SEMA Emission Lab Test Report

for Exhaust Emission Test Procedures according

Date:	1/14/2020	**Time:**	22:00:53
Test Legislation:	EPA		
Test Cycle:	FTP74		
Test Purpose:	Preconditioning		
Test Name:	UDDS		
Test Cell:	iGEMV_TC1		
Remark:	Precondition Derive Baseline		

CONFIDENTIAL

Date: 1/14/20

Accept_____ Reject_____

Signature_____

TestInformation

General Data

Test Number	*UDDS_20200114_10_TC1*		
Test Name	*UDDS*		
Test Cell	*iGEMV_TC1*		
Test Type	*UDDS*		
Legislation	*EPA*		
Requirements (Bag)	*SIMPLE*		
Date	*1/14/2020*	CH_4 Response Factor	
Test Start	*22:00:53*	Odometer Start[mile]	*78742*
Start Time Cycle	*2020-01-14 22|02-59-(000)*	Delay Time Method	*Default*
Test End	*22:43:09*		
Operator	*Art Herrera*	Air Condition	*YES*
Driver	*Rene Acosta*	Particle Measurement	OFF
Shifttable	Auto		
Flow Stream	*PreCon*		
Calibrated Ranges	*autorange*		
Remark :	*Precondition Derive Baseline*		

Vehicle Data

Test Group	*Derive F-250*	Transmission	*Automatic*
Manufacturer	*Ford*	Drive Axle Weight[lb]	*0*
Model	*F-250*	Tank Position	
Model Year	*2011*	Tank Material	*Plastic*
VIN	*1FT7W2BT9BEA15523*	Tank Volume[gal]	*26.00*
License Plate	*HJHU73*	Evaporative Family	*N/A*
Order Number		Canister Volume[l]	*0.00*
Engine Family	*BFMXD06.761A*	Canister Working Capacity[g]	*0*
Engine Trim Level	*trimEng*	Tire Manufacturer	*CONTINENTAL*
Engine Code	*codeEng*	Tire Model	*CONTITRAC TR*
Displacement [l]	*6.700*	Tire Size	*275/70/18*
Number of Cylinders	*6*	Tire Pressure [psi]	*65*

Dyno Data

Dyno Type	*SREV*	A [lbf]	*61.4690*
Inertia [lb]	*9500.00*	B [lbf/mph]	*0.14073*
Simulation Coefficient N	*2*	C [lbf/mph2]	*0.049012*

Fuel Data *2007 Certification Diesel HD0521GP10*

Fuel Type	*DIESEL*	Fuel Temperature [°C]	*15.56*
Fuel Analyze Date		Fuel Density [kg/l]	*0.8542*
Fuel Manufacturer		Net Heat. Val. [BTU/lb]	*18325*
Fuel Tank Number		Carb. Weight Frac.	*0.8670*
Fuel Charge		HC Ratio	*1.8282*
Remarks:	*2007 Certification Diesel HD0521GP10*	OC Ratio	*0.0000*

Weather Limit Data

Test Data	UDDS	Operator	Art Herrera	Speed Table		Date:	
Test Number	UDDS_20200114_10_TC1	Driver	Rene Acosta	Shift Table	Auto	Cold Start	

Vehicle		**Dyno**		**Fuel**		**Test Timing**	
VIN	*1FT7W2BT9BEA15523*	Inertia [lb]	*9500.00*	2007 Certification Diesel HD0521GP10		Start Time	*22:00:53*
		A [lbf]	*61.469*	Fuel type	DIESEL	End Time	*22:43:09*
Model	F-250	B [lbf/mph]	*0.14073*	Density	*0.8542*		
Model Year	*2011*	C [lbf/mph2]	*0.049012*	NHV	18325	Soak Time	
Engine Family	BFMXD06.761A			CWF	*0.8670*		
Displacement [l]	*6.700*						
Transmission	*Automatic*						
Odometer Start [mile]	*78742*	Flow Stream	PreCon				
Odometer End [mile]	*78749*	Remark	Precondition Derive Baseline				

Bag Analysis

PHASE 1	THC [ppmC]	CO [ppm]	CO_2 [%]	NO_x [ppm]	CH_4 [ppm]	NMHC [ppm]				
Range	*0*						Temp. [°F]	76.13	Volume [scf]	
Zero Value	*0.00*						Press. [in-Hg]	29.24	D.F.	
Span Value	*0.00*						RH [%]	*44.60*	Ph. Start [s]	0.0
Sample	*0.00*						AH [g/kg]	*8.727*	Ph. End [s]	505.7
Mass.	*0.000*						Dist. [mi]	*3.58*	Ph. Length [s]	505.7
Mass per Dist.	*0.0000*						NO_x Corr. F	*0.94*	Bag An. Delay [s]	
							Dr. Viola.	*0*	Vio. Durat. [s]	0.0
							Crank [s]	*0.7*	FE [mile/gal]	
SPC Mass Particles [g]			SPC Mass per Dist. [g/mile]							

PHASE 2	THC [ppmC1]	CO [ppm]	CO_2 [%]	NO_x [ppm]	CH_4 [ppm]	NMHC [ppm]				
Range	*0*						Temp. [°F]	79.09	Volume [scf]	
Zero Value	*0.00*						Press. [in-Hg]	29.24	D.F.	
Span Value	*0.00*						RH [%]	*41.01*	Ph. Start [s]	505.7
Sample	*0.00*						AH [g/kg]	*8.652*	Ph. End [s]	1377.6
Mass.	*0.000*						Dist. [mi]	*3.87*	Ph. Length [s]	871.9
Mass per Dist.	*0.0000*						NO_x Corr. F	*0.94*	Bag An. Delay [s]	
							Dr. Viola.	*0*	Vio. Durat. [s]	0.0
									FE [mile/gal]	
SPC Mass Particles [g]			SPC Mass per Dist. [g/mile]							

Total Result

actual	THC [g/mile]	CO [g/mile]	CO2 [g/mile]	NOX [g/mile]	CH4 [g/mile]	NMOG [g/mile]	NMHC [g/mile]	NMHC+NO_x [g/mile]	*Fuel Economy*	
Mass per Dist.	0.0000					*0.0000*		0.000	mile/gal	
Mass per Dist. (rounded)	0.0000					*0.000*		0.000	Dist. [mi]	*7.45*
Mass per Dist. - Parti SPC [mg/mile]										

CONFIDENTIAL

Date: 4/14/20

Accept _____ Reject _____

Signature: _____

CVS Data	Cycle data		Environmental Data	
Dilution Factor (Bag)	Vio. Dur.[s]	0.0	Rel. Hum.[%]	*44.60*
Dilution Factor (Modal)	Number	0	Ab. Hum.[g/lbs]	*8.73*
CVS Volume[scf]	Act. Dist.[mi]	*3.58*	Pressure[inHg]	*29.24*
CVS Flow[scfm]			Temp.[°F]	*76.13*
CVS Inlet Pressure			Temp. Min.[°F]	*70.70*
CVS Inlet Temp.[°F]			Temp. Max.[°F]	*79.34*
CVS Inlet Temp. Min.[°F]			NO_X Corr. F	*0.94*
CVS Inlet Temp. Max.[°F]				

Particulate

SPC Particulate Results			Avg	Max	Min
Primary Filter Particle Mass [ug]		Temp Air Particlulate Dil [deg F]			
Mass Particles [g]		Temp Gas Particulate [deg F]			
Massflow Particles [g/h]		Pressure Gas Particulate			
Mass per Dist. [g/mile]		Dilution Ratio			
Particulate Sampling Time [s]		Pressure Drop Pri Filter [mbar]			
Primary Filter ID	A1				
Filter Diameter [mm]	47				

Bag

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	CH_4[ppm]	NMHC[ppm]
Range	*0*					
Sample	*0.000*					
Std. Dev.	*0.000*					
Ambient	*0.000*					
Std. Dev.	*0.000*					
Corrected	*0.000*					
Mass	**THC[g]**	**CO[g]**	**CO_2[g]**	**NO_X[g]**	**CH_4[g]**	**NMHC[g]**
Uncorrected	*0.0000*					
Corrected	*0.0000*					
Mass per distance	**THC[g/mile]**	**CO[g/mile]**	**CO_2[g/mile]**	**NO_X[g/mile]**	**CH_4[g/mile]**	**NMHC[g/mile]**
Corrected for Lost Sample Mass	*0.0000*					
Fuel Consumption						
Fuel Consumption[g]		Fuel Consumption[l/100km]				
Fuel Consumption[l]		**Fuel Economy[mile/gal]**				

CVS Data	Cycle data		Environmental Data	
Dilution Factor (Bag)	Vio. Dur.[s]	0.0	Rel. Hum.[%]	*41.01*
Dilution Factor (Modal)	Number	0	Ab. Hum.[g/lbs]	*8.85*
CVS Volume[scf]	Act. Dist.[mi]	*3.87*	Pressure[inHg]	*29.24*
CVS Flow[scfm]			Temp.[°F]	*79.09*
CVS Inlet Pressure			Temp. Min.[°F]	*77.18*
CVS Inlet Temp.[°F]			Temp. Max.[°F]	*80.96*
CVS Inlet Temp. Min.[°F]			NO_X Corr. F	*0.94*
CVS Inlet Temp. Max.[°F]				

Particulate

SPC Particulate Results		Avg	Max	Min
Primary Filter Particle Mass [ug]	Temp Air Particlulate Dil [deg F]			
Mass Particles [g]	Temp Gas Particulate [deg F]			
Massflow Particles [g/h]	Pressure Gas Particulate			
Mass per Dist. [g/mile]	Dilution Ratio			
Particulate Sampling Time [s]	Pressure Drop Pri Filter [mbar]			
Primary Filter ID				
Filter Diameter [mm]				

Bag

Concentrations	THC[ppmC]	CO[ppm]	CO_2[%]	NO_X[ppm]	CH_4[ppm]	NMHC[ppm]
Range	*0*					
Sample	*0.000*					
Std. Dev.	*0.000*					
Ambient	*0.000*					
Std. Dev.	*0.000*					
Corrected	*0.000*					
Mass	**THC[g]**	**CO[g]**	**CO_2[g]**	**NO_X[g]**	**CH_4[g]**	**NMHC[g]**
Uncorrected	*0.0000*					
Corrected	*0.0000*					
Mass per distance	**THC[g/mile]**	**CO[g/mile]**	**CO_2[g/mile]**	**NO_X[g/mile]**	**CH_4[g/mile]**	**NMHC[g/mile]**
Corrected for Lost Sample Mass	*0.0000*					

Fuel Consumption

Fuel Consumption[g]	Fuel Consumption[l/100km]
Fuel Consumption[l]	**Fuel Economy[mile/gal]**

Test Data: UDDS Operator: Art Herrera Date: 1/14/2020
Test Number: UDDS_20200114_10_TC1 Driver: Rene Acosta

Driver Violations

		Phase 1	Phase 2
Number of Violations	-	0	0
Duration of Violations	(s)	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		

Emission Lab Test Report

Drive Cycle Energy Summary

Test Record #: UDDS_20200114_10_TC1

Test Cycle FTP74
Test Legislation EPA

Vehicle ID 1FT7W2BT9BEA15523

DYNO Data

	Road Load	Street Load
Inertia [lb]	*9500.00*	
A [lbf]	*61.469*	*80.650*
B [lbf/mph]	*0.14073*	*1.58910*
C [lbf/mph2]	*0.049012*	*0.038900*

	Phase1	Phase2	Phase3	Weighted
Distance				
Target	5779.17	6211.05		
Driven	5761.65	6220.19		
Distance Rating (%)	-0.3032	0.1472		
Cycle Energy (MJ)				
Target	8.07	7.35		
Driven	8.14	7.32		
Distance per Energy Cycle (m/MJ)				
Target	715.91	845.06		1560.97
Driven	707.42	850.20		1557.62
Road Load Work Fraction				
Target	0.4674	0.3467		
Driven	0.4779	0.3519		
Inertial Work (MJ)				
Target	4.30	4.80		9.10
Driven	4.25	4.74		8.99
Inertial Work Fraction				
Target	0.5326	0.6533		
Driven	0.5221	0.6481		
Inertial Work Rating	-1.0984	-1.2389		-1.1725
Absolute Speed Change (m/s2)				
Target	204.85	340.93		545.78
Driven	202.93	335.99		538.93
Absolute Speed Change Rating (%)	-0.9368	-1.4465		-1.2552
Energy Rating	1.1852	-0.6082		
Energy Economy Rating	1.1852	-0.6082		0.2144