ATDS Emission Lab Test Report

for Exhaust Emission Test Procedures according

Date:	11/17/2021	**Start Time:**	9:12:47
Test Number:	ONT3_002492	**End Time:**	11:39:17
Test Vehicle:	3182_FCRXT03.05PV-349		
Test Legislation:	EPA1066		
Test Cycle:	FTP75		
Test Purpose:	Certification		
Test Cell:	iGEM-V-TC1		
Order Number:	3182		
Remark:	TEST #3 AS RECEIVED		

QUALITY ASSURANCE

INSPECTED BY: REDACTED

DATE: 2021-11-18

COMMENTS: OK

General Data

Test Number	*ONT3_002492*		
Test Name	*FTP75*		
Test Cell	*iGEM-V-TC1*		
Test Type	*FTP75*		
Legislation	*EPA1066*		
Requirements (Bag)	*CERTIFICATION*		
Requirements (Modal)	*CERTIFICATION*		
Date	*11/17/2021*	CH_4 Response Factor	*1.186*
Test Start	*9:12:47*	Odometer Position [mi]	*107896*
Start Time Cycle	*2021-11-17 10|20-00-(000)*	Delay Time Method	
Test End	*11:39:17*		
Operator	**REDACTED**	Air Condition	*OFF*
Driver		Particle Measurement	USUAL
Shifttable	*Auto*		
Flow Stream	*ModalDirty*		
Calibrated Ranges	*autorange*		
Remark	*TEST #3 AS RECEIVED*		

Vehicle Data *3182_FCRXT03.05PV-349*

Manufacturer	*1500*	Displacement	*3.0L*
Vehicle Model	**REDACTED**	Engine Family	*FCRXT03.05PV*
Order Number	*3182*	Manufacturer	*RAM*
Test Group	*3182_FCRXT03.05PV-349*	Transmission	*Automatic*
Evaporative Family		Engine Code	

Dyno Data *3182*

Dyno Type	*SVOR*	Inertia [lb]	*5500.00*
	A [lbf]	B [lbf/mph]	C [lbf/mph2]
Street Load	*41.680*	*0.08690*	*0.036750*
Road Load	*-2.300*	*0.34300*	*0.032700*

Fuel Data *Diesel-FL0821BE10*

Fuel Type	*DIESEL*	Fuel Temperature [°C]	*15.00*
Fuel Analyze Date		Fuel Density [kg/l]	*0.8550*
Fuel Manufacturer		Net Heat. Val. [BTU/lb]	*18295*
Fuel Tank Number		Carb. Weight Frac.	*0.8650*
Fuel Charge		HC Ratio	*1.8742*
Remarks:		OC Ratio	*-1.0000*

Weather Limit Data

Temp Min [deg F]	*68.00*	Dew Point Max [deg F]	*100.00*
Temp Max [deg F]	*86.00*	Pressure Min [mbar]	*800.0*
Dew Point Min [deg F]	*15.01*	Pressure Max [mbar]	*1100.0*

Fan Speed Data *RoadSpeed*

F1 [%]	F2 [%/mph]	F3 [%/mph2]
5	0.745999992	0.0031

Test Data	FTP75	Operator	**REDACTED**	Speed Table		Date:	11/17/2021
Test Number	ONT3_002492	Driver		Shift Table Auto		Cold Start	

Vehicle	**REDACTED**	**Dyno**		**Fuel**		**Test Timing**	
Vehicle #	REDACTED	Inertia [lb]	5500.00	Diesel-FL0821BE10		Start Time	9:12:47
		A [lbf]	-2.300	Fuel type	DIESEL	End Time	11:39:17
Model	1500	B [lbf/mph]	0.34300	Density	0.8550		
Year	2015	C [lbf/mph2]	0.032700	NHV	18295	Soak Time	626.8
Displacement:	3.0L			CWF	0.8650		
Engine Family	FCRXT03.05PV						
Trans	Automatic	Flow Stream	ModalDirty				
Odometer [mile]	107896	Remark	TEST #3 AS RECEIVED				

Bag Analysis

PHASE 1	THC [ppmC]	CO [ppm]	CO_2 [%]	NO_X [ppm]	N2O [ppm]	CH_4 [ppm]	NMHC [ppm]				
Range	100	500	4	30		30		Temp. [°F]	79.54	Volume [scf]	3172
Zero Read	0.00	0.0	0.0	0.0		0.0		Press. [inHg]	29.03	D.F.	12.86
Span Read	93.39	467.60	3.719	27.870		27.700		RH [%]	36.35	Ph. Start [s]	0.1
Sample	23.94	52.25	0.985	3.968		4.588	18.497	AH [g/kg]	8.019	Ph. End [s]	505.6
Mass.	1.249	5.504	1630.257	0.631		0.277	0.958	Dist. [mi]	3.61	Ph. Length [s]	506.7
Mass per Dist.	0.3462	1.5252	451.729	0.1748		0.0767	0.2655	NO_X Corr.	0.9187	Bag An. Del	1607
								Dr. Viola.	0	Vio. Durat. [s]	0.0
								Crank [s]	0.60	FE [mile/gal]	22.4
PSS Massflow Particles [g/h]	0.0733		PSS Mass per Dist. [g/mile]				0.0029				

PHASE 2	THC [ppmC1]	CO [ppm]	CO_2 [%]	NO_X [ppm]	N2O [ppm]	CH_4 [ppm]	NMHC [ppm]				
Range	100	50	1	30		30		Temp. [°F]	78.81	Volume [scf]	4435
Zero Value	0.00	0.0	0.0	0.0		0.0		Press. [in-Hg]	29.03	D.F.	18.49
Span Value	93.39	46.54	0.933	27.910		27.690		RH [%]	37.34	Ph. Start [s]	505.7
Sample	7.74	0.37	0.674	0.071		2.137	5.208	AH [g/kg]	8.043	Ph. End [s]	1375.2
Mass.	0.565	0.054	1560.314	0.016		0.180	0.377	Dist. [mi]	3.89	Ph. Length [s]	868.6
Mass per Dist.	0.1454	0.0139	401.195	0.0041		0.0464	0.0970	NO_X Corr.	0.9193	Bag An. Del	1289
								Dr. Viola.	0	Vio. Durat. [s]	0.0
										FE [mile/gal]	25.3
PSS Massflow Particles [g/h]	0.0053		PSS Mass per Dist. [g/mile]				0.0003				

PHASE 3	THC [ppmC1]	CO [ppm]	CO_2 [%]	NO_X [ppm]	N2O [ppm]	CH_4 [ppm]	NMHC [ppm]				
Range	100	50	1	30		30		Temp. [°F]	77.65	Volume [scf]	3165
Zero Value	0	0.0	0.0	-0.1		0.0		Press. [in-Hg]	29.03	D.F.	15.58
Span Value	93.39	46.56	0.933	27.910		27.700		RH [%]	39.08	Ph. Start [s]	1999.2
Sample	8	9.44	0.808	1.152		3.041	4.176	AH [g/kg]	8.105	Ph. End [s]	2506.0
Mass.	0.405	0.992	1333.500	0.183		0.183	0.216	Dist. [mi]	3.61	Ph. Length [s]	507.0
Mass per Dist.	0.1122	0.2745	369.120	0.0507		0.0507	0.0597	NO_X Corr.	0.9211	Bag An. Del	1716
								Dr. Viola.	0	Vio. Durat. [s]	0.0
								Crank [s]	1.90	FE [mile/gal]	27.5
PSS Massflow Particles [g/h]	0.0096		PSS Mass per Dist. [g/mile]				0.0004				

Total Result (weighted)

Weighted	THC [g/mile]	CO [g/mile]	CO_2 [g/mile]	NO_X [g/mile]	N2O [g/mile]	CH_4 [g/mile]	NMHC [g/mile]	$HC+NO_X$ [g/mile]	***Fuel Economy***
Mass per Dist.	0.1778	0.3982	402.85	0.0522		0.0538	0.1216	0.23000	mile/gal 25.19
Mass per Dist. (rounded)	0.1778	0.3982	402.8	0.0522		0.0538	0.1216	0.2300	
Mass per Dist. - Particulate PSS	0.0009								

Test Data	FTP75	Operator	**REDACTED**
Test Number	ONT3_002492	Driver	Auto

Correlation Bag and Modal (diluted) for Mass per Distance

		THC [g/mile]	CO [g/mile]	CO_2 [g/mile]	NO_X [g/mile]	CH_4 [g/mile]	N_2O [g/mile]	NMHC [g/mile]
Bag	Phase 1	*0.0000*	*1.5252*	*451.7294*	*0.1748*	*0.0767*		
Modal	Phase 1	*0.0000*	*1.4653*	*443.6379*	*0.1653*	*0.0676*		
Percent	*Phase 1*	*#DIV/0!*	*4.08*	*1.82*	*5.70*	*13.50*	*#DIV/0!*	*#DIV/0!*
Bag	Phase 2	*0.0000*	*0.0139*	*401.1953*	*0.0041*	*0.0464*		
Modal	Phase 2	*0.0000*	*0.0108*	*398.0975*	*0.0009*	*0.0407*		
Percent	*Phase 2*	*#DIV/0!*	*28.99*	*0.78*	*345.75*	*14.12*	*#DIV/0!*	*#DIV/0!*
Bag	Phase 3	*0.0000*	*0.2745*	*369.1195*	*0.0507*	*0.0507*		
Modal	Phase 3	*0.0000*	*0.1942*	*362.1828*	*0.0487*	*0.0576*		
Percent	*Phase 3*	*#DIV/0!*	*41.40*	*1.92*	*4.11*	*-12.03*	*#DIV/0!*	*#DIV/0!*
Total								
Bag		*0.0000*	*0.5895*	*407.1801*	*0.0747*	*0.0538*		*0.0576*
Modal		*0.0000*	*0.5429*	*401.2120*	*0.0699*	*0.0549*		
Percent		*#DIV/0!*	*8.60*	*1.49*	*6.89*	*-1.94*	*#DIV/0!*	*#DIV/0!*

Total Result (weighted)

Weighted	THC [g/mile]	CO [g/mile]	CO_2 [g/mile]	NO_X [g/mile]	CH_4 [g/mile]	N_2O [g/mile]	NMHC [g/mile]	$HC+NO_X$ [g/mile]	***Fuel Economy***
Mass per Dist.	*0.0000*	*0.40*	*402.85*	*0.05*	*0.05*			0.052	mile/gal *25.2*

Total Result

actual	THC [g/mile]	CO [g/mile]	CO2 [g/mile]	NOX [g/mile]	CH4 [g/mile]	N2O [g/mile]	NMHC [g/mile]	$HC+NO_X$ [g/mile]	***Fuel Economy***
Mass per Dist.	*0.0000*	*0.59*	*407.18*	*0.07*	*0.06*			0.075	mile/gal *24.9*
									Dist. [mi] *11.11*

CVS Data		Cycle data		Environmental Data	
Dilution Factor (Bag)	*12.86*	Vio. Dur.[s]	0.0	Rel. Hum.[%]	*36.35*
Dilution Factor (Modal)	*13.08*	Number	0	Ab. Hum.[g/lbs]	*8.02*
CVS Volume[scf]	*3172.29*	Act. Dist.[mi]	*3.61*	Pressure[inHg]	*29.03*
CVS Flow[scfm]	*375.64*			Temp.[°F]	*79.54*
CVS Inlet Pressure	*28.94*			Temp. Min.[°F]	*77.54*
CVS Inlet Temp.[°F]	*100.47*			Temp. Max.[°F]	*80.96*
CVS Inlet Temp. Min.[°F]	*95.81*			NO_X Corr. F	*0.9187*
CVS Inlet Temp. Max.[°F]	*107.15*				

Bag

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH_4[ppm]	NMHC[ppm]
Range	*100*	*500*	*4*	*30*		*30*	
Sniff	*0.000*	*52.496*	*1.031*	*4.075*		*0.685*	
Zero Read	*0.002*	*0.046*	*0.000*	*-0.005*		*0.000*	
Zero Offset[%]	*0.074*	*0.009*	*0.003*	*0.000*		*0.002*	
Span Read	*93.390*	*467.600*	*3.719*	*27.870*		*27.700*	
Span Offset[%]	*0.101*	*-0.030*	*-0.048*	*-0.211*		*-0.411*	
Sample	*0.000*	*52.841*	*1.034*	*4.085*		*6.867*	
Std. Dev.	*0.000*						
Ambient	*4.382*	*0.644*	*0.054*	*0.127*		*2.471*	
Std. Dev.	*0.000*						
Corrected	*23.938*	*52.247*	*0.985*	*3.968*		*4.588*	*18.497*
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH_4[g]	NMHC[g]
Uncorrected	*1.2493*	5.5043	1630.257	0.6307		0.2768	0.9582
Corrected	*1.2493*	5.5043	1630.257	0.6307		0.2768	0.9582
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH_4[g/mile]	NMHC[g/mile]
Corrected for Lost Sample Mass	*0.3462*	*1.5252*	*451.729*	*0.1748*		*0.0767*	*0.2655*

Fuel Consumption			
Fuel Consumption[g]	*522.530*	Fuel Consumption[l/100km]	*10.522*
Fuel Consumption[l]	*0.611*	**Fuel Economy**[mile/gal]	*22.354*

Diluted Modal

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH4[ppm]
Sample	-	*50.792*	*1.017*	*3.875*		*6.324*
Ambient (bag)	*4.382*	*0.644*	*0.054*	*0.127*		*2.471*
Corrected	*23.938*	*50.197*	*0.967*	*3.758*		*4.042*
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH4[g]
Uncorrected	*1.249*	*5.288*	*1601.055*	*0.597*		*0.244*
Corrected	*1.249*	*5.288*	*1601.055*	*0.597*		*0.244*
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH4[g/mile]
Corrected	*0.346*	*1.465*	*443.638*	*0.165*		

Fuel Consumption			
Fuel Consumption[g]	*522.530*	Fuel Consumption[l/100km]	*10.333*
Fuel Consumption[l]	*0.611*	**Fuel Economy**[mile/gal]	*22.763*

Correlation for Mass per distance

	THC[%]	CO[%]	CO_2[%]	NO_X[%]	N_2O[%]	CH4[%]
Bag to Diluted	0.00	4.08	1.82	5.70	#DIV/0!	#DIV/0!

CVS Data		Cycle data		Environmental Data	
Dilution Factor (Bag)	*18.49*	Vio. Dur.[s]	0.0	Rel. Hum.[%]	*37.34*
Dilution Factor (Modal)	*18.63*	Number	0	Ab. Hum.[g/lbs]	*8.04*
CVS Volume[scf]	*4435.08*	Act. Dist.[mi]	*3.89*	Pressure[inHg]	*29.03*
CVS Flow[scfm]	*306.36*			Temp.[°F]	*78.81*
CVS Inlet Pressure	*28.96*			Temp. Min.[°F]	*77.36*
CVS Inlet Temp.[°F]	*105.22*			Temp. Max.[°F]	*80.42*
CVS Inlet Temp. Min.[°F]	*100.31*			NO_X Corr. F	*0.9193*
CVS Inlet Temp. Max.[°F]	*110.57*				

Bag

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH_4[ppm]	NMHC[ppm]
Range	*100*	*50*	*1*	*30*		*30*	
Sniff	*0.000*	*0.782*	*0.727*	*0.151*		*3.363*	
Zero Read	*0.002*	*-0.002*	*0.000*	*-0.011*		*0.000*	
Zero Offset[%]	*0.074*	*0.000*	*0.000*	*0.015*		*0.006*	
Span Read	*93.390*	*46.540*	*0.933*	*27.910*		*27.690*	
Span Offset[%]	*0.101*	*-0.147*	*-0.220*	*-0.143*		*-0.500*	
Sample	*0.000*	*0.886*	*0.724*	*0.155*		*4.968*	
Std. Dev.	*0.000*						
Ambient	*4.351*	*0.549*	*0.053*	*0.089*		*2.993*	
Std. Dev.	*0.000*						
Corrected	*7.743*	*0.367*	*0.674*	*0.071*		*2.137*	*5.208*
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH_4[g]	NMHC[g]
Uncorrected	*0.5655*	0.0541	1560.314	0.0158		0.1805	0.3772
Corrected	*0.5655*	0.0541	1560.314	0.0158		0.1805	0.3772
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH_4[g/mile]	NMHC[g/mile]
Corrected for Lost Sample Mass	*0.1454*	*0.0139*	*401.195*	*0.0041*		*0.0464*	*0.0970*
Fuel Consumption							
Fuel Consumption[g]	*496.870*	Fuel Consumption[l/100km]		*9.285*			
Fuel Consumption[l]	*0.581*	**Fuel Economy**[mile/gal]		*25.333*			

Diluted Modal

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH4[ppm]
Sample	-	*0.804*	*0.719*	*0.100*		*4.705*
Ambient (bag)	*4.351*	*0.549*	*0.053*	*0.089*		*2.993*
Corrected	*7.743*	*0.284*	*0.668*	*0.016*		*1.873*
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH4[g]
Uncorrected	*0.565*	*0.042*	*1548.266*	*0.004*		*0.158*
Corrected	*0.565*	*0.042*	*1548.266*	*0.004*		*0.158*
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH4[g/mile]
Corrected	*0.145*	*0.011*	*398.098*	*0.001*		*0.041*
Fuel Consumption						
Fuel Consumption[g]	*493.032*	Fuel Consumption[l/100km]		*9.213*		
Fuel Consumption[l]	*0.577*	**Fuel Economy**[mile/gal]		*25.531*		

Correlation for Mass per distance

	THC[%]	CO[%]	CO_2[%]	NO_X[%]	N_2O[%]	CH4[%]
Bag to Diluted	0.00	28.99	0.78	345.75	#DIV/0!	14.12

CVS Data		Cycle data		Environmental Data	
Dilution Factor (Bag)	15.58	Vio. Dur.[s]	0.0	Rel. Hum.[%]	39.08
Dilution Factor (Modal)	15.86	Number	0	Ab. Hum.[g/lbs]	8.10
CVS Volume[scf]	3164.54	Act. Dist.[mi]	3.61	Pressure[inHg]	29.03
CVS Flow[scfm]	374.50			Temp.[°F]	77.65
CVS Inlet Pressure	28.93			Temp. Min.[°F]	74.12
CVS Inlet Temp.[°F]	103.55			Temp. Max.[°F]	80.78
CVS Inlet Temp. Min.[°F]	98.33			NO_X Corr. F	0.9211
CVS Inlet Temp. Max.[°F]	111.29				

Bag

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH_4[ppm]	NMHC[ppm]
Range	100	50	1	30		30	
Sniff	0.000	9.745	0.856	1.239		3.329	
Zero Read	0.002	0.025	0.000	-0.064		0.000	
Zero Offset[%]	0.074	0.163	0.018	0.000		0.002	
Span Read	93.390	46.560	0.933	27.910		27.700	
Span Offset[%]	0.101	0.023	-0.068	-0.147		-0.467	
Sample	0.000	9.911	0.858	1.201		5.342	
Std. Dev.	0.000						
Ambient	4.431	0.506	0.054	0.053		2.459	
Std. Dev.	0.000						
Corrected	7.782	9.438	0.808	1.152		3.041	4.176
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH_4[g]	NMHC[g]
Uncorrected	0.4052	0.9918	1333.500	0.1831		0.1830	0.2158
Corrected	0.4052	0.9918	1333.500	0.1831		0.1830	0.2158
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH_4[g/mile]	NMHC[g/mile]
Corrected for Lost Sample Mass	0.1122	0.2745	369.120	0.0507		0.0507	0.0597
Fuel Consumption							
Fuel Consumption[g]	425.037	Fuel Consumption[l/100km]		8.550			
Fuel Consumption[l]	0.497	**Fuel Economy**[mile/gal]		27.509			

Diluted Modal

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	N_2O[ppm]	CH4[ppm]
Sample	-	7.148	0.843	1.158		5.761
Ambient (bag)	4.431	0.506	0.054	0.053		2.459
Corrected	0.000	6.674	0.792	1.109		3.457
Mass	THC[g]	CO[g]	CO_2[g]	NO_X[g]	N_2O[g]	CH4[g]
Uncorrected	0.405	0.701	1308.440	0.176		0.208
Corrected	0.405	0.701	1308.440	0.176		0.208
Mass per distance	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	N_2O[g/mile]	CH4[g/mile]
Corrected	0.112	0.194	362.183	0.049		0.058
Fuel Consumption						
Fuel Consumption[g]	416.921	Fuel Consumption[l/100km]		8.387		
Fuel Consumption[l]	0.488	**Fuel Economy**[mile/gal]		28.045		

Correlation for Mass per distance

	THC[%]	CO[%]	CO_2[%]	NO_X[%]	N_2O[%]	CH4[%]
Bag to Diluted	0.00	41.40	1.92	4.11	#DIV/0!	-12.03

Test Data: FTP75 Operator: **REDACTED** Date: 11/17/2021
Test Number: ONT3_002492 Driver:

Driver Violations

		Phase1	Phase2	Phase3
Number of Violations	-	0	0	0
Duration of Violations	(s)	0.0	0.0	0.0

Number	Phase	Violation Begin (s)	Violation End (s)	Violation Duration (s)	Scheduled Speed (mph)	Max Speed Deviation (mph)
No Violations In This Test				0.0		

Test Record #: ONT3_002492

Phase 1

Analyzer Adjust

	Range Number	Range	Zero Value	Zero Set Value	Zero Offset	Span Value	Span Set Value	Span Offset	ReZero Value
		ppm	ppm	ppm	%	ppm	ppm	%	ppm
CO_2 (%)	2	4	0.00	0.00	0.00	3.72	3.72	-0.03	0.00
CO	2	500	0.05	0.00	0.01	467.60	467.60	0.00	0.04
NO_X	1	30	-0.01	0.00	-0.02	27.87	27.90	-0.10	0.01
THC (ppmC1)	2	30	0.00	0.00	0.01	28.02	28.02	0.00	0.19
CH_4	1	30	0.00	0.00	0.00	27.70	27.70	0.00	0.03

Analyzer Check

	Range Number	Range	Zero Value	Zero Set Value	Zero Drift	Span Value	Span Set Value	Span Drift
		ppm	ppm	ppm	%	ppm	ppm	%
CO_2 (%)	2	4	0.00	0.00	-0.01	3.72	3.72	-0.02
CO	2	500	0.05	0.00	0.00	467.45	467.60	-0.03
NO_X	1	30	0.00	0.00	-0.02	27.84	27.90	-0.11
THC (ppmC1)	2	30	0.21	0.00	0.07	28.20	28.02	0.60
CH_4	1	30	0.00	0.00	-0.09	27.58	27.70	-0.41

Phase 2

Analyzer Adjust

	Range Number	Range	Zero Value	Zero Set Value	Zero Offset	Span Value	Span Set Value	Span Offset	ReZero Value
		ppm	ppm	ppm	%	ppm	ppm	%	ppm
CO_2 (%)	1	1	0.00	0.00	-0.02	0.93	0.93	0.00	0.00
CO	1	50	0.00	0.00	0.00	46.54	46.54	0.00	0.00
NO_X	1	30	-0.01	0.00	-0.04	27.91	27.90	0.03	0.01
THC (ppmC1)	2	100	0.00	0.00	0.00	93.39	93.39	0.00	0.02
CH_4	1	30	0.00	0.00	0.00	27.69	27.70	-0.03	0.03

Analyzer Check

	Range Number	Range	Zero Value	Zero Set Value	Zero Drift	Span Value	Span Set Value	Span Drift
		ppm	ppm	ppm	%	ppm	ppm	%
CO_2 (%)	1	1	0.00	0.00	0.00	0.93	0.93	-0.22
CO	1	50	0.00	0.00	0.00	46.47	46.54	-0.15
NO_X	1	30	0.00	0.00	-0.03	27.86	27.90	-0.18
THC (ppmC1)	2	100	0.04	0.00	0.02	93.25	93.39	-0.14
CH_4	1	30	0.00	0.00	-0.08	27.55	27.70	-0.47

Phase 3

Analyzer Adjust

	Range Number	Range	Zero Value	Zero Set Value	Zero Offset	Span Value	Span Set Value	Span Offset	ReZero Value
		ppm	ppm	ppm	%	ppm	ppm	%	ppm
CO_2 (%)	1	1	0.00	0.00	0.00	0.93	0.93	0.00	0.00
CO	1	50	0.03	0.00	0.05	46.56	46.54	0.04	0.06
NO_X	1	30	-0.06	0.00	-0.21	27.91	27.90	0.03	0.01
THC (ppmC1)	2			0.00					
CH_4	1	30	0.00	0.00	0.00	27.70	27.70	0.00	0.02

Analyzer Check

	Range Number	Range	Zero Value	Zero Set Value	Zero Drift	Span Value	Span Set Value	Span Drift
		ppm	ppm	ppm	%	ppm	ppm	%
CO_2 (%)	1	1	0.00	0.00	0.00	0.93	0.93	-0.07
CO	1	50	0.08	0.00	0.05	46.55	46.54	-0.02
NO_X	1	30	0.00	0.00	-0.02	27.86	27.90	-0.18
THC (ppmC1)	2			0.00				
CH_4	1	30	0.00	0.00	-0.08	27.56	27.70	-0.47

Operator	REDACTED	Driver	REDACTED	Customer :	3182
Test Purpose:	Certification	Legislation:	*EPA1066*	Requirements (Bag)	*CERTIFICATION*
Conditioning:		Emission Standards	Default		

Test Intent: *TEST #3 AS RECEIVED*

VIN REDACTED

DYNO Data

	Road Load	Street Load
Inertia [lb]	*5500.00*	
A [N]	*-10.231*	*185.402*
B [N/km/h]	*0.94805*	*0.24019*
C [N/km2/h2]	*0.056161*	*0.063117*

	Phase1	Phase2	Phase3	Phase4	Weighted
Distance (m)					
Target	5779.15	6210.96	5779.15		17769.26
Driven	5807.12	6258.23	5813.08		17878.43
Distance Rating (%)	0.4841	0.7611	0.5870		0.6144
Cycle Energy (MJ)					
Target	4.41	3.93	4.41		8.34
Driven	4.43	4.05	4.45		8.49
Distance per Energy Cycle (m/MJ)					
Target	4.41	3.93	4.41		1437.73
Driven	4.43	4.05	4.45		1421.11
Road Load Work Fraction					
Target	0.4355	0.2924	0.4355		0.3681
Driven	0.4365	0.2855	0.4263		0.3614
Inertial Work (MJ)					
Target	2.49	2.78	2.49		5.27
Driven	2.50	2.90	2.55		5.42
Inertial Work Fraction					
Target	0.5645	0.7076	0.5645		0.6319
Driven	0.5635	0.7145	0.5737		0.6386
Inertial Work Rating (%)	0.2748	4.1525	2.4842		2.9156
Absolute Speed Change (m/s)					
Target	204.88	340.91	204.88		545.79
Driven	204.62	348.77	208.43		555.56
Absolute Speed Change Rating (%)	-0.1291	2.3053	1.7349		1.7903
Energy Rating (%)	0.4499	3.1391	0.8359		1.4122
Energy Economy Rating (%)	-0.0341	2.3056	0.2468		1.1563

Operator **REDACTED**	Driver **REDACTED**	Customer :	3182
Test Purpose: Certification	Legislation *EPA1066*	Requirements (Bag)	*CERTIFICATION*
Conditioning:	Emission Default		

Overall Status: Passed

Phase 1

Test Record #: ONT3_002492

Vehicle ID: **REDACTED**

		Average	Min	Max	Low Limit	Upper Limit	Status
General							
Cell Temperature	(°C)	26.41	25.30	27.20	20.00	30.00	Passed
Barometer	(mbar)	983.23	983.10	983.30	800.00	1100.00	Passed
Dew Point Temperature	(°C)	10.28	9.90	10.50	-9.44	37.78	Passed
Specific Humidity Test Cell	(gr/lb)	56.13	54.52	57.09	38.50	87.50	Passed
CVS Inlet Temperature	(°C)	38.04	35.45	41.75	20.00	48.89	
Dilution Air Temperature	(°C)	35.00	34.55	35.35	15.00	52.00	Passed
Weighted Test Dilution Factor	(-)	15.83			7.00	20.00	Passed
Dilution Factor	(-)	12.86			7.00	20.00	Passed
Fuel Economy	(mpg)	22.35			10.00	50.00	Passed
Zero Offset	(%)	-	-0.02	0.01	-2.00	2.00	Passed
Span Offset	(%)	-	-0.10	0.00	-2.00	2.00	Passed
Zero Check Drift	(%)	-	-0.09	0.07	-2.00	2.00	Passed
Span Check Drift	(%)	-	-0.41	0.60	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2)	(%)	n.a.	-	-	-10.00	10.00	Passed
Inertial Work Rating	(%)	2.92			-3.00	3.00	NA
Absolute Speed Change Rating	(%)	1.79			-1.68	1.68	NA
Energy Economy Rating	(%)	1.16			-1.44	1.44	NA
Ambient Concentrations							
HC	(ppm)	4.38			2.00	10.00	Passed
NO_x	(ppm)	0.13			-0.10	10.00	Passed
CO	(ppm)	0.64			0.00	15.00	Passed
CO_2	(ppm)	536.47			300.00	650.00	Passed
CH_4	(ppm)	2.47			1.30	10.00	Passed
N2O	(ppm)				0.20	0.50	
PM Filter Parameters							
Particulate Filter Temperature	(°C)	50.40	46.15	52.75	42.00	60.00	Passed
Filter Face Velocity	(cm/s)	90.18			0.00	100.00	Passed
Filter Face Velocity Points >100cm/s	(%)					5.00	
Secondary Dilution Air Temperature	(°F)				20.0	30.0	
Particulate Sample Proportionality							
Particulate Result Validation	(ug)	53.00			1.00	600.00	Passed
Test-Cycle Specific Validations							
Phase Distance	(miles)	3.61			3.52	3.66	Passed
Sample Phase Time	(s)	506.7			503.5	507.5	Passed
Duration Phase 1	(s)	505.50					NA
Crank Time Phase1	(s)	0.60			0	5	Passed
Crank Time Phase3	(s)	1.90			0	5	Passed
Crank Counts		1			0	1	Passed
Shutdown Time Phase 1					0	5	
Shutdown Time Phase 3					0	5	
Hot Soak Time	(s)	626.80			540.00	660.00	Passed
Test Hold Counts		0					Passed
Duration Test Hold	(s)	0.00			0	60	Passed

Operator	REDACTED	Driver	REDACTED	Customer :	3182
Test Purpose:	Certification	Legislation	*EPA1066*	Requirements (Bag)	*CERTIFICATION*
Conditioning:		Emission	Default		

Phase 2 Overall Status: Passed

		Average	Min	Max	Low Limit	Upper Limit	Status
General							
Cell Temperature	(°C)	26.01	25.20	26.90	20.00	30.00	Passed
Barometer	(mbar)	983.14	983.00	983.20	800.00	1100.00	Passed
Dew Point Temperature	(°C)	10.33	9.90	10.70	-9.44	37.78	Passed
Specific Humidity Test Cell	(gr/lb)	56.30	54.49	57.83	38.50	87.50	Passed
Dilution Air Temperature	(°C)	35.87	35.05	36.25	15.00	52.00	Passed
Dilution Factor	(-)	18.49			7.00	20.00	Passed
Fuel Economy	(mpg)	25.33			10.00	50.00	Passed
Zero Offset	(%)	-	-0.04	0.00	-2.00	2.00	Passed
Span Offset	(%)	-	-0.03	0.03	-2.00	2.00	Passed
Zero Check Drift	(%)	-	-0.08	0.02	-2.00	2.00	Passed
Span Check Drift	(%)	-	-0.47	-0.14	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2)	(%)	n.a.			-10.00	10.00	Passed
Ambient Concentrations							
HC	(ppm)	4.35			2.00	10.00	Passed
NO_x	(ppm)	0.09			-0.10	10.00	Passed
CO	(ppm)	0.55			0.00	15.00	Passed
CO_2	(ppm)	530.07			300.00	650.00	Passed
CH_4	(ppm)	2.99			1.30	10.00	Passed
N2O	(ppm)				0.20	0.50	
PM Filter Parameters							
Particulate Filter Temperature	(°C)	50.34	46.15	52.75	42.00	60.00	Passed
Filter Face Velocity	(cm/s)	90.23			0.00	100.00	Passed
Particulate Result Validation	(ug)	8.00			2.00	600.00	Passed
Test-Cycle Specific Validations							
Phase Distance	(miles)	3.89			3.78	3.94	Passed
Sample Phase Time	(s)	868.6			867.5	871.5	Passed
Duration Phase 2	(s)	869.50					NA
Crank Time Phase1	(s)	0.6000			0	5	Passed
Crank Time Phase3	(s)	1.90			0	5	Passed
Crank Counts		1			0	1	Passed
Shutdown Time Phase 1					0	5	
Shutdown Time Phase 2					0	5	
Hot Soak Time	(s)	626.80			540.00	660.00	Passed
Test Hold Counts		0					Passed
Duration Test Hold	(s)	0.00			0	60	Passed

Operator	REDACTED	Driver	REDACTED	Customer :	3182
Test Purpose:	Certification	Legislatio	*EPA1066*	Requirements (Bag)	*CERTIFICATION*
Conditioning:		Emission	Default		

Phase 3 Overall Status: Passed

		Average	Min	Max	Low Limit	Upper Limit	Status
General							
Cell Temperature	(°C)	25.36	23.40	27.10	20.00	30.00	Passed
Barometer	(mbar)	982.92	982.80	983.00	800.00	1100.00	Passed
Dew Point Temperature	(°C)	10.40	9.70	10.90	-9.44	37.78	Passed
Specific Humidity Test Cell	(gr/lb)	56.73	53.84	58.76	38.50	87.50	Passed
Dilution Air Temperature	(°C)	35.44	35.05	36.35	15.00	52.00	Passed
Dilution Factor	(-)	15.58			7.00	20.00	Passed
Fuel Economy	(mpg)	27.51			10.00	50.00	Passed
Zero Offset	(%)	-	-0.21	0.05	-2.00	2.00	Passed
Span Offset	(%)	-	0.00	0.04	-2.00	2.00	Passed
Zero Check Drift	(%)	-	-0.08	0.05	-2.00	2.00	Passed
Span Check Drift	(%)	-	-0.47	-0.02	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2)	(%)	n.a.	-	-	-10.00	10.00	Passed
Ambient Concentrations							
HC	(ppm)	4.43			2.00	10.00	Passed
NO_x	(ppm)	0.05			-0.10	10.00	Passed
CO	(ppm)	0.51			0.00	15.00	Passed
CO_2	(ppm)	543.59			300.00	650.00	Passed
CH_4	(ppm)	2.46			1.30	10.00	Passed
N2O	(ppm)				0.20	0.50	
PM Filter Parameters							
Particulate Filter Temperature	(°C)	50.12	46.15	52.75	42.00	60.00	Passed
Filter Face Velocity	(cm/s)	90.08			0.00	100.00	Passed
Particulate Result Validation	(ug)	7.00			2.00	600.00	Passed
Test-Cycle Specific Validations							
Phase Distance	(miles)	3.61			3.52	3.66	Passed
Sample Phase Time	(s)	507.0			504.8	508.8	Passed
Duration Phase 3	(s)	506.80					NA
Crank Time Phase1	(s)	0.6000			0	5	Passed
Crank Time Phase3	(s)	1.90			0	5	Passed
Crank Counts		1			0	1	Passed
Shutdown Time Phase 1					0	5	
Shutdown Time Phase 3					0	5	
Hot Soak Time	(s)	626.80			540.00	660.00	Passed
Test Hold Counts		0					Passed
Duration Test Hold	(s)	0.00			0	60	Passed