


ATDS Emission Lab Test Report

for Exhaust Emission Test Procedures according

Date:	2022-04-27	Start Time:	08:58:34
Test Number:	ONT3_003224	End Time:	10:41:19
Test Vehicle:	3182_FCRXT03.05PV-1054		
Test Legislation:	EPA1066		
Test Cycle:	FTP75		
Test Purpose:	Certification		
Test Cell:	IGEM-V-TC1		
Order Number:	3182		
Remark:	TEST 1 AS RECEIVED		

 **QUALITY ASSURANCE**
REDACTED

INSPECTED BY: _____

DATE: 2022-04-28

COMMENTS: ok

General Data

Test Number	ONT3_003224		
Test Name	FTP75		
Test Cell	iGEM-V-TC1		
Test Type	FTP75		
Legislation	EPA1066		
Requirements (Bag)	CERTIFICATION		
Requirements (Modal)	CERTIFICATION		
Date	2022-04-27	CH ₄ Response Factor	1.186
Test Start	08:58:34	Odometer Position ^[mi]	118787
Start Time Cycle	2022-04-27 09 21-17-(000)	Delay Time Method	
Test End	10:41:19		
Operator	REDACTED	Air Condition	OFF
Driver	REDACTED	Particle Measurement	USUAL
Shifttable	Auto		
Flow Stream	Modal/Dirty		
Calibrated Ranges	autorange		
Remark	TEST 1 AS RECEIVED		

Vehicle Data **3182_FCRXT03.05PV-1054**

Manufacturer	1500	Displacement	3.0L
Vehicle Model	REDACTED	Engine Family	FCRXT03.05PV
Order Number	3182	Manufacturer	Ram
Test Group	3182_FCRXT03.05PV-1054	Transmission	Automatic
Evaporative Family		Engine Code	

Dyno Data **3182**

Dyno Type	SVOR	Inertia ^[lb]	6000.00
	A ^[lbf]	B ^[lbf/mph]	C ^[lbf/mph²]
Street Load	50.570	0.04400	0.038470
Road Load	12.400	0.21500	0.034900

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 [%/mph ²]
5	0.745999992	0.0031

Test Data: FTP75
Test Number: ONT3_003224

Operator:
Driver:

REDACTED

Date: 2022-04-27

Driver Violations

		<u>Phase1</u>	<u>Phase2</u>	<u>Phase3</u>
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		

Phase 1

Analyzer Adjust

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Offset %	Span Value ppm	Span Set Value ppm	Span Offset %	ReZero Value ppm
CO ₂ (%)	2	4	0.00	0.00	-0.01	3.72	3.72	-0.03	0.00
CO	1	500	0.00	0.00	0.00	464.90	464.90	0.00	0.03
NO _x	1	30	-0.01	0.00	-0.03	28.32	28.30	0.07	0.01
THC (ppmC1)	2	30	-0.08	0.00	-0.25	28.00	28.02	-0.07	0.00
CH ₄	1	30	0.00	0.00	0.00	27.65	27.65	0.00	0.03

Analyzer Check

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Drift %	Span Value ppm	Span Set Value ppm	Span Drift %
CO ₂ (%)	2	4	0.00	0.00	-0.01	3.72	3.72	0.01
CO	1	500	0.05	0.00	0.00	464.77	464.90	-0.03
NO _x	1	30	0.02	0.00	0.03	28.27	28.30	-0.18
THC (ppmC1)	2	30	0.00	0.00	0.25	27.85	28.02	-0.50
CH ₄	1	30	0.00	0.00	-0.10	27.56	27.65	-0.30

Phase 2

Analyzer Adjust

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Offset %	Span Value ppm	Span Set Value ppm	Span Offset %	ReZero Value ppm
CO ₂ (%)	1	1	0.00	0.00	-0.02	0.93	0.93	0.00	0.00
CO	1	500	-0.01	0.00	0.00	465.00	464.90	0.02	0.03
NO _x	1	30	0.03	0.00	0.11	28.30	28.30	0.00	0.03
THC (ppmC1)	2	100	0.00	0.00	0.00	93.11	93.11	0.00	0.02
CH ₄	1	30	0.00	0.00	0.00	27.66	27.65	0.03	0.03

Analyzer Check

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Drift %	Span Value ppm	Span Set Value ppm	Span Drift %
CO ₂ (%)	1	1	0.00	0.00	0.01	0.92	0.93	-1.11
CO	1	500	0.03	0.00	0.00	464.66	464.90	-0.07
NO _x	1	30	0.02	0.00	-0.03	28.27	28.30	-0.11
THC (ppmC1)	2	100	0.05	0.00	0.03	93.06	93.11	-0.05
CH ₄	1	30	0.05	0.00	0.06	27.54	27.65	-0.40

Phase 3

Analyzer Adjust

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Offset %	Span Value ppm	Span Set Value ppm	Span Offset %	ReZero Value ppm
CO ₂ (%)	1	1	0.00	0.00	-0.03	0.93	0.93	0.00	0.00
CO	1	500	-0.06	0.00	-0.01	465.00	464.90	0.02	0.00
NO _x	1	30	0.01	0.00	0.03	28.29	28.30	-0.03	0.04
THC (ppmC1)	2			0.00					
CH ₄	1	30	0.00	0.00	0.00	27.65	27.65	0.00	0.00

Analyzer Check

	Range Number	Range ppm	Zero Value ppm	Zero Set Value ppm	Zero Drift %	Span Value ppm	Span Set Value ppm	Span Drift %
CO ₂ (%)	1	1	0.00	0.00	0.03	0.92	0.93	-0.81
CO	1	500	0.00	0.00	0.00	464.79	464.90	-0.04
NO _x	1	30	0.04	0.00	-0.01	28.24	28.30	-0.18
THC (ppmC1)	2			0.00				
CH ₄	1	30	0.00	0.00	0.00	27.47	27.65	-0.61

Operator **REDACTED**

Driver **REDACTED**

Customer : 3182

Test Purpose: Certification

Legislation: EPA1066

Requirements (Bag) CERTIFICATION

Conditioning:

Emission Standards Default

Test Intent:

TEST 1 AS RECEIVED

VIN **REDACTED**

DYNO Data

	Road Load	Street Load
Inertia ^[lb]	6000.00	
A ^[N]	55.158	224.947
B ^[N/km/h]	0.59426	0.12162
C ^[N/km2/h2]	0.059940	0.066071

	Phase1	Phase2	Phase3	Phase4	Weighted
Distance (m)					
Target	5779.15	6210.95	5779.15		17769.25
Driven	5794.03	6225.59	5791.47		17811.09
Distance Rating (%)	0.2575	0.2356	0.2133		0.2355
Cycle Energy (MJ)					
Target	4.81	4.34	4.81		9.16
Driven	4.79	4.34	4.79		9.13
Distance per Energy Cycle (m/MJ)					
Target	4.81	4.34	4.81		1309.40
Driven	4.79	4.34	4.79		1316.09
Road Load Work Fraction					
Target	0.4357	0.3018	0.4357		0.3722
Driven	0.4427	0.3048	0.4439		0.3775
Inertial Work (MJ)					
Target	2.72	3.03	2.72		5.75
Driven	2.67	3.02	2.66		5.68
Inertial Work Fraction					
Target	0.5643	0.6982	0.5643		0.6278
Driven	0.5573	0.6952	0.5561		0.6225
Inertial Work Rating (%)	-1.7642	-0.4701	-1.8907		-1.1155
Absolute Speed Change (m/s)					
Target	204.87	340.91	204.88		545.79
Driven	201.71	339.32	201.67		541.01
Absolute Speed Change Rating (%)	-1.5441	-0.4657	-1.5654		-0.8751
Energy Rating (%)	-0.5390	-0.0449	-0.4398		-0.3512
Energy Economy Rating (%)	-0.8009	-0.2806	-0.6560		-0.5103

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_003224

Vehicle ID: **REDACTED**

	<u>Average</u>	<u>Min</u>	<u>Max</u>	<u>Low Limit</u>	<u>Upper Limit</u>	<u>Status</u>
General						
Cell Temperature (°C)	26.31	24.50	27.50	20.00	30.00	Passed
Barometer (mbar)	980.70	980.60	980.70	800.00	1100.00	Passed
Dew Point Temperature (°C)	9.78	8.20	10.10	-9.44	37.78	Passed
Specific Humidity Test Cell (gr/lb)	54.53	48.73	55.56	38.50	87.50	Passed
Dilution Air Temperature (°C)	35.56	35.25	35.85	15.00	52.00	Passed
Weighted Test Dilution Factor (-)	16.05			7.00	20.00	Passed
Dilution Factor (-)	13.03			7.00	20.00	Passed
Fuel Economy (mpg)	22.47			10.00	50.00	Passed
Zero Offset (%)	-	-0.25	0.00	-2.00	2.00	Passed
Span Offset (%)	-	-0.07	0.07	-2.00	2.00	Passed
Zero Check Drift (%)	-	-0.10	0.25	-2.00	2.00	Passed
Span Check Drift (%)	-	-0.50	0.01	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2) (%)	n.a.	-	-	-10.00	10.00	Passed
Ambient Concentrations						
HC (ppm)	3.42			2.00	10.00	Passed
NO _x (ppm)	0.12			-0.10	10.00	Passed
CO (ppm)	0.12			0.00	15.00	Passed
CO ₂ (ppm)	479.80			300.00	650.00	Passed
CH ₄ (ppm)	2.14			1.30	10.00	Passed
N ₂ O (ppm)				0.20	0.50	
PM Filter Parameters						
Particulate Filter Temperature (°C)	49.72	46.45	51.75	42.00	60.00	Passed
Filter Face Velocity (cm/s)	90.43			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)	9.40			1.00	600.00	Passed
Test-Cycle Specific Validations						
Phase Distance (miles)	3.60			3.52	3.66	Passed
Sample Phase Time (s)	507.2			504.1	508.1	Passed
Duration Phase 1 (s)	506.10					NA
Crank Time Phase1 (s)	1.20			0	5	Passed
Crank Time Phase3 (s)	1.30			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)	549.80			540.00	660.00	Passed
Test Hold Counts	0					Passed
Duration Test Hold (s)	0.00			0	60	Passed

Operator **REDACTED**
 Test Purpose: Certification
 Conditioning:

Driver **REDACTED** Customer :
 Legislation: EPA1066 Requirements (Bag)
 Emission : Default

3182
 CERTIFICATION

Phase 2

Overall Status **Passed**

	<u>Average</u>	<u>Min</u>	<u>Max</u>	<u>Low Limit</u>	<u>Upper Limit</u>	<u>Status</u>
General						
Cell Temperature (°C)	26.10	24.50	27.60	20.00	30.00	Passed
Barometer (mbar)	980.69	980.60	980.70	800.00	1100.00	Passed
Dew Point Temperature (°C)	9.50	8.00	10.70	-9.44	37.78	Passed
Specific Humidity Test Cell (gr/lb)	53.46	48.16	57.92	38.50	87.50	Passed
Dilution Air Temperature (°C)	36.23	35.55	36.55	15.00	52.00	Passed
Dilution Factor (-)	19.07			7.00	20.00	Passed
Fuel Economy (mpg)	25.84			10.00	50.00	Passed
Zero Offset (%)	-	-0.02	0.11	-2.00	2.00	Passed
Span Offset (%)	-	0.00	0.03	-2.00	2.00	Passed
Zero Check Drift (%)	-	-0.03	0.06	-2.00	2.00	Passed
Span Check Drift (%)	-	-1.11	-0.05	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2) (%)	n.a.			-10.00	10.00	Passed
Ambient Concentrations						
HC (ppm)	3.42			2.00	10.00	Passed
NO _x (ppm)	0.10			-0.10	10.00	Passed
CO (ppm)	0.25			0.00	15.00	Passed
CO ₂ (ppm)	478.34			300.00	650.00	Passed
CH ₄ (ppm)	2.13			1.30	10.00	Passed
N ₂ O (ppm)				0.20	0.50	Passed
PM Filter Parameters						
Particulate Filter Temperature (°C)	49.77	46.45	51.75	42.00	60.00	Passed
Filter Face Velocity (cm/s)	90.36			0.00	100.00	Passed
Particulate Result Validation (ug)	2.60			2.00	600.00	Passed
Test-Cycle Specific Validations						
Phase Distance (miles)	3.87			3.78	3.94	Passed
Sample Phase Time (s)	869.4			868.3	872.3	Passed
Duration Phase 2 (s)	870.30					NA
Crank Time Phase1 (s)	1.2000			0	5	Passed
Crank Time Phase3 (s)	1.30			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)	549.80			540.00	660.00	Passed
Test Hold Counts	0					Passed
Duration Test Hold (s)	0.00			0	60	Passed

Operator
 Test Purpose:
 Conditioning:

REDACTED

Certification

Driver **REDACTED** Customer :
 Legislator: EPA1066 Requirements (Bag)
 Emission : Default

3182
 CERTIFICATION

		<u>Phase 3</u>				Overall Status	Passed
		<u>Average</u>	<u>Min</u>	<u>Max</u>	<u>Low Limit</u>	<u>Upper Limit</u>	<u>Status</u>
General							
Cell Temperature	(°C)	26.86	25.50	27.50	20.00	30.00	Passed
Barometer	(mbar)	980.69	980.60	980.80	800.00	1100.00	Passed
Dew Point Temperature	(°C)	9.29	8.10	10.60	-9.44	37.78	Passed
Specific Humidity Test Cell	(gr/lb)	52.64	48.17	57.40	38.50	87.50	Passed
Dilution Air Temperature	(°C)	36.19	35.55	39.45	15.00	52.00	Passed
Dilution Factor	(-)	15.42			7.00	20.00	Passed
Fuel Economy	(mpg)	27.04			10.00	50.00	Passed
Zero Offset	(%)	-	-0.03	0.03	-2.00	2.00	Passed
Span Offset	(%)	-	-0.03	0.02	-2.00	2.00	Passed
Zero Check Drift	(%)	-	-0.01	0.03	-2.00	2.00	Passed
Span Check Drift	(%)	-	-0.81	-0.04	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2)	(%)	n.a.	-	-	-10.00	10.00	Passed
Ambient Concentrations							
HC	(ppm)	3.50			2.00	10.00	Passed
NO _x	(ppm)	0.09			-0.10	10.00	Passed
CO	(ppm)	0.58			0.00	15.00	Passed
CO ₂	(ppm)	482.97			300.00	650.00	Passed
CH ₄	(ppm)	2.16			1.30	10.00	Passed
N ₂ O	(ppm)				0.20	0.50	
Condensation Potential							
PM Filter Parameters							
Particulate Filter Temperature	(°C)	49.79	46.45	51.75	42.00	60.00	Passed
Filter Face Velocity	(cm/s)	90.22			0.00	100.00	Passed
Particulate Result Validation	(ug)	6.40			2.00	600.00	Passed
Test-Cycle Specific Validations							
Phase Distance	(miles)	3.60			3.52	3.66	Passed
Sample Phase Time	(s)	506.3			504.2	508.2	Passed
Duration Phase 3	(s)	506.20					NA
Crank Time Phase1	(s)	1.2000			0	5	Passed
Crank Time Phase3	(s)	1.30			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)	549.80			540.00	660.00	Passed
Test Hold Counts		0					Passed
Duration Test Hold	(s)	0.00			0	60	Passed