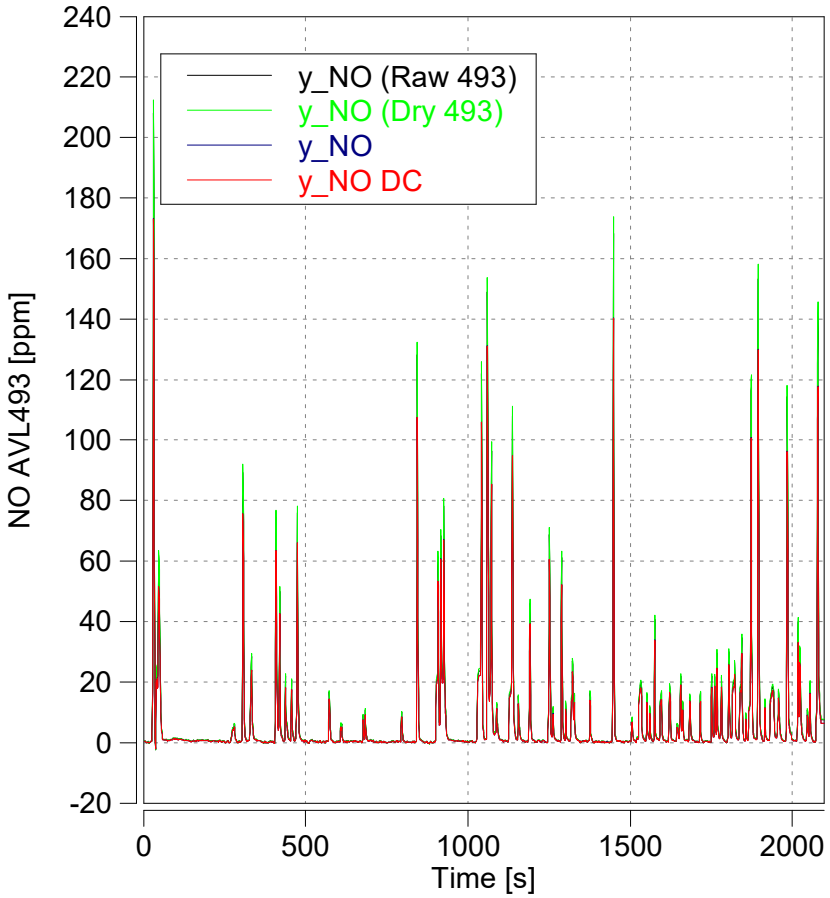
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

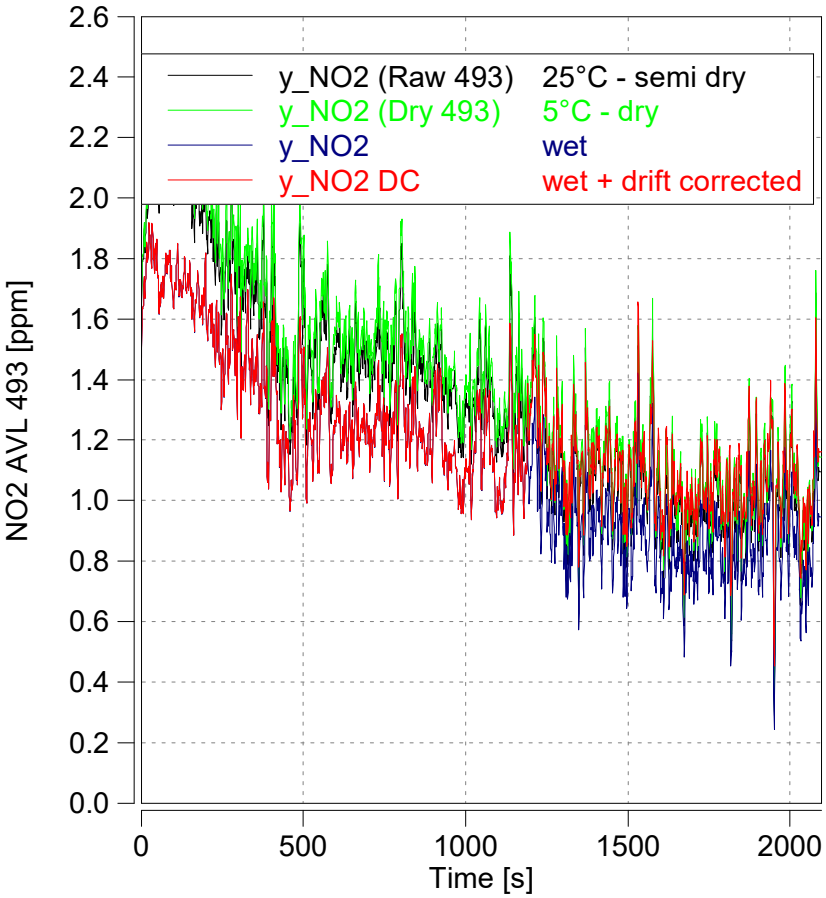
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019

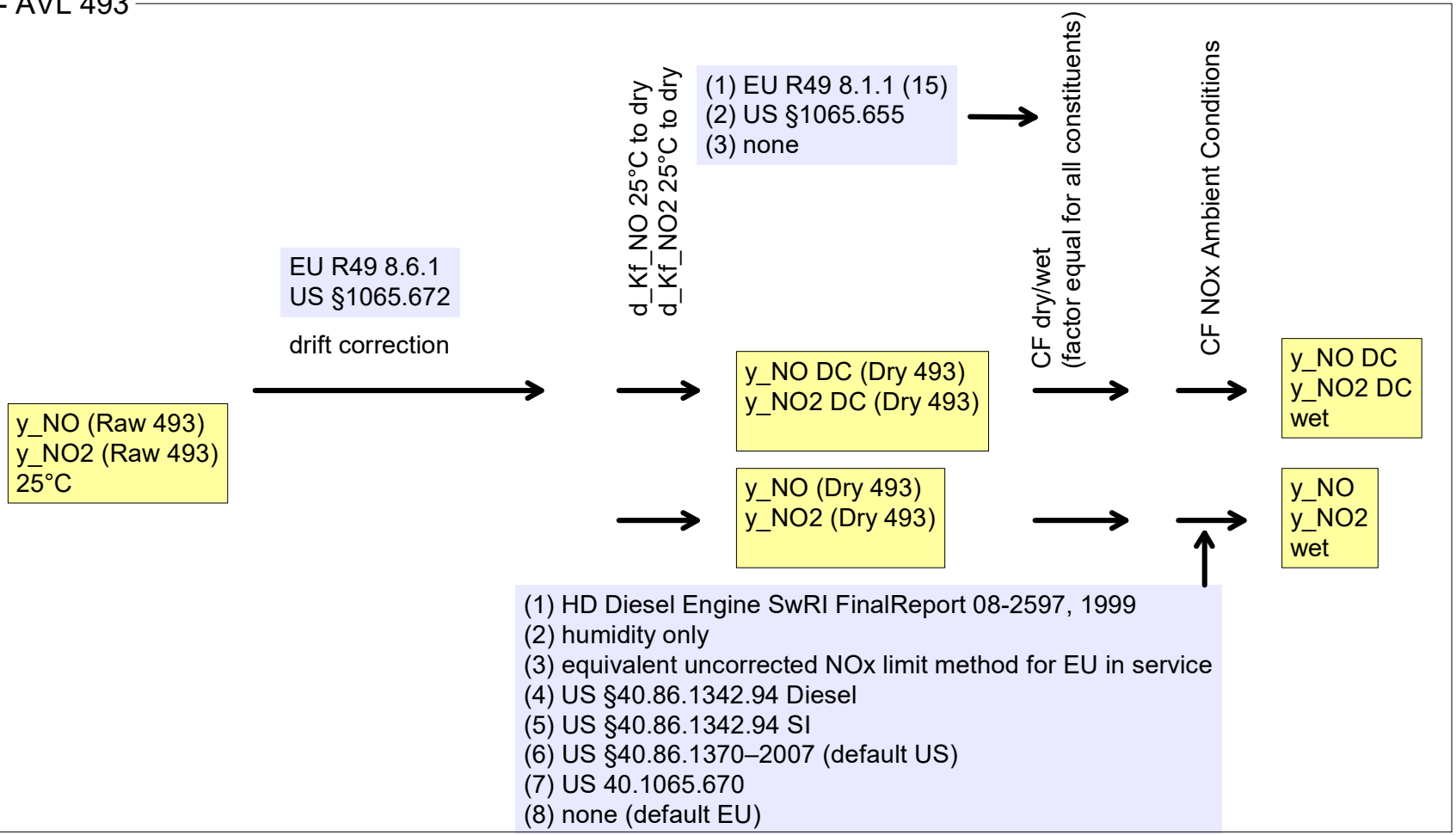




Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

NOx - AVL 493

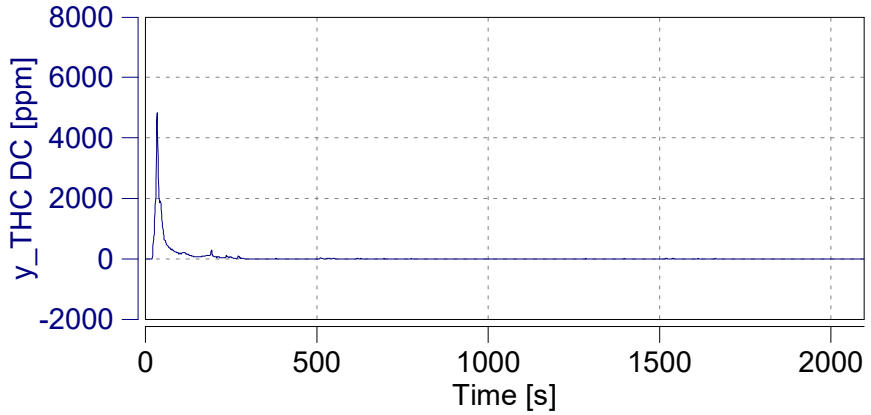

y_NO (Raw 493)
y_NO2 (Raw 493)
25°C
EU R49 8.6.1
US §1065.672
drift correction
d_Kf_NO 25°C to dry
d_Kf_NO2 25°C to dry
(1) EU R49 8.1.1 (15)
(2) US §1065.655
(3) none
y_NO DC (Dry 493)
y_NO2 DC (Dry 493)
y_NO (Dry 493)
y_NO2 (Dry 493)
CF dry/wet
(factor equal for all constituents)
CF NOx Ambient Conditions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

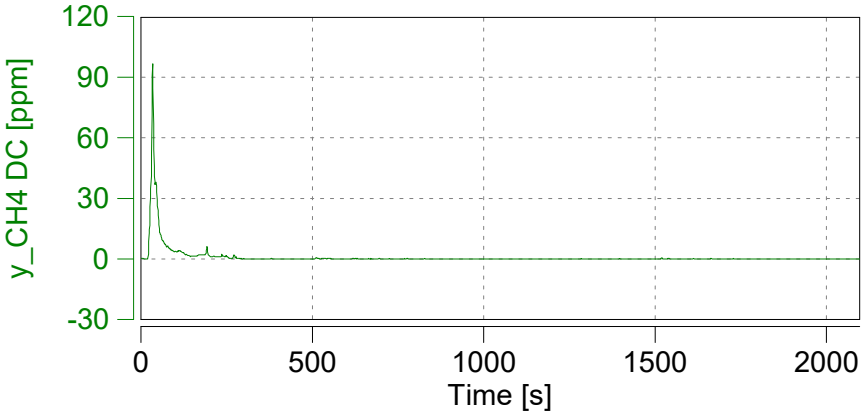
Case: X253-3303

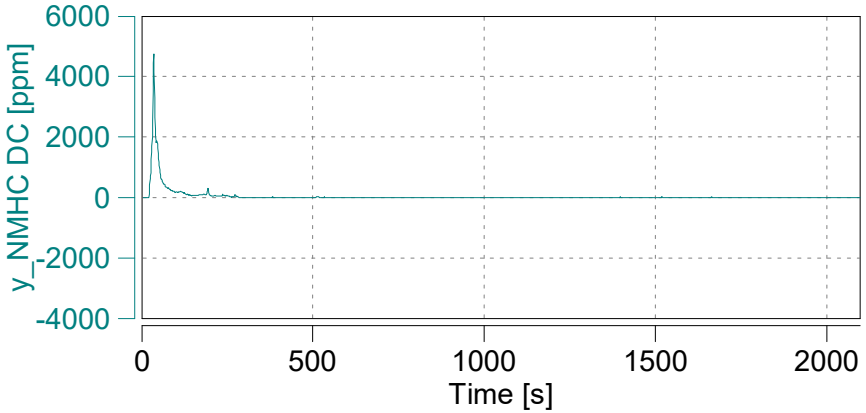
Page: Corrected Emissions (5)

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	40.8	32.2	27.0

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	45.5	%
Decelerating	43.5	%
Cruising	0.9	%
Stop	10.1	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

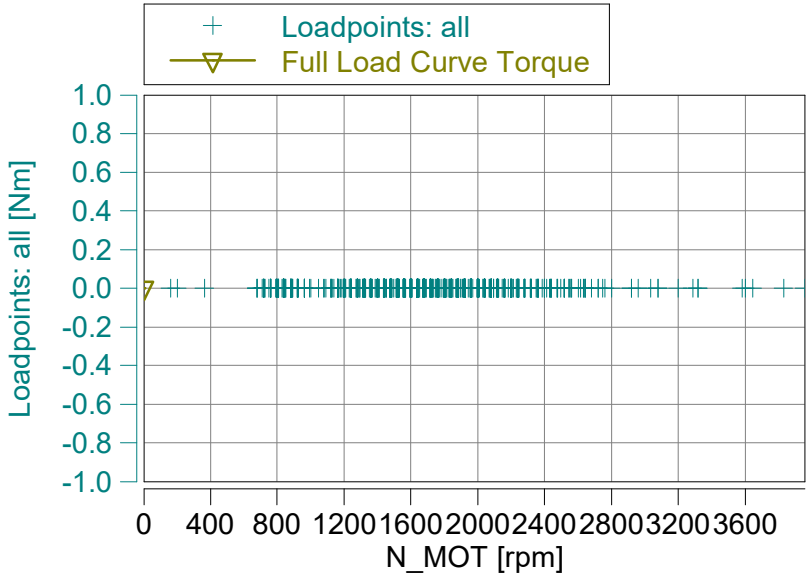
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.11
	r^2 = 0.97

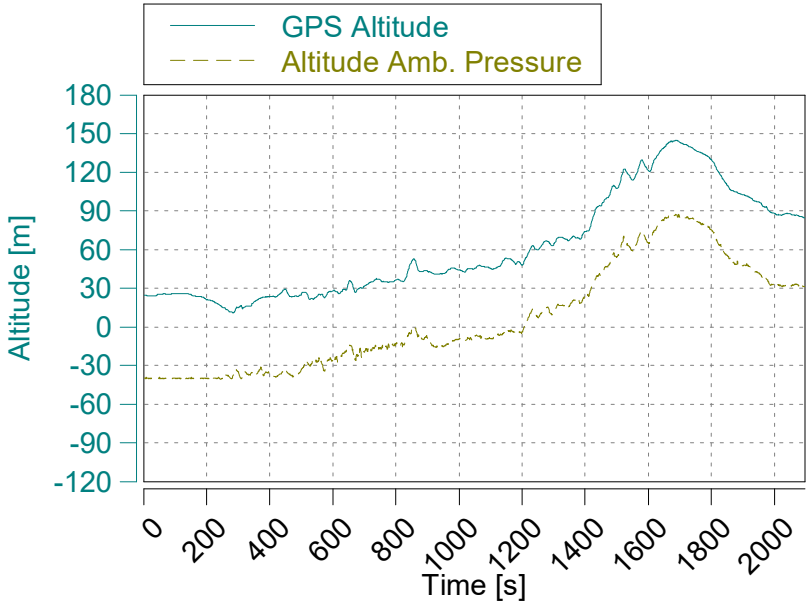
Case: X253-3303

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

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	2097.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	214.5	g/kWh
avg BSFC ISO16183	245.8	g/kWh
Distance ECU	38.0	km
Distance GPS	38.472	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
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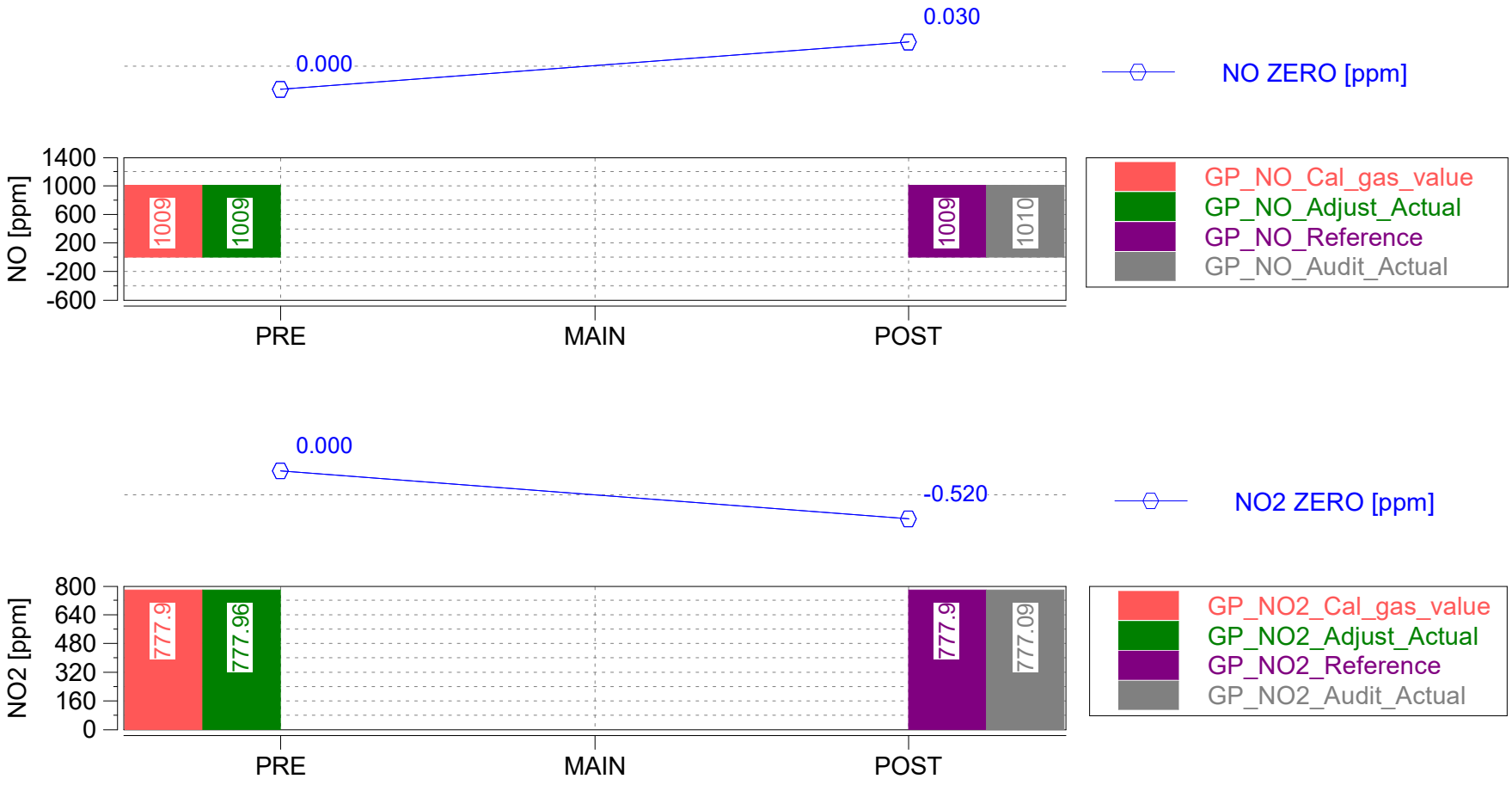
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

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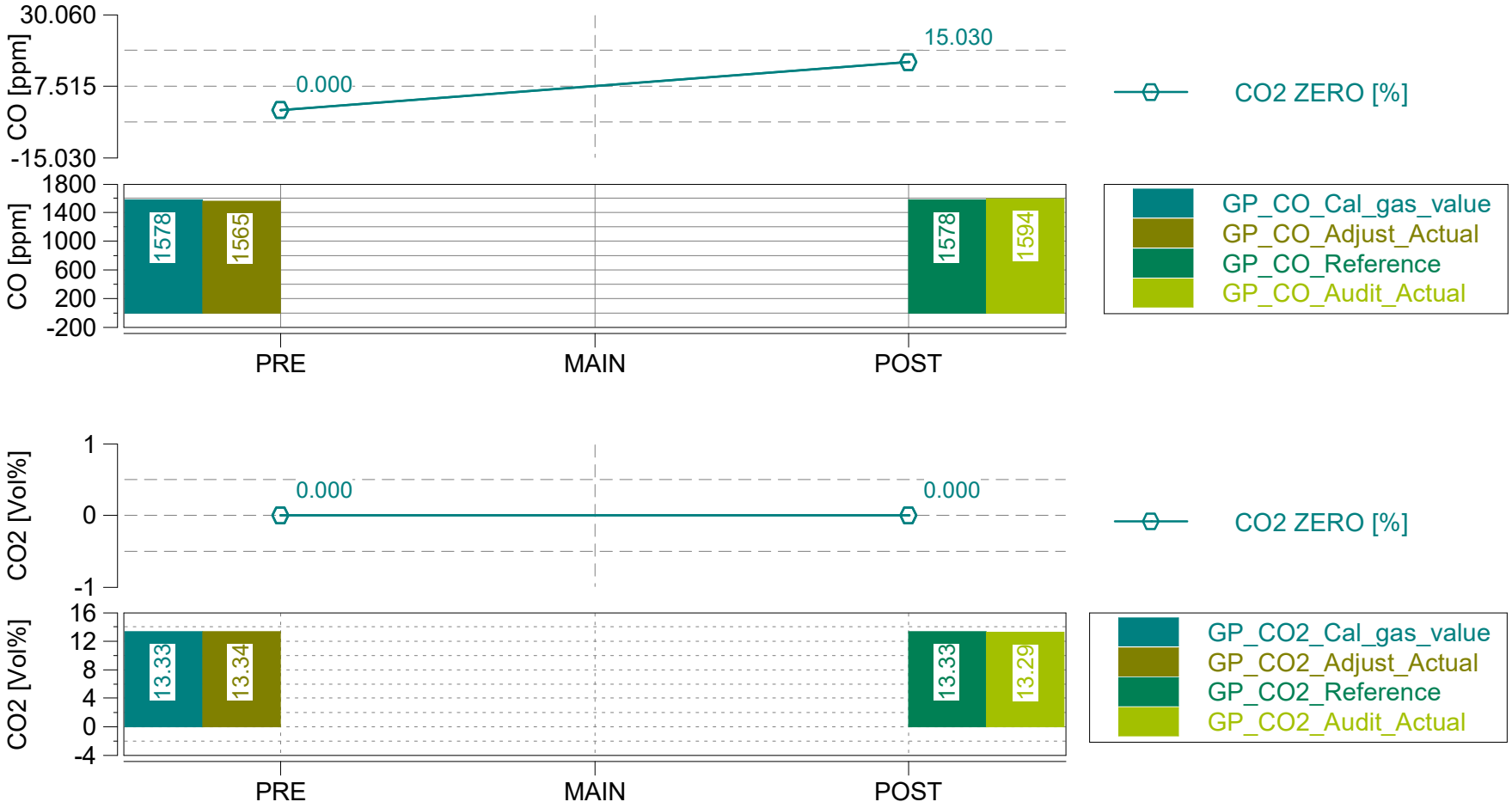
Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
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Engine: /
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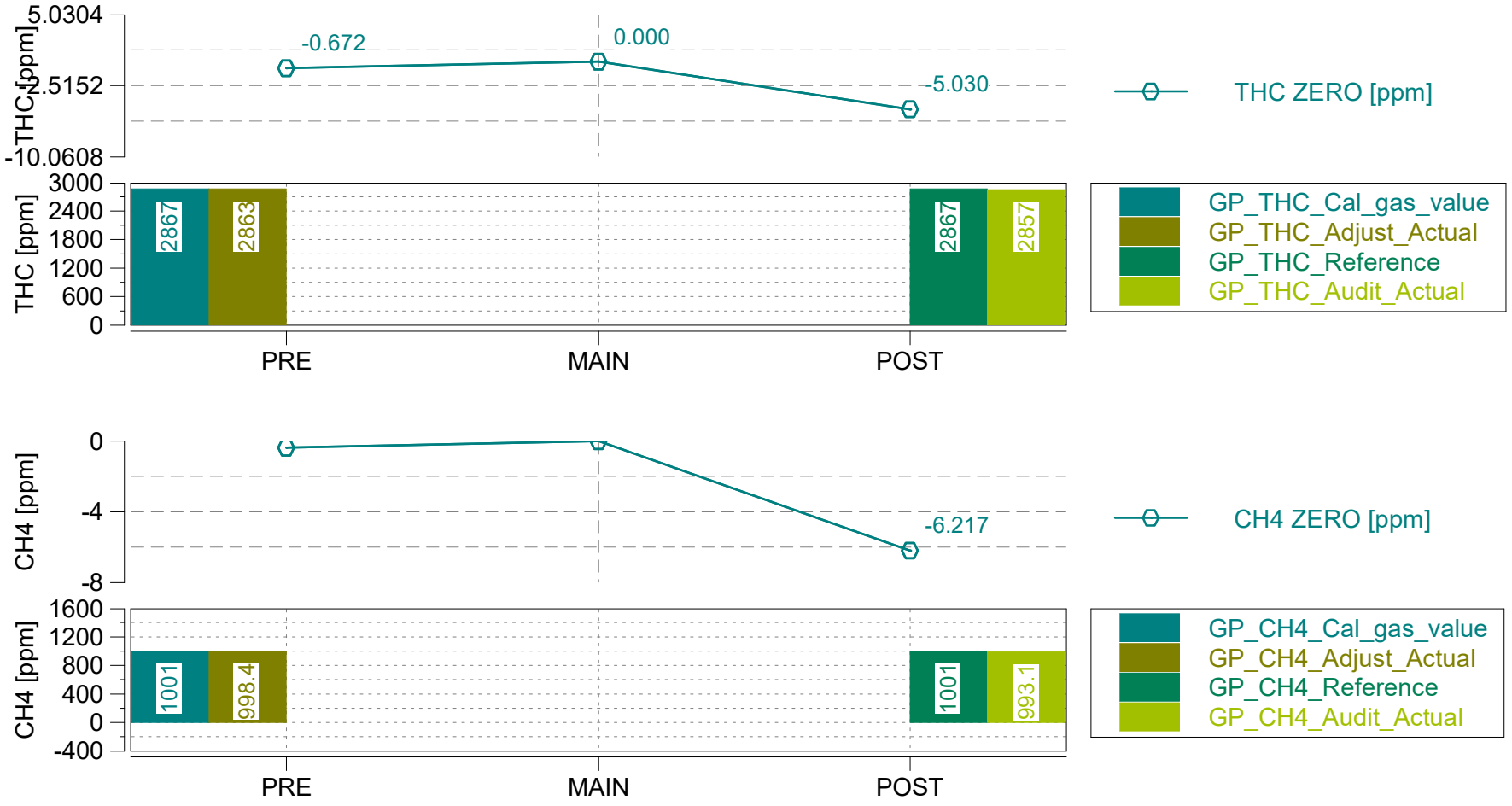
Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

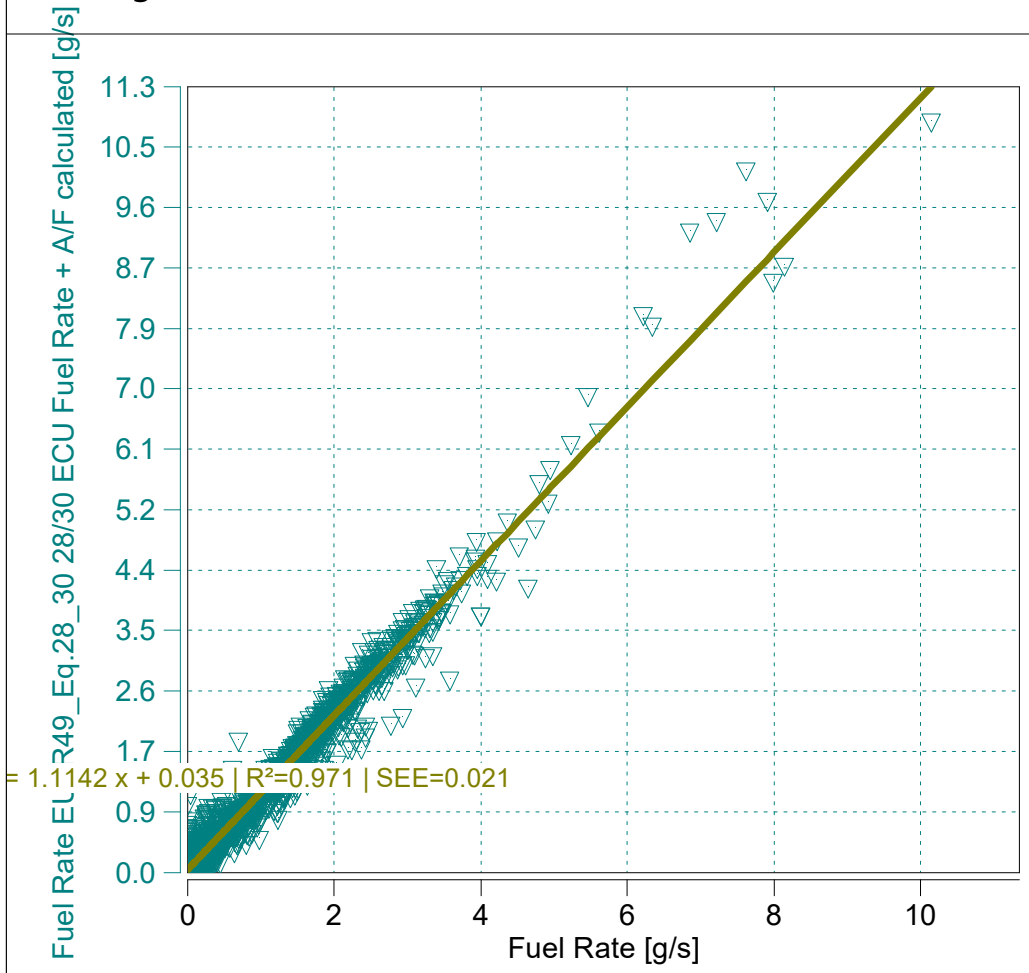
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 A0 LATC>CARB'
Start Date: 02/07/2020
Start Time: 12:03:03.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.1142 x + 0.035 | R²=0.971 | SEE=0.021
m = 1.11 (0.9 - 1.1 recommended)
R² = 0.97 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 100

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary

'X253-3303 LA City Default'

Start Date: 02/06/2020

Start Time: 11:51:00.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	3572.00	s
Trip Duration (a)	3572.00	s
Trip Distance	16.15	mi
Trip Distance (a)	16.15	mi
Trip Fuel Cons. (b)	2.02	kg
Trip Fuel Cons. (ab)	2.02	kg
Trip Fuel Cons. EU (ac)	2.20	kg
Trip Fuel Cons. US (ac)	2.20	kg
Trip Fuel Economy (b)	22.67	mpg_US
Trip Fuel Economy (ab)	22.67	mpg_US
Trip Fuel Economy EU (ac)	20.80	mpg_US
Trip Fuel Economy US (ac)	20.78	mpg_US
Trip Fuel Economy GGE (b)	22.67	mpg_US
Trip Fuel Economy GGE (ab)	22.67	mpg_US
Trip Fuel Economy EU GGE (ac)	20.80	mpg_US
Trip Fuel Economy US GGE (ac)	20.78	mpg_US
Trip Av. Eng. Speed	1151.45	rpm
Trip Av. Torque	32.61	lbft
Trip Av. Power	9.83	hp
Trip Work		
Trip Work (a)	9.75	hphr
Trip Exhaust Mass	34.19	kg
Trip Exhaust Mass EU (ac)	30.95	kg
Trip Exhaust Mass US (ac)	31.01	kg
Trip Av. Amb. Temperature	69.76	deg_F
Trip Av. Humidity	19.71	%
Trip Av. GPS Altitude	81.71	m
Fuel Type	Petrol (E10)	

ave THC	-3.79771	ppm
ave NMHC	-3.72175	ppm
ave CH4	-0.07595	ppm
ave CO	200.22637	ppm
ave CO2	11.22052	%
ave NOx	7.95589	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN	n/a	#/cm3
tot THC	-0.06831	g
tot NMHC	-0.06319	g
tot CH4	-0.00151	g
tot CO	9.25642	g
tot CO2	6665.59529	g
tot NO (d)	0.18729	g
tot NO2	0.04178	g
tot NOx	0.22906	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	16.27415	mi/hr
Trip Distance Share Urban	78.16364	% distance
Trip Distance Share Rural	19.34894	% distance
Trip Distance Share Motorway	2.48742	% distance

BS CO2	683.45559	g/hphr
BS CO	0.94911	g/hphr
BS THC	-0.00700	g/hphr
BS NMHC	-0.00648	g/hphr
BS CH4	-0.00016	g/hphr
BS NO (d)	0.01920	g/hphr
BS NO2	0.00428	g/hphr
BS NOx	0.02349	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN	n/a	#/hpr
DS CO2	412.81491	g/mi
DS CO	0.57327	g/mi
DS THC	-0.00423	g/mi
DS NMHC	-0.00391	g/mi
DS CH4	-0.00009	g/mi
DS NO (d)	0.01160	g/mi
DS NO2	0.00259	g/mi
DS NOx	0.01419	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN	n/a	#/mi
FS CO2	3307.92421	g/kg
FS CO	4.59367	g/kg
FS THC	-0.03390	g/kg
FS NMHC	-0.03136	g/kg
FS CH4	-0.00075	g/kg
FS NO (d)	0.09294	g/kg
FS NO2	0.02073	g/kg
FS NOx	0.11368	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Trip Summary Drift Corrected

'X253-3303 LA City Default'

Start Date: 02/06/2020

Start Time: 11:51:00.0

AVL

Concerto M.O.V.E, 2019

Trip Duration	3572.00	s
Trip Duration (a)	3572.00	s
Trip Distance	16.15	mi
Trip Distance (a)	16.15	mi
Trip Fuel Cons. (b)	2.02	kg
Trip Fuel Cons. (ab)	2.02	kg
Trip Fuel Cons. EU (ac)	2.20	kg
Trip Fuel Cons. US (ac)	2.20	kg
Trip Fuel Economy (b)	22.67	mpg_US
Trip Fuel Economy (ab)	22.67	mpg_US
Trip Fuel Economy EU (ac)	20.80	mpg_US
Trip Fuel Economy US (ac)	20.78	mpg_US
Trip Fuel Economy GGE (b)	22.67	mpg_US
Trip Fuel Economy GGE (ab)	22.67	mpg_US
Trip Fuel Economy EU GGE (ac)	20.80	mpg_US
Trip Fuel Economy US GGE (ac)	20.78	mpg_US
Trip Av. Eng. Speed	1151.45	rpm
Trip Av. Torque	32.61	lbft
Trip Av. Power	9.83	hp
Trip Work		
Trip Work (a)	9.75	hphr
Trip Exhaust Mass	34.19	kg
Trip Exhaust Mass EU (ac)	30.95	kg
Trip Exhaust Mass US (ac)	31.01	kg
Trip Av. Amb. Temperature	69.76	deg_F
Trip Av. Humidity	19.71	%
Trip Av. GPS Altitude	81.71	m
Fuel Type	Petrol (E10)	

ave THC DC	-3.62310	ppm
ave NMHC DC	-3.55064	ppm
ave CH4 DC	-0.07246	ppm
ave CO DC	200.10780	ppm
ave CO2 DC	11.24161	%
ave NOx DC	7.93528	ppm
ave PM	n/a	mg/m3
ave Soot meas	n/a	mg/m3
ave Soot	n/a	mg/m3
ave PN DC	n/a	#/cm3
tot THC DC	-0.06533	g
tot NMHC DC	-0.06043	g
tot CH4 DC	-0.00145	g
tot CO DC	9.25094	g
tot CO2 DC	6678.11989	g
tot NO DC (d)	0.18675	g
tot NO2 DC	0.04176	g
tot NOx DC	0.22852	g
tot Soot	n/a	g
tot Soot meas	n/a	g
tot PM	n/a	g
tot PN DC	n/a	#
PM measurement type	0.00000	-
tot Soot on PM filter (estim.)	0.00000	mg
Soot --> PM simple scaling factor	1.00000	-
Trip Av. Veh. Speed	16.27415	mi/hr
Trip Distance Share Urban	78.16364	% distance
Trip Distance Share Rural	19.34894	% distance
Trip Distance Share Motorway	2.48742	% distance

BS CO2 DC	684.73980	g/hphr
BS CO DC	0.94854	g/hphr
BS THC DC	-0.00670	g/hphr
BS NMHC DC	-0.00620	g/hphr
BS CH4 DC	-0.00015	g/hphr
BS NO DC (d)	0.01915	g/hphr
BS NO2 DC	0.00428	g/hphr
BS NOx DC	0.02343	g/hphr
BS Soot	n/a	g/hphr
BS Soot meas	n/a	g/hphr
BS PM	n/a	g/hphr
BS PN DC	n/a	#/hpr
DS CO2 DC	413.59059	g/mi
DS CO DC	0.57293	g/mi
DS THC DC	-0.00405	g/mi
DS NMHC DC	-0.00374	g/mi
DS CH4 DC	-0.00009	g/mi
DS NO DC (d)	0.01157	g/mi
DS NO2 DC	0.00259	g/mi
DS NOx DC	0.01415	g/mi
DS Soot	n/a	g/mi
DS Soot meas	n/a	g/mi
DS PM	n/a	g/mi
DS PN DC	n/a	#/mi
FS CO2 DC	3314.13978	g/kg
FS CO DC	4.59095	g/kg
FS THC DC	-0.03242	g/kg
FS NMHC DC	-0.02999	g/kg
FS CH4 DC	-0.00072	g/kg
FS NO DC (d)	0.09268	g/kg
FS NO2 DC	0.02073	g/kg
FS NOx DC	0.11341	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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

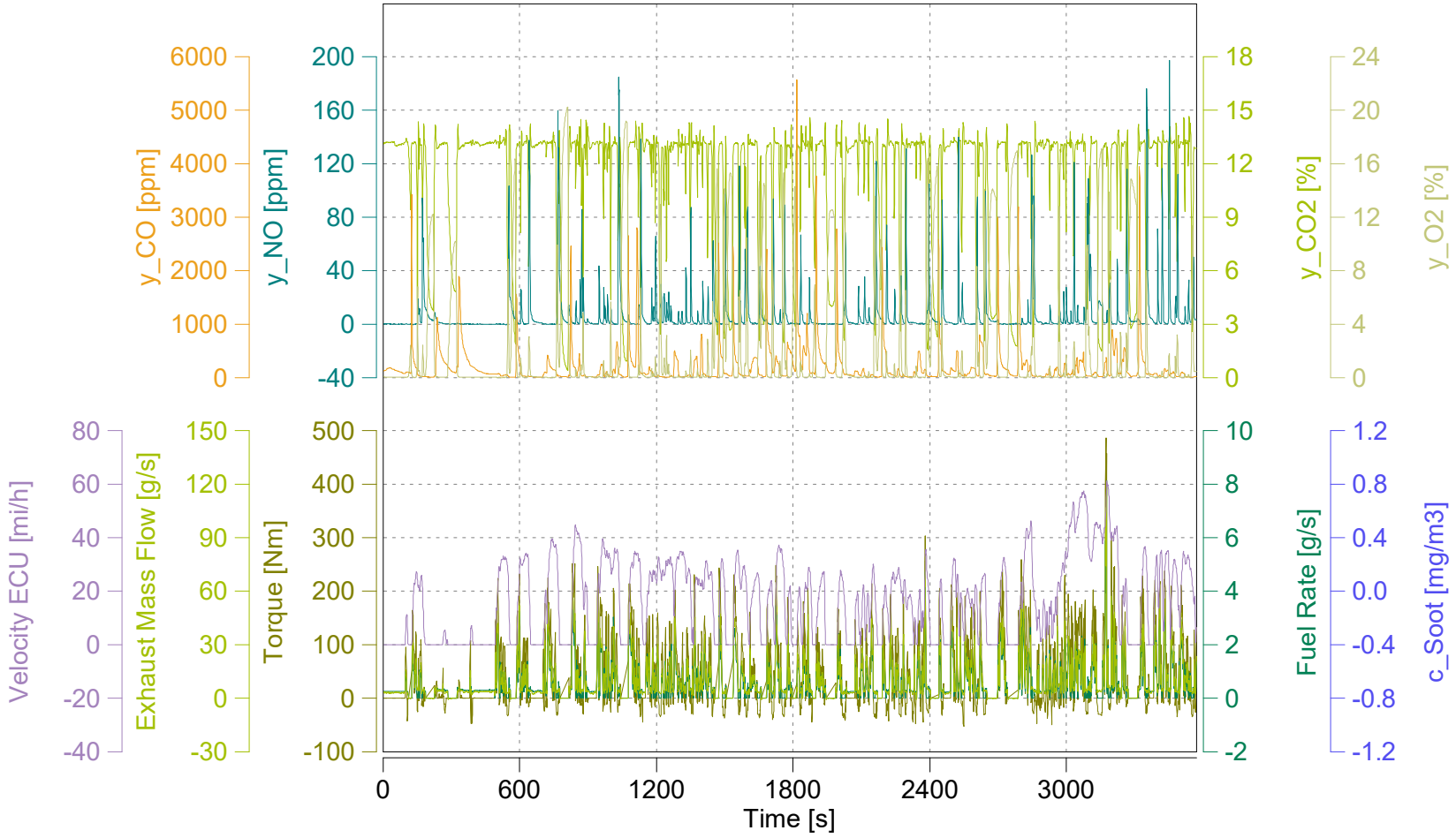
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment Check

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

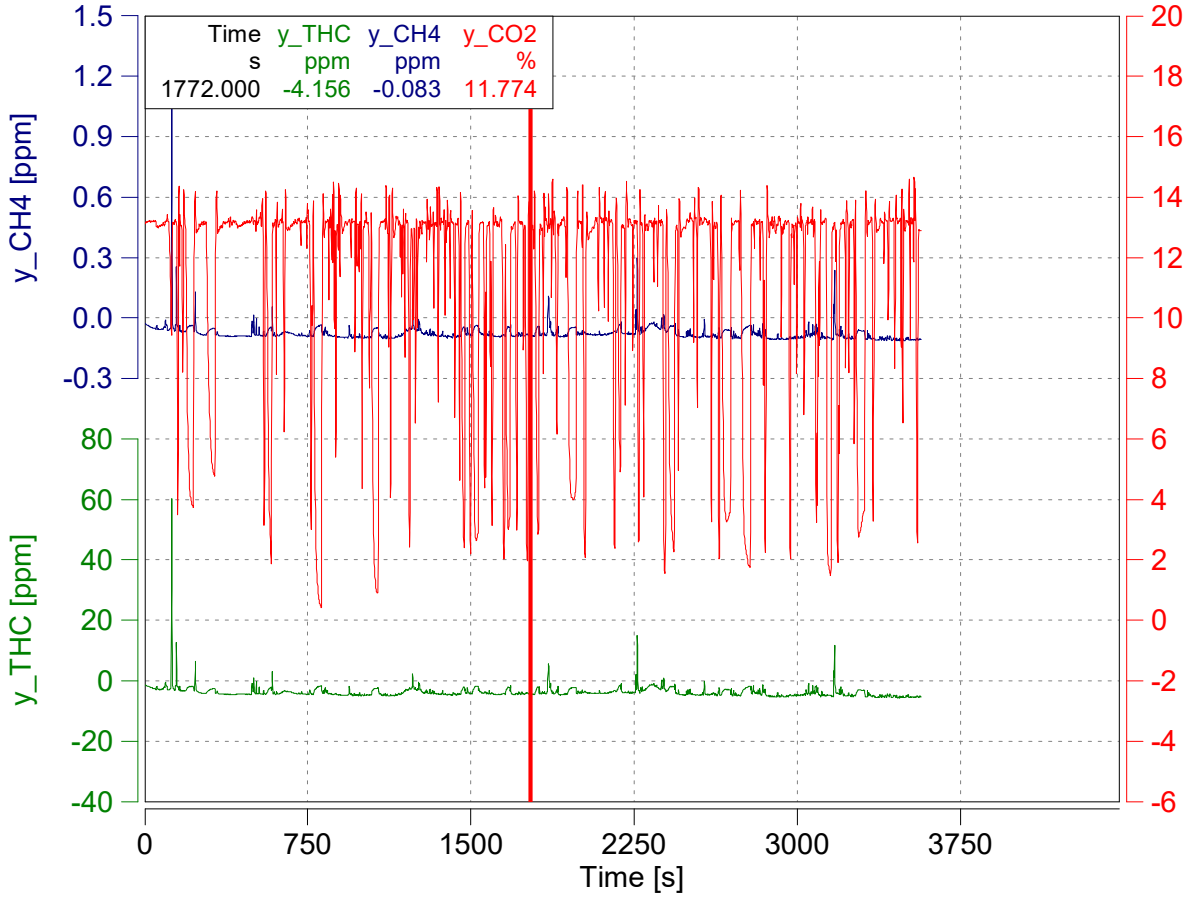
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Time Alignment of Gas Concentrations

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019



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 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

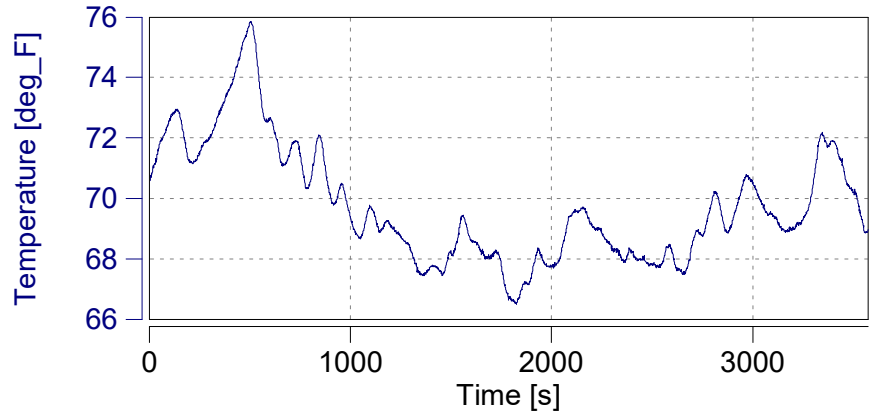
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

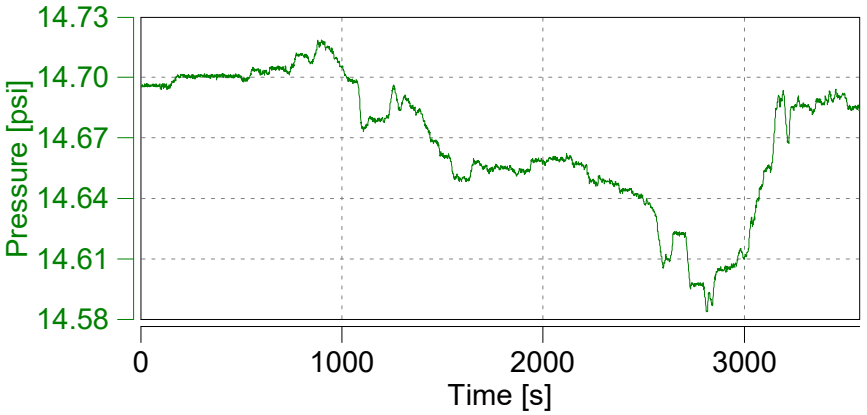
Case: X253-3303

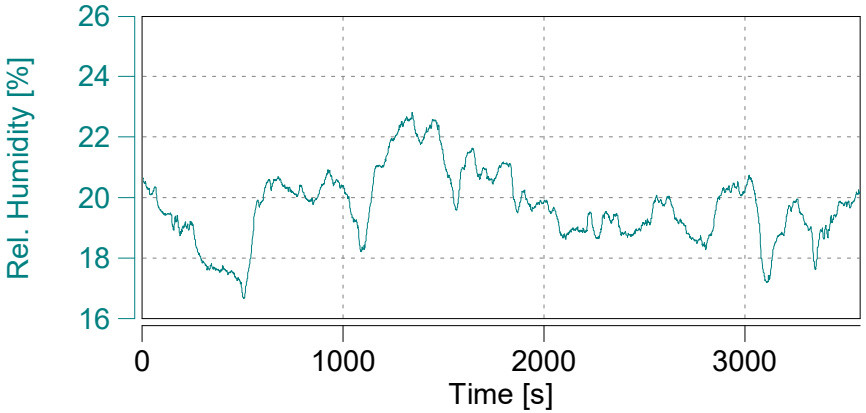
Page: Ambient Conditions

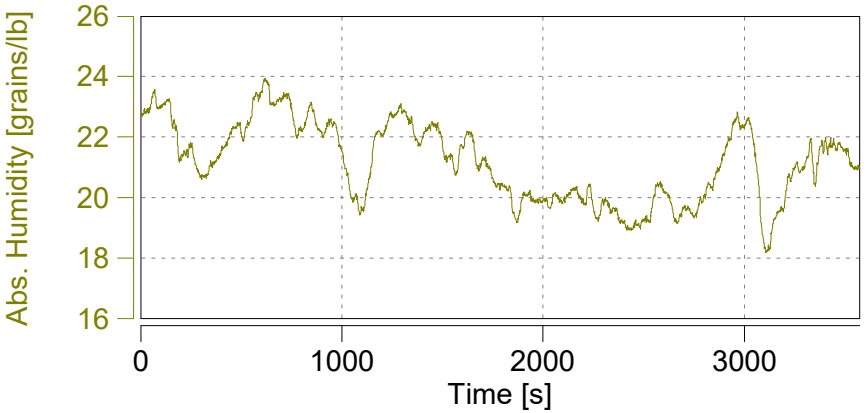
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

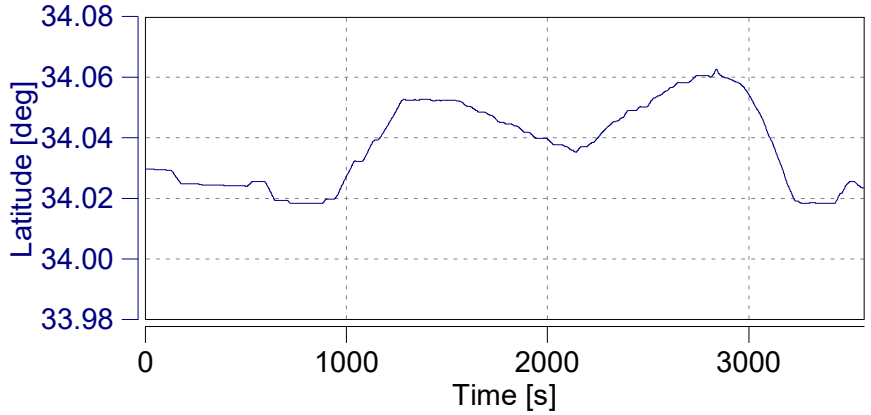
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

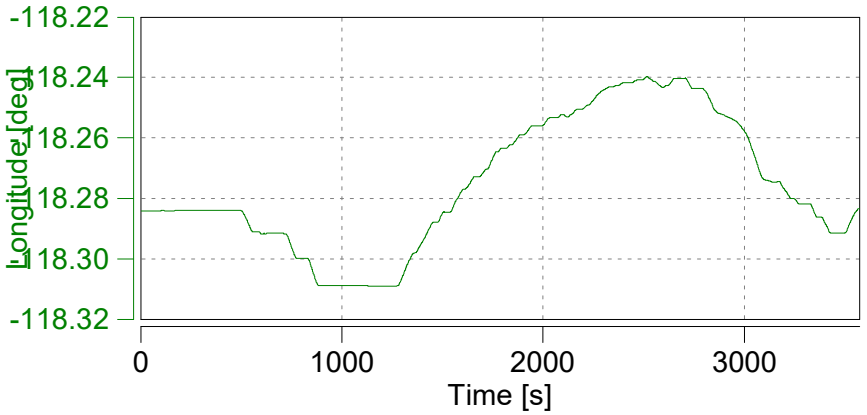
Case: X253-3303

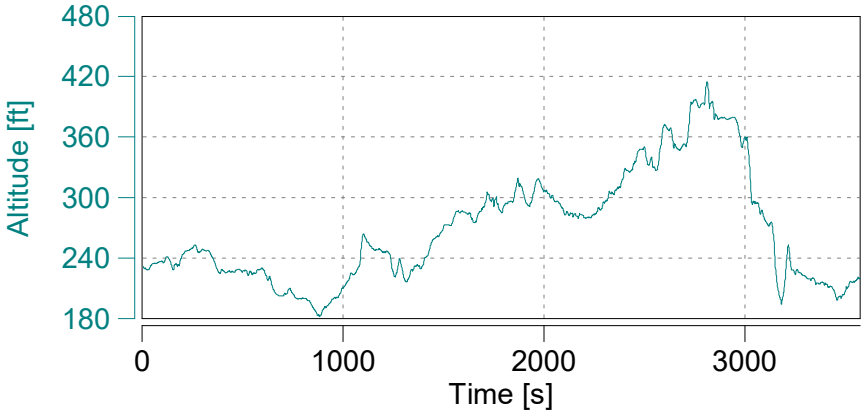
Page: GPS

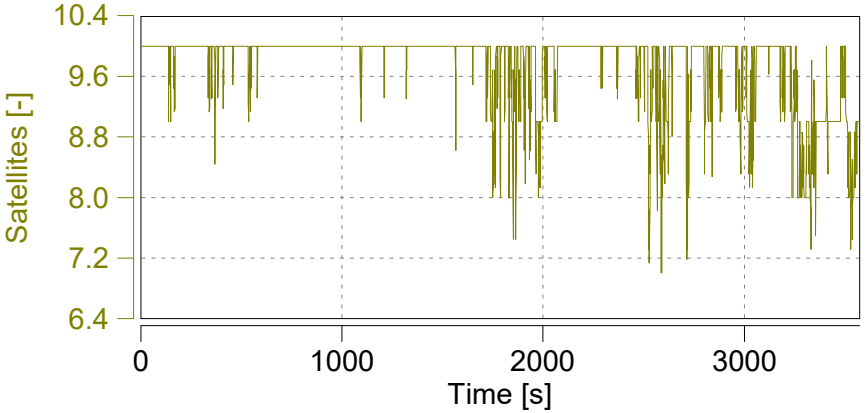
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

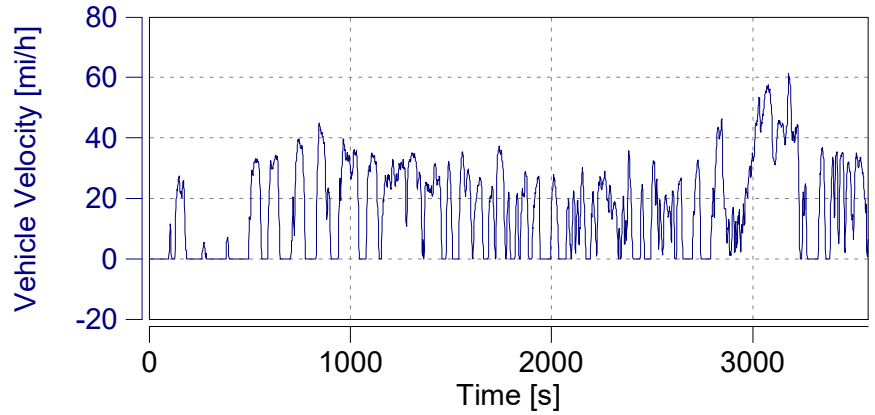
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

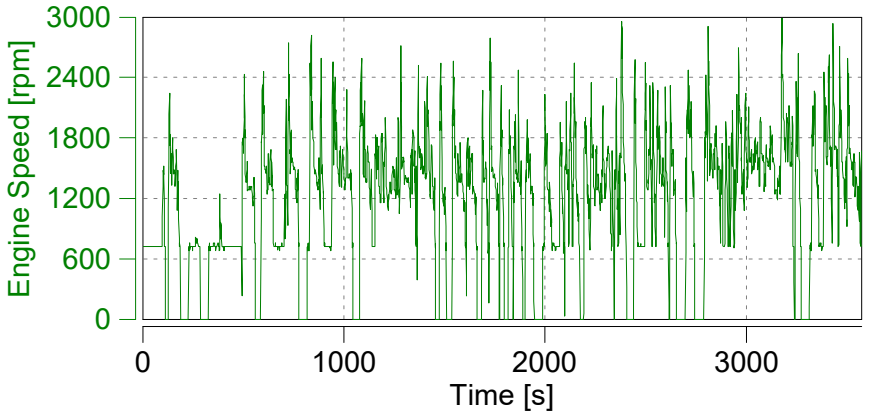
Case: X253-3303

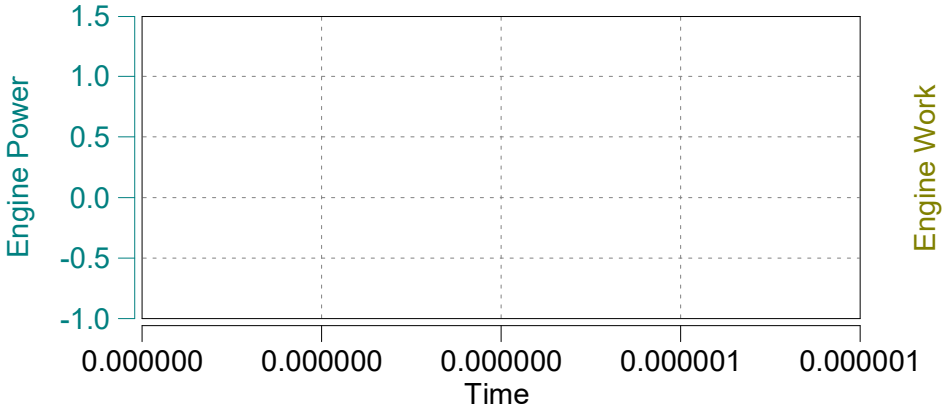
Page: Engine (1)

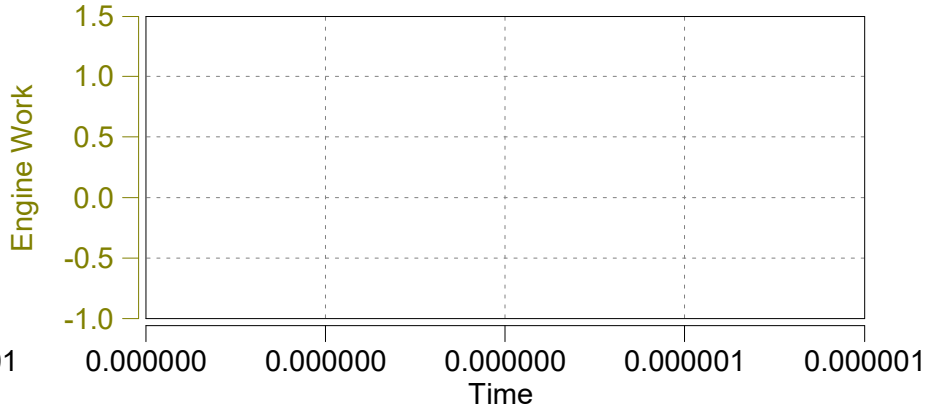
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

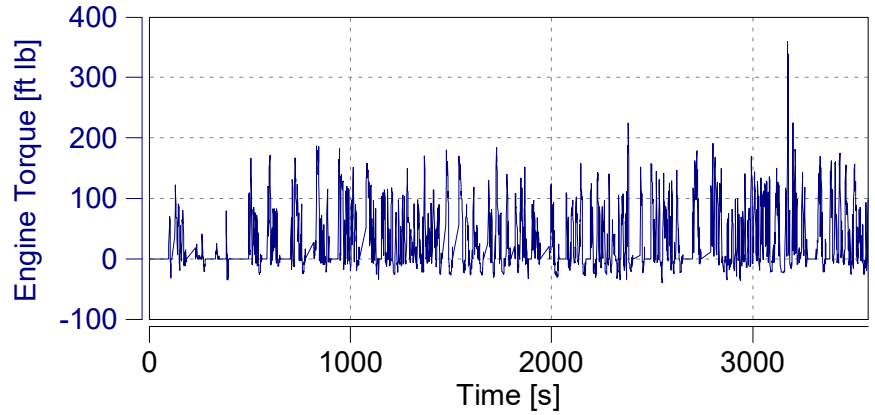
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

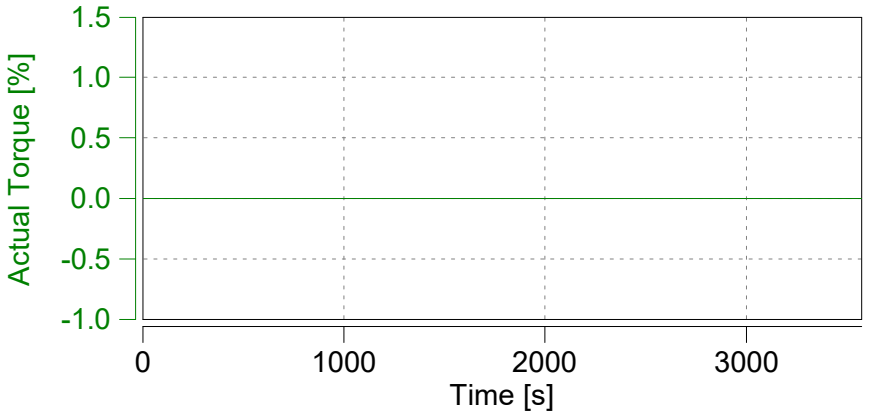
Case: X253-3303

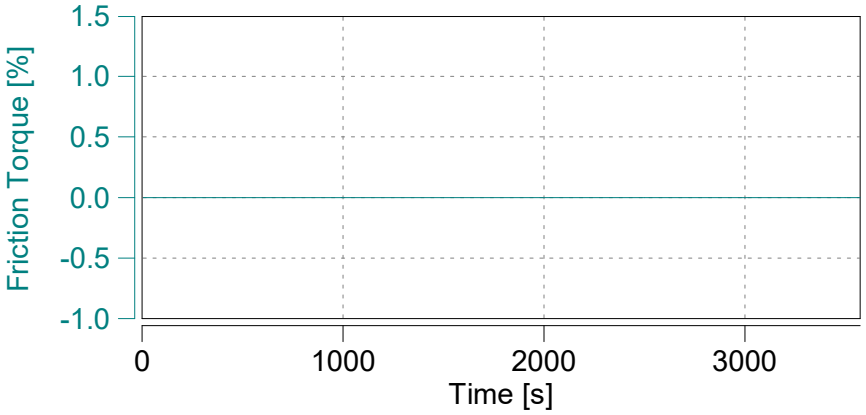
Page: Engine (2)

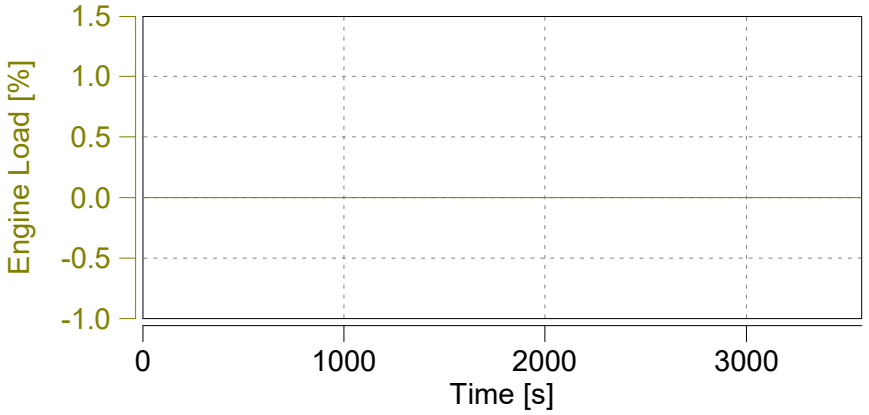
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

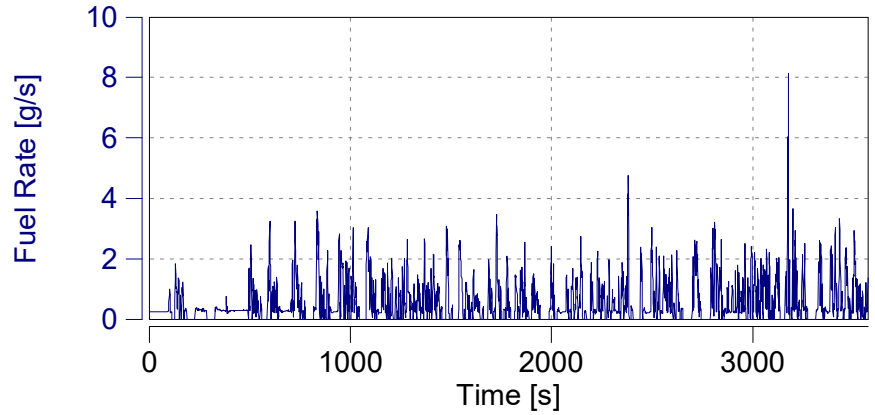
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

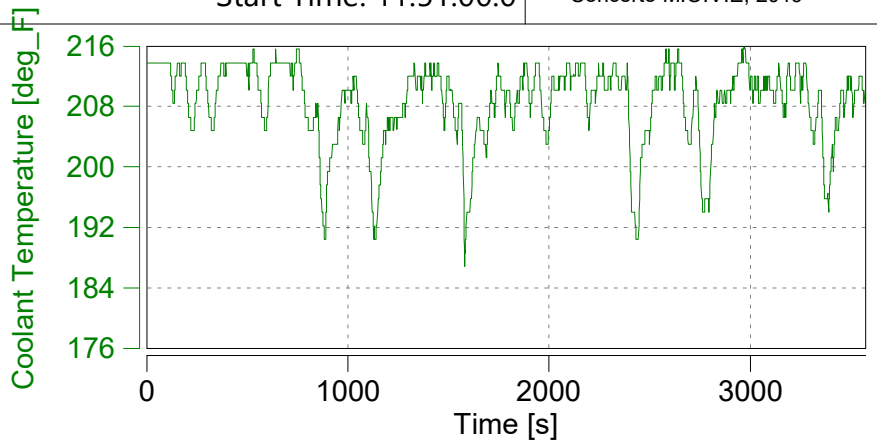
Case: X253-3303

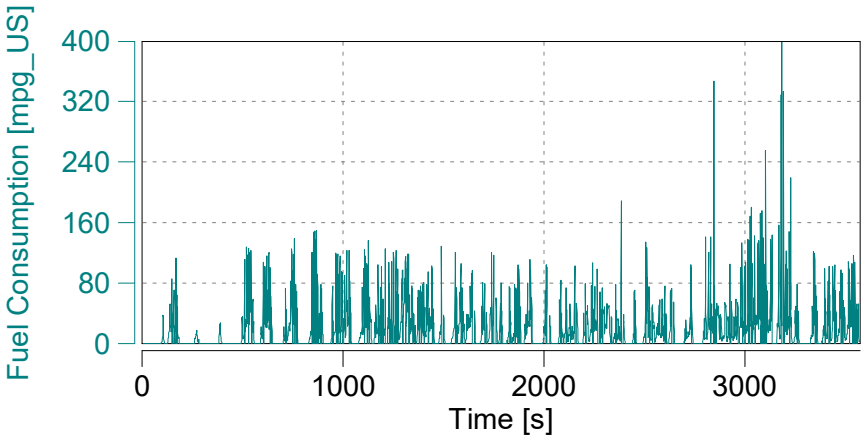
Page: Engine (3)

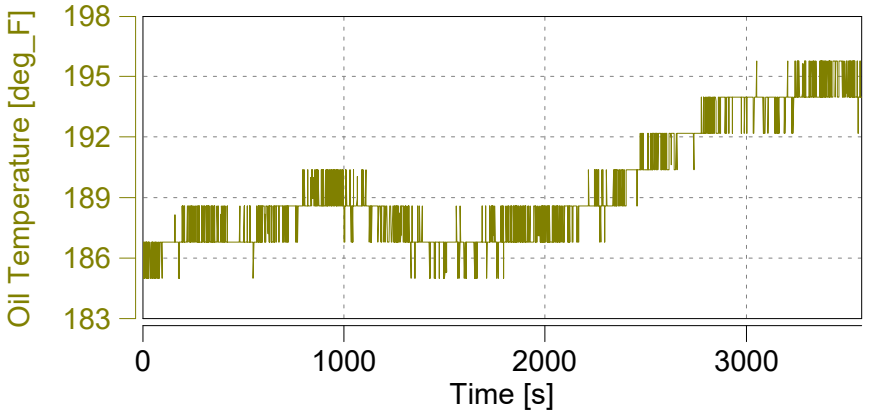
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

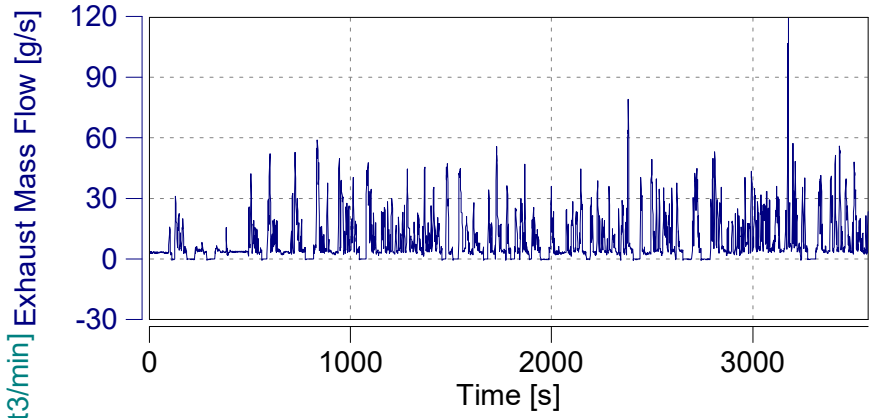
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

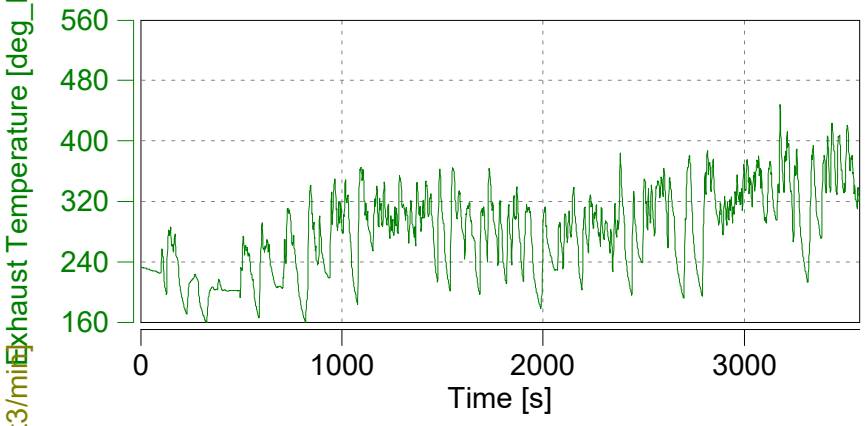
Case: X253-3303

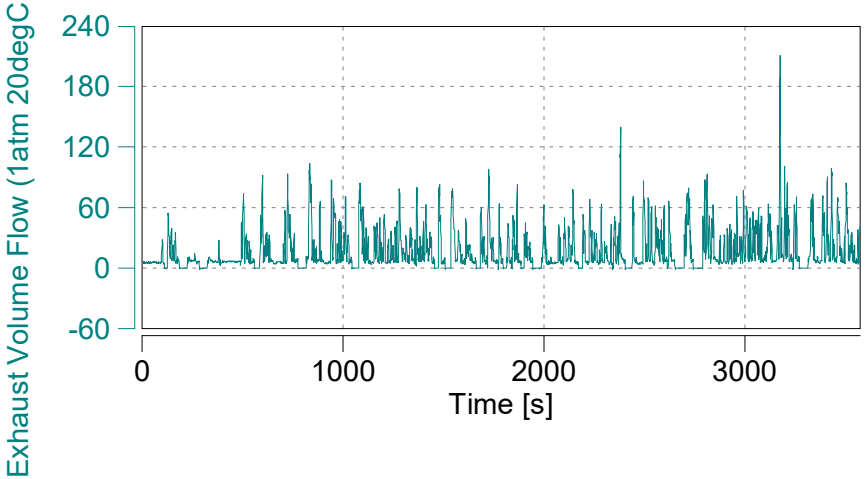
Page: Exhaust Flow (1)

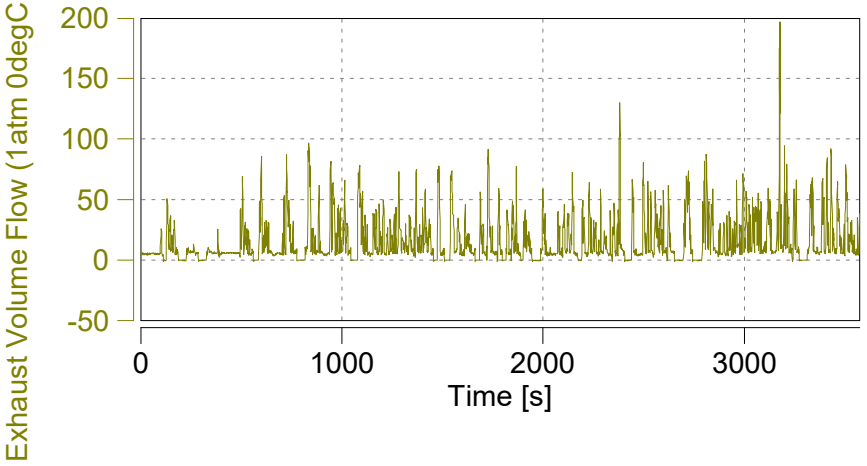
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

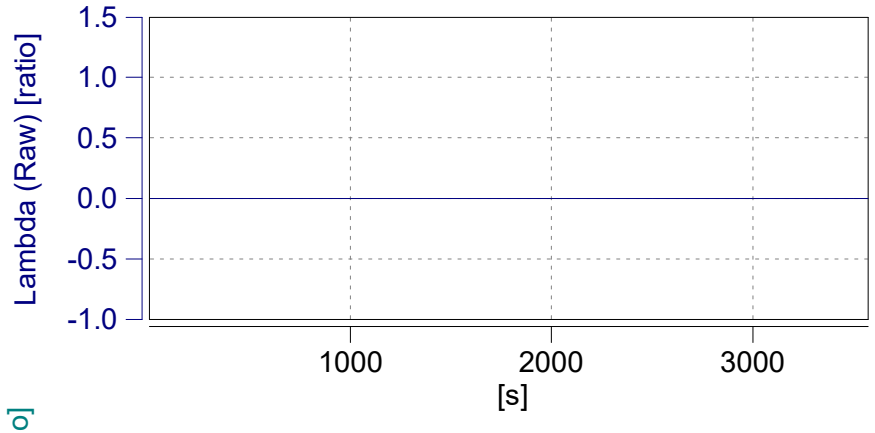
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

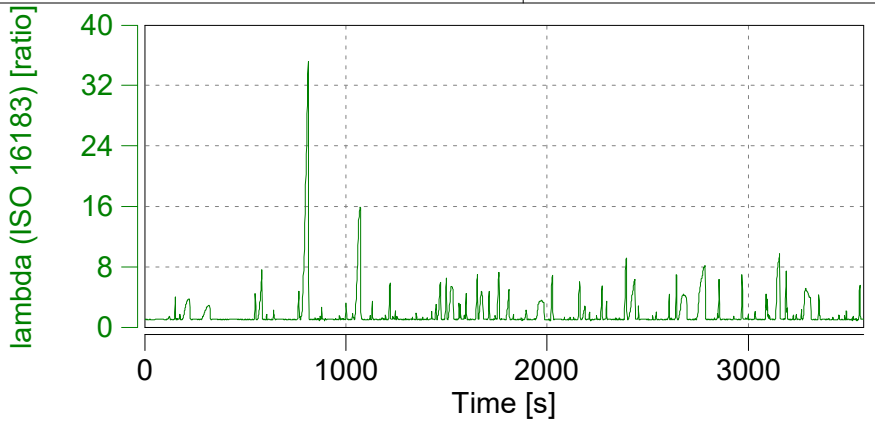
Case: X253-3303

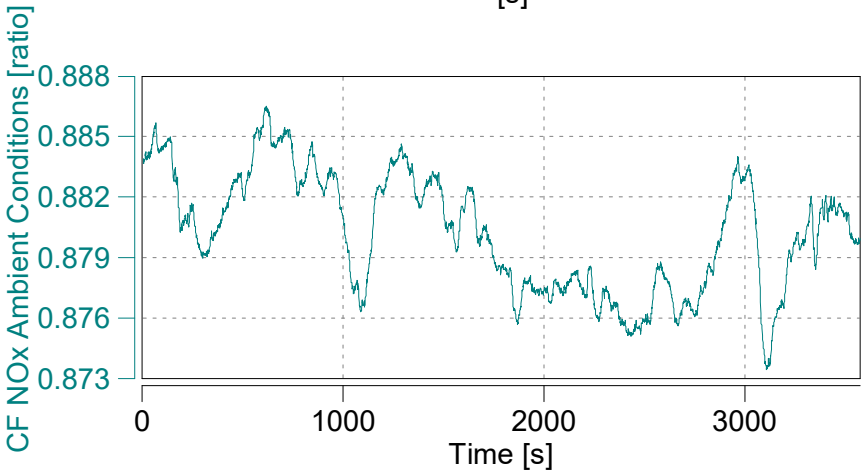
Page: Exhaust Flow (2)

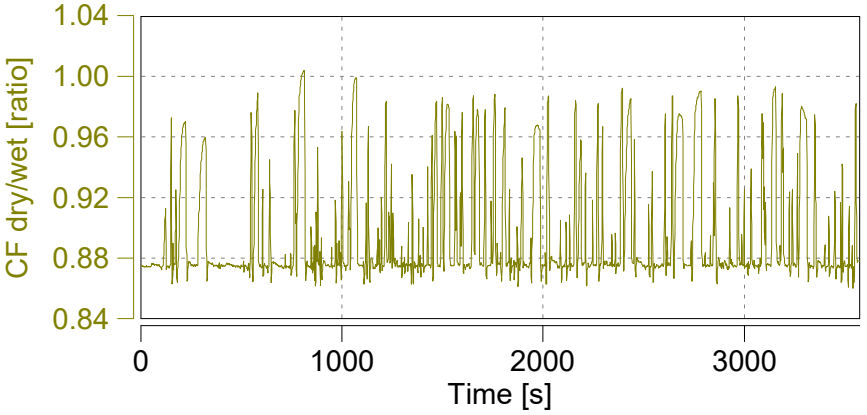
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

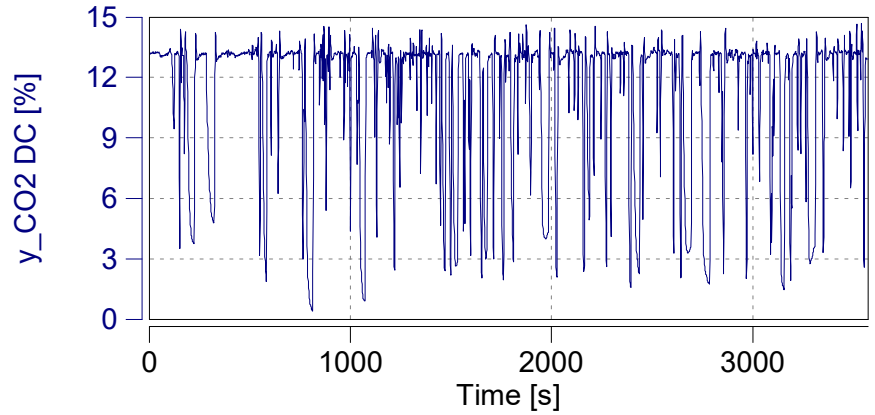
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

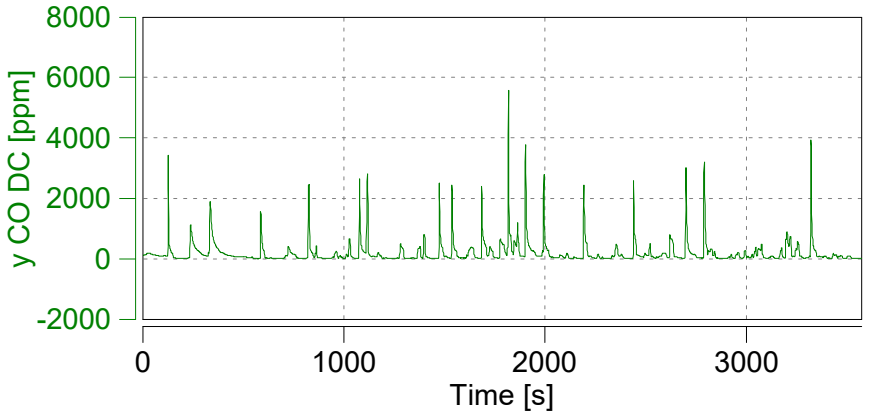
Case: X253-3303

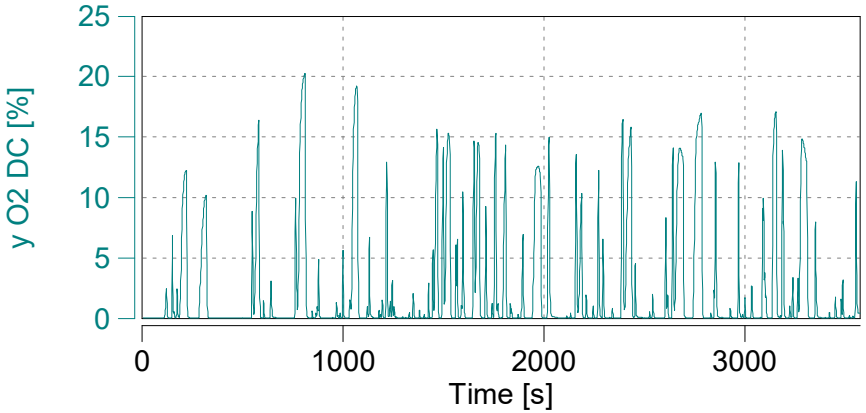
Page: Corrected Emissions (1)

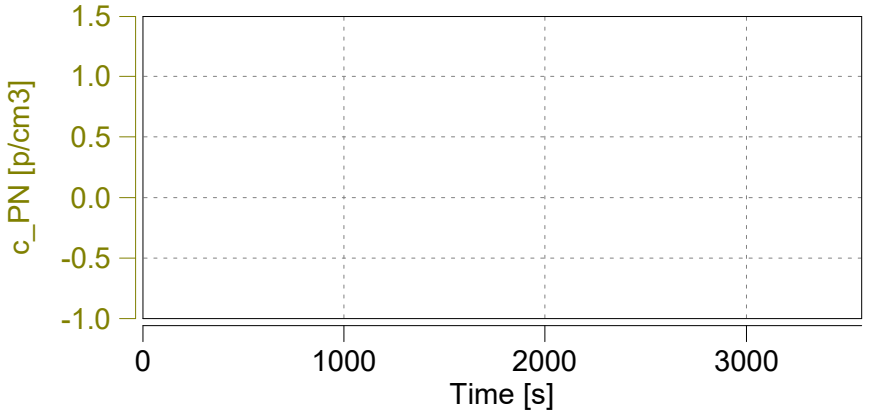
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

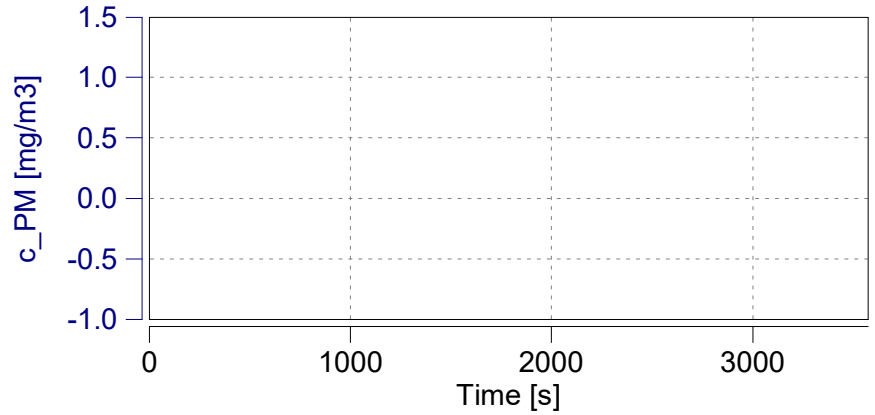
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

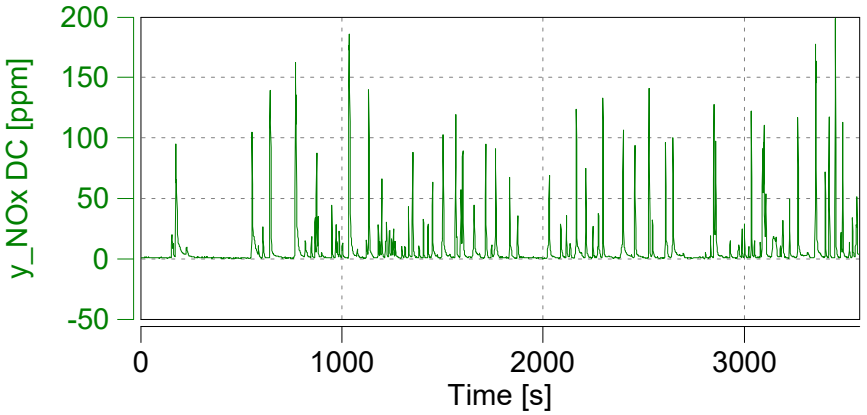
Case: X253-3303

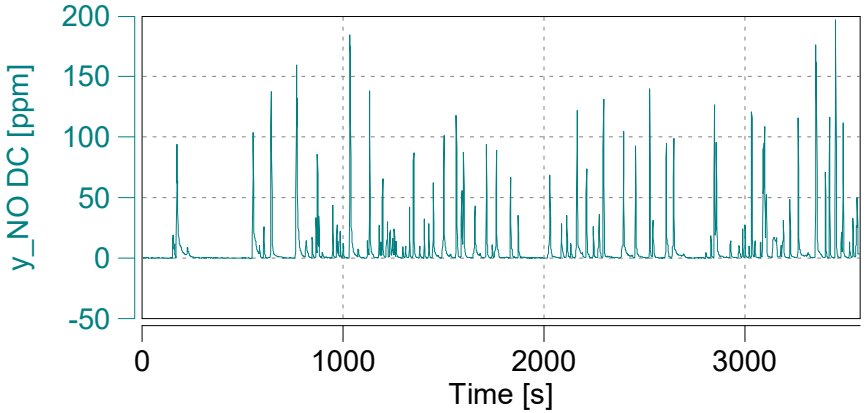
Page: Corrected Emissions (2)

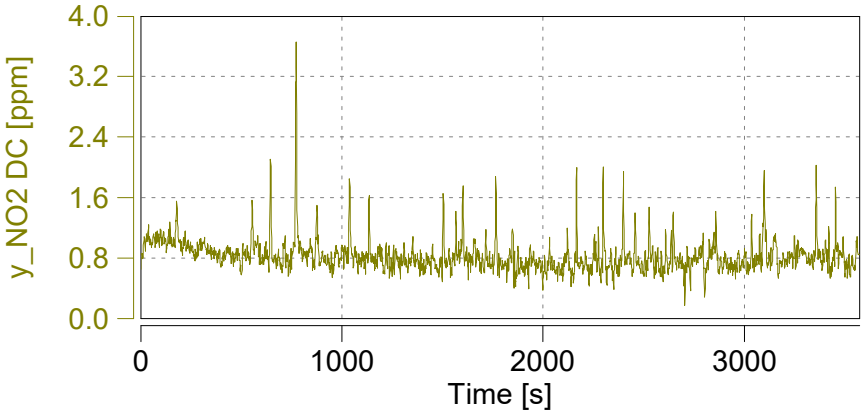
'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019









Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

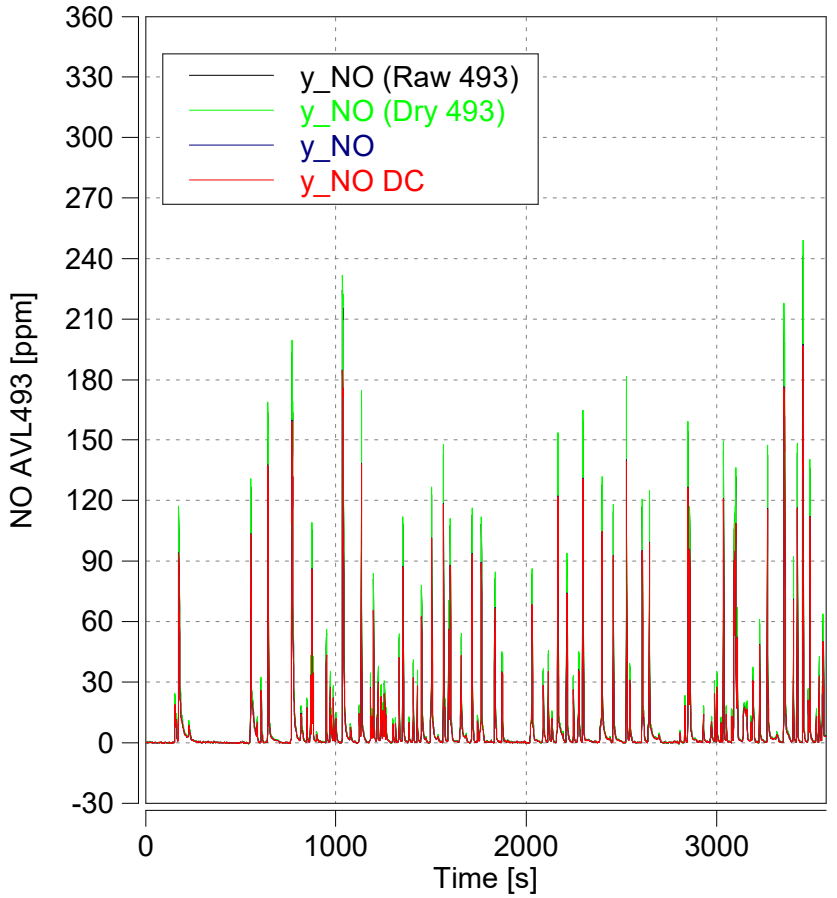
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

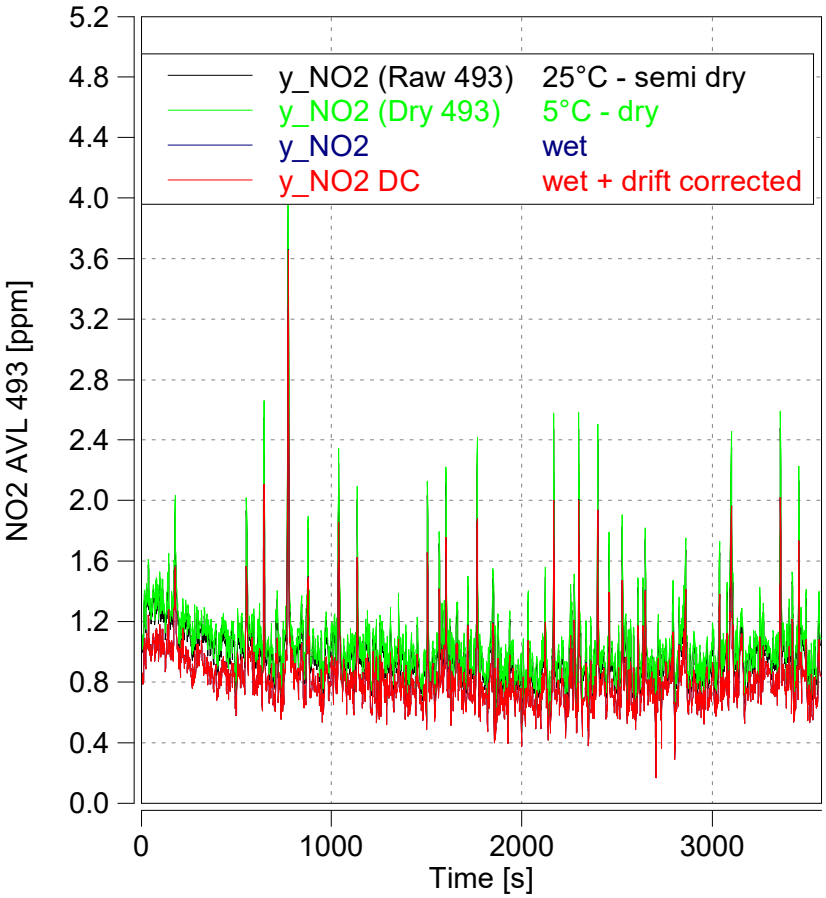
Case: X253-3303

Page: Corrected Emissions (3)

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019





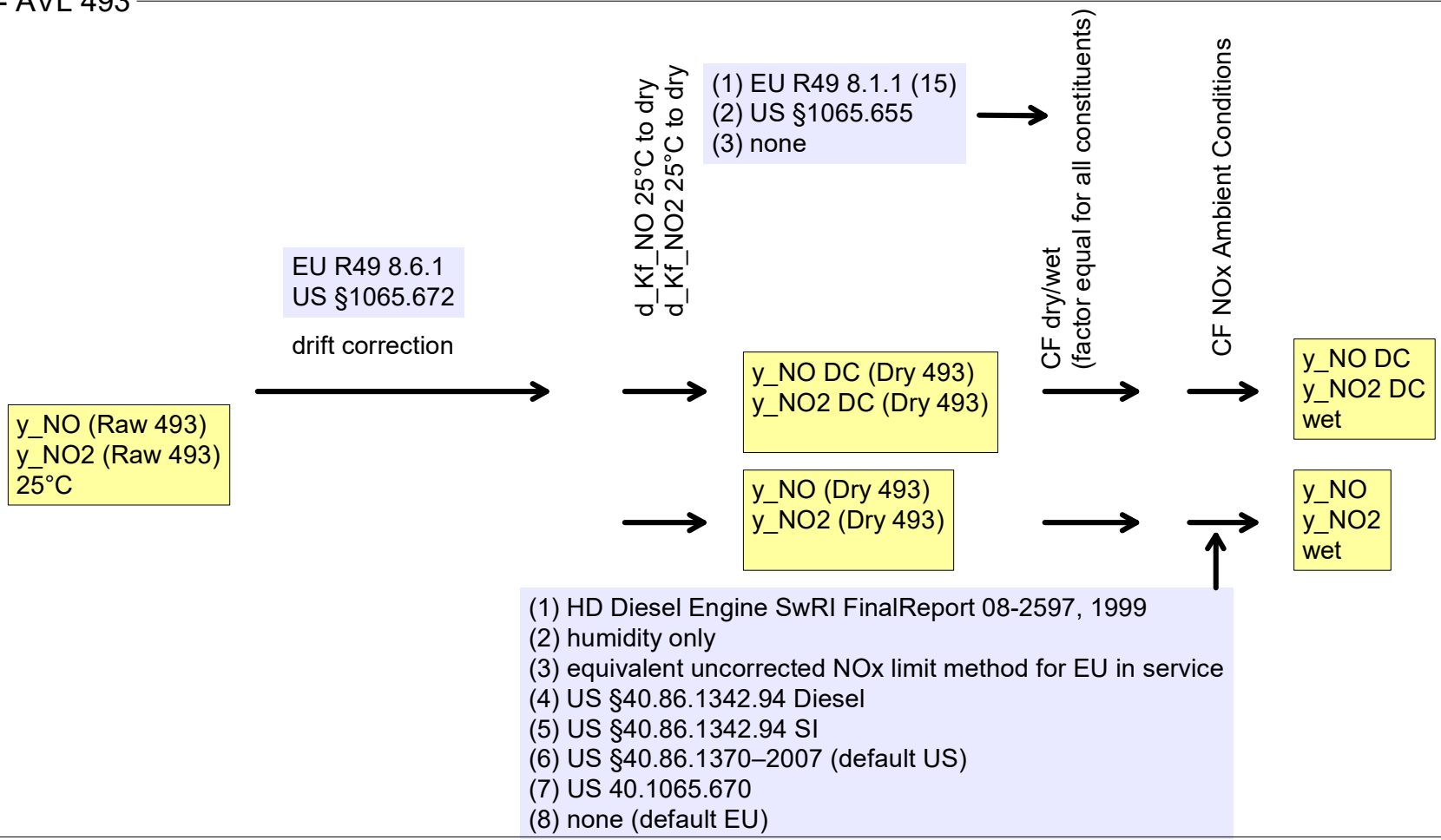
Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019

NOx - AVL 493

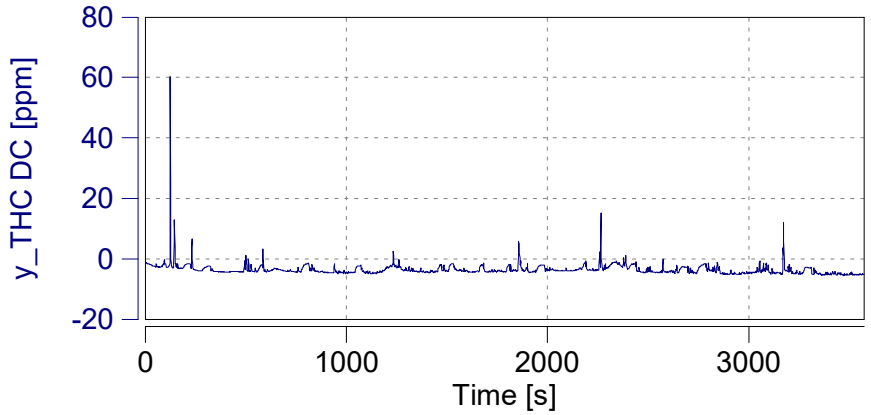


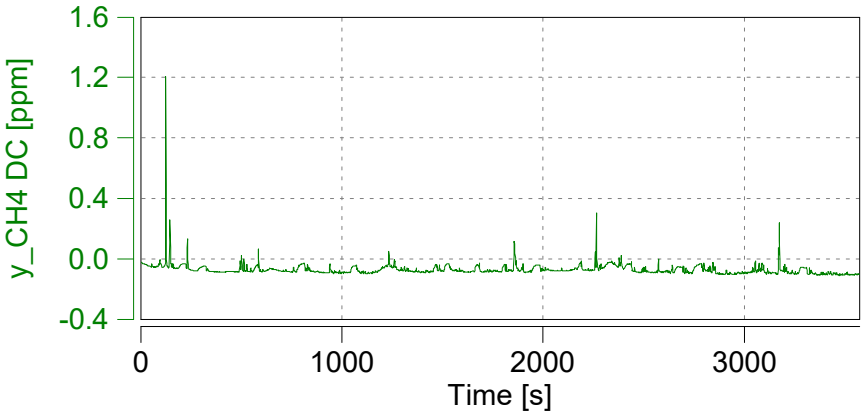
Case: X253-3303

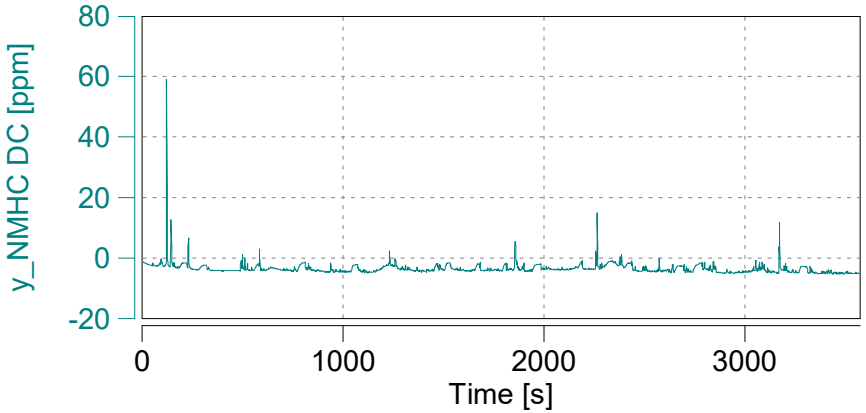
Page: Corrected Emissions (5)

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019







Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

#ERROR

X253-3303

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	92.1	7.2	0.7

Shares of time of the trip in % characterised by accelerating, decelerating, cruising and stop		
Accelerating	34.5	%
Decelerating	34.4	%
Cruising	0.2	%
Stop	31.0	%

	Minimum	Maximum
Work window average power (%)		
CO2 mass window duration (s)		

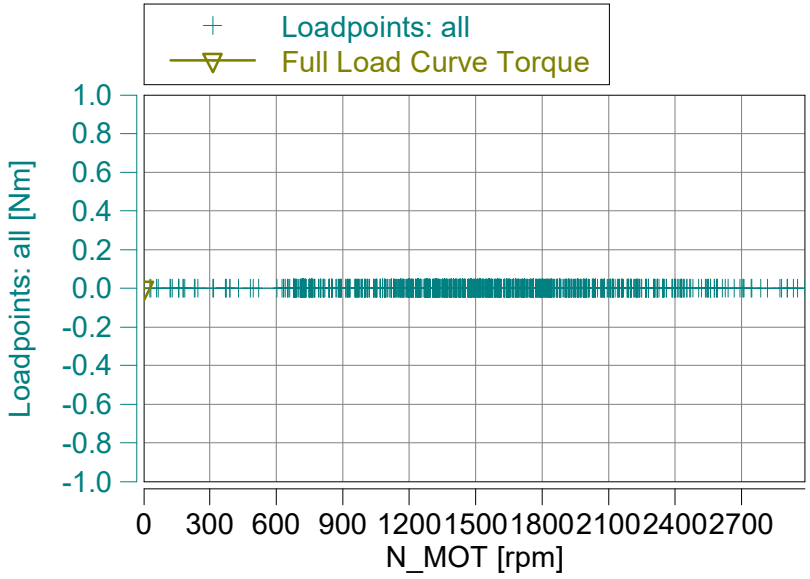
Work window: percentage of valid windows	
CO2 mass window: percentage of valid window	
Fuel consumption consistency ratio	m = 1.07
	r^2 = 0.95

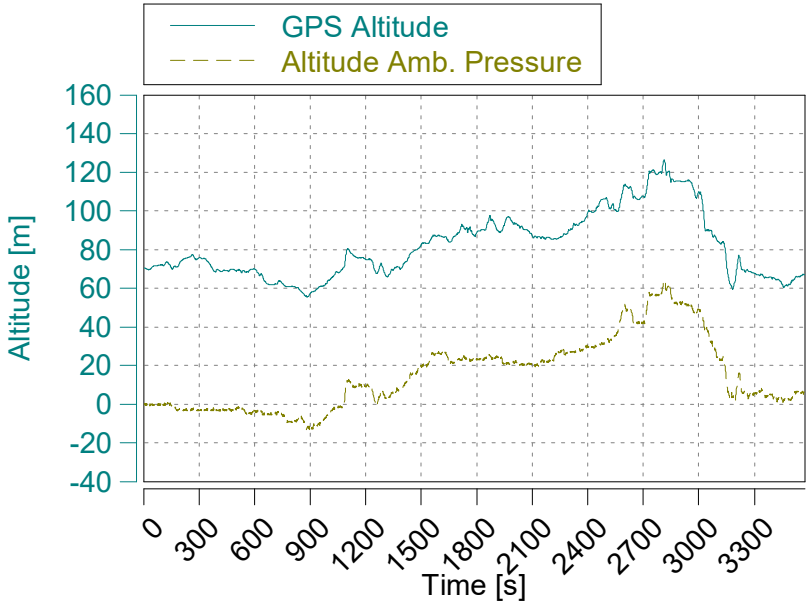
Case: X253-3303

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

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019





Trip Duration (a)	3572.0	s
Test Duration (b)		s
Total Work (c)		kWh
Reference Work		kWh
Total CO2 Mass (c)		g
Reference CO2 Mass		g
avg BSFC ECU	277.1	g/kWh
avg BSFC ISO16183	302.1	g/kWh
Distance ECU	26.0	km
Distance GPS	26.284	km

GAS PEMS Leak Check Age	0	days
GAS PEMS Leak Check Date	N/A	yyyy-mm-dd
GAS PEMS Leak Check Time	N/A	hh:mm:ss
GAS PEMS Leak Check External	0.00	%

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

Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

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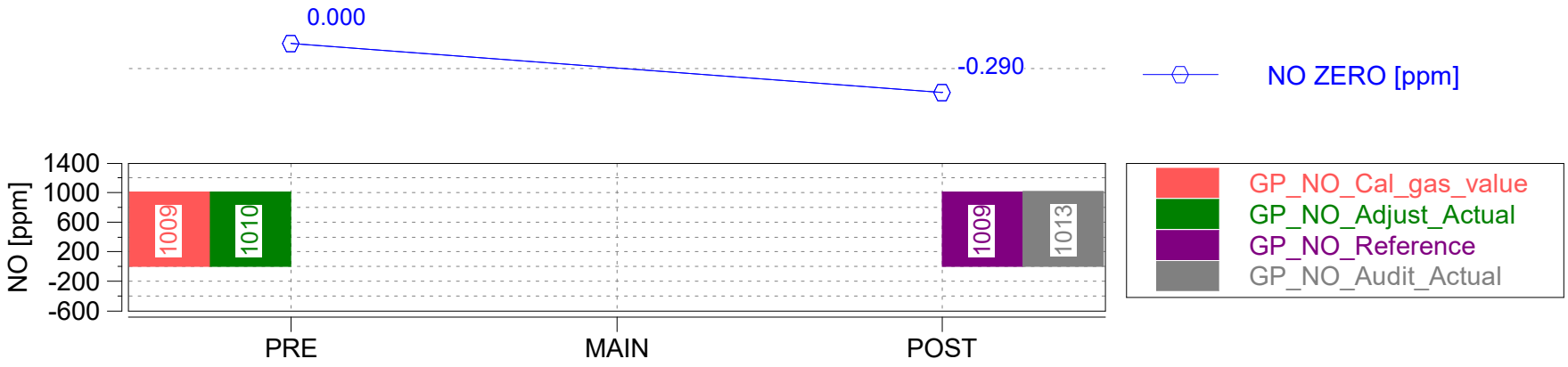
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

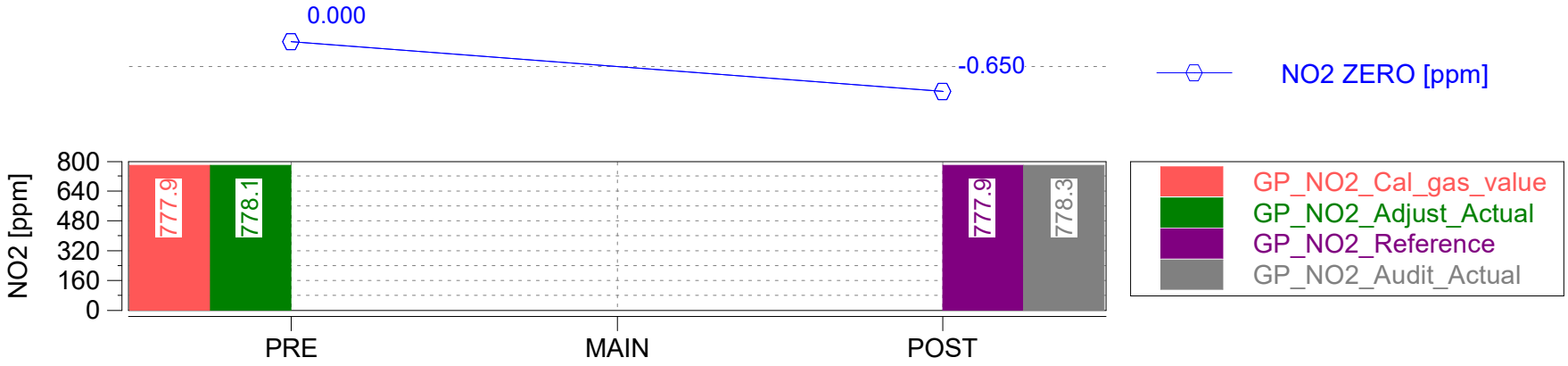
Case: X253-3303

Page: NO/NO2/NOx Zero - Span

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019





Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

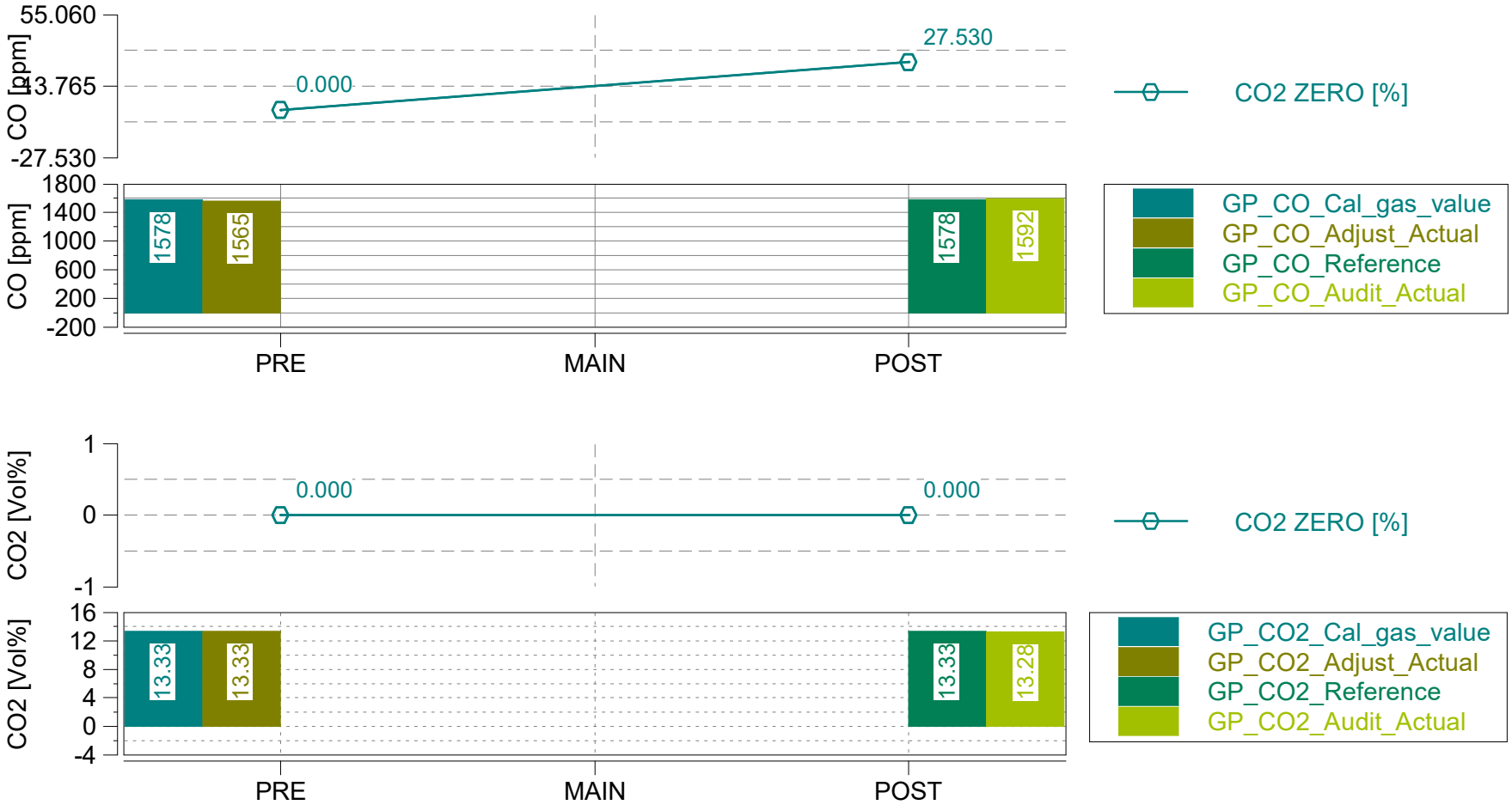
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: CO/CO2 Zero - Span

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

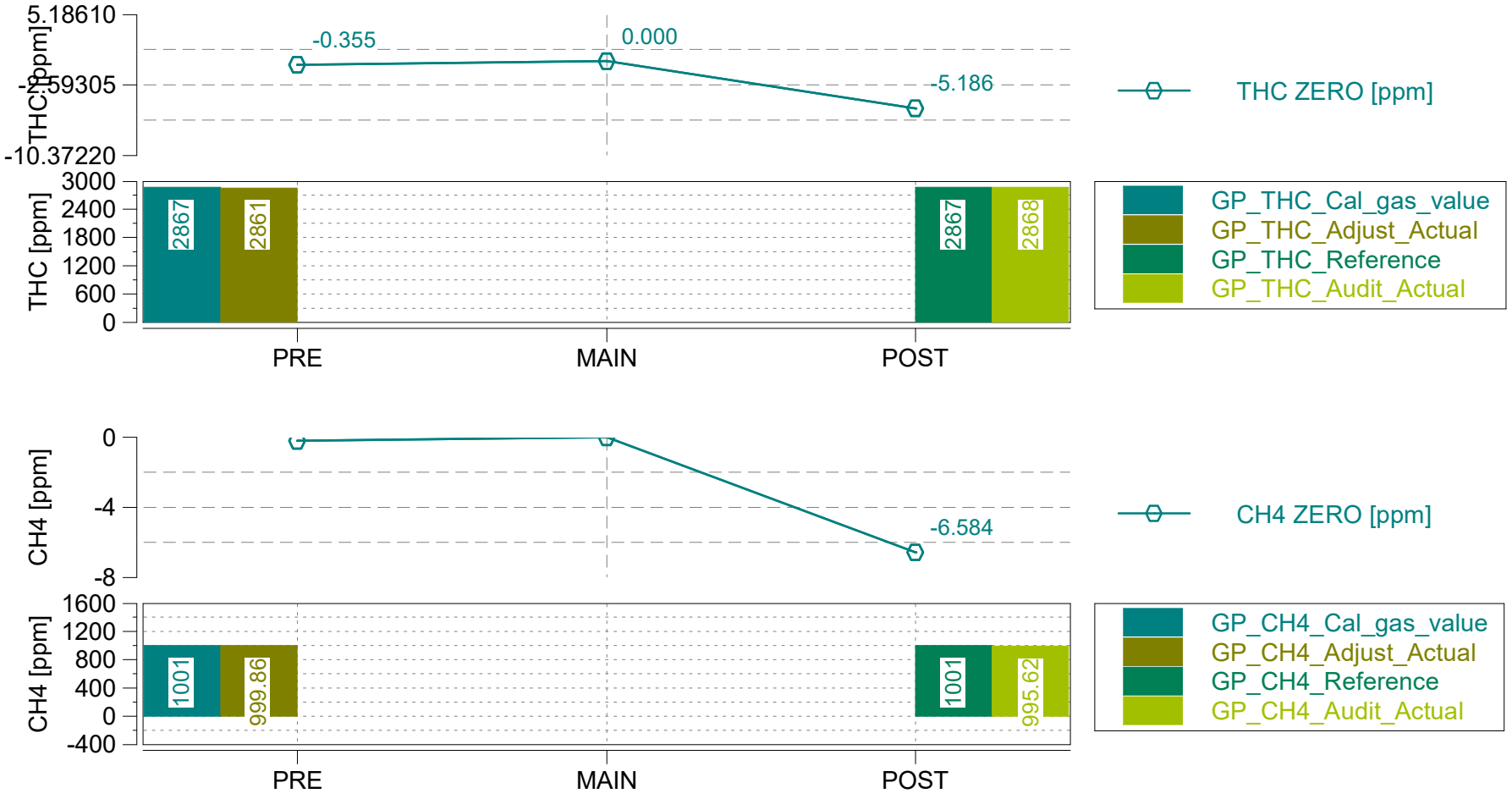
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: THC/CH4 Zero - Span

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019



Concerto Version: 503 Build 82, Serial Number: 1604
M.O.V.E Post-Processing: DT_1R3.1_B300
Legislation:

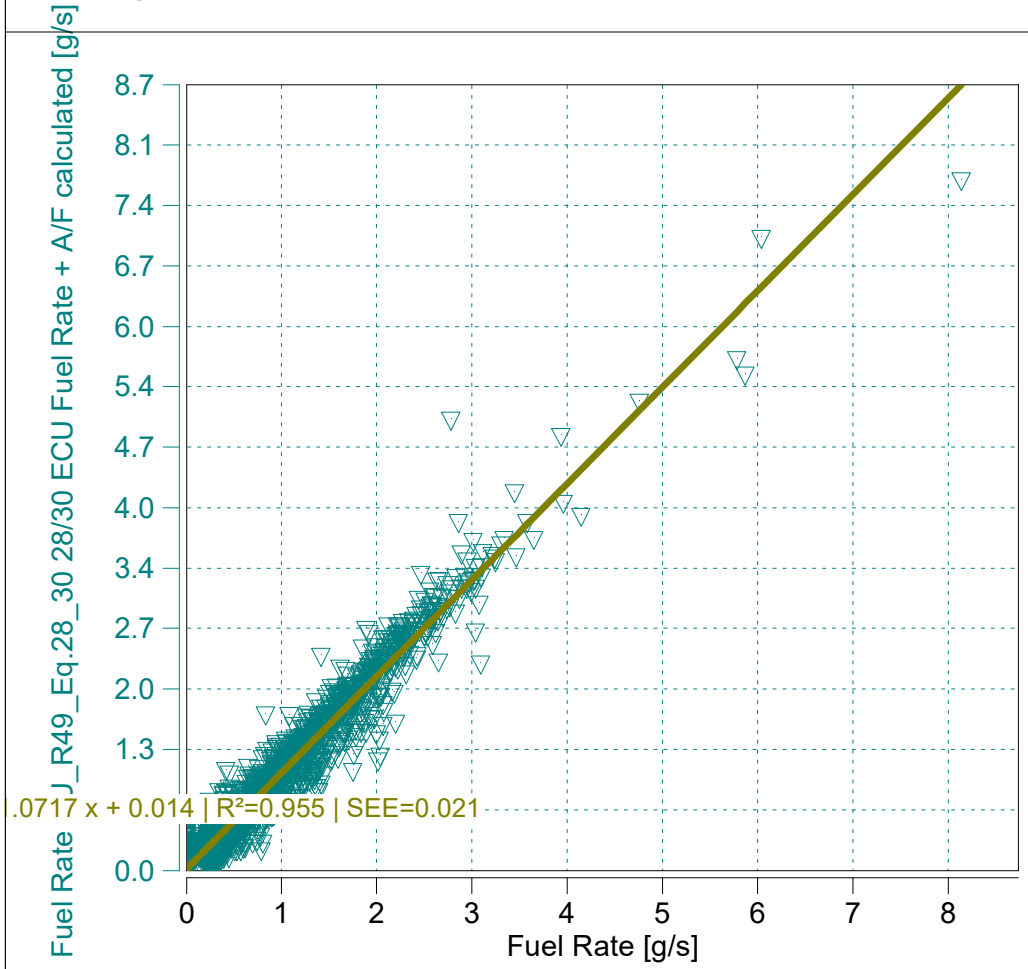
Vehicle: X253 / PEMS
Engine: /
NOx Ambient Condition Corr.: 7 - CFR40 §1065.670
Dry / Wet Corr.: 2 - CFR40 §86.1342-90

Case: X253-3303

Page: Fuel Rate ECU vs. Calculated

'X253-3303 LA City Default'
Start Date: 02/06/2020
Start Time: 11:51:00.0

AVL
Concerto M.O.V.E, 2019



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

y = 1.0717 x + 0.014 | R²=0.955 | SEE=0.021
m = 1.07 (0.9 - 1.1 recommended)
R² = 0.95 (min 0.9 mandatory)

Data from - to [% of Maximum]

0 | 100

Concerto Version: 503 Build 82, Serial Number: 1604
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