




ATDS Emission Lab Test Report

for Exhaust Emission Test Procedures according

Date:	4/19/2023	Start Time:	10:54:58
Test Number:	ONT3_005149	End Time:	11:52:53
Test Vehicle:	3225_GCRXT03.06PV-479		
Test Legislation:	EPA1086		
Test Cycle:	HWFET+HWFET		
Test Purpose:	Certification		
Test Cell:	IGEM-V-TC1		
Order Number:	3225		
Remark:	TEST #1		

 QUALITY ASSURANCE

INSPECTED BY: _____ REDACTED

DATE: 4/24/2023

COMMENTS: 01C

General Data

Test Number	ONT3_005149		
Test Name	HWFET_HWFET		
Test Cell	iGEM-V-TC1		
Test Type	HWFET_HWFET		
Legislation	EPA1066		
Requirements (Bag)	CERTIFICATION		
Requirements (Modal)	CERTIFICATION		
Date	4/19/2023	CH ₄ Response Factor	
Test Start	10:54:58	Odometer Position ^[mi]	107621
Start Time Cycle	2023-04-19 11 21-02-(000)	Delay Time Method	
Test End	11:52:53		
Operator	REDACTED	Air Condition	OFF
Driver	REDACTED	Particle Measurement	USUAL
Shifttable	Auto		
Flow Stream	ModalDirty		
Calibrated Ranges	autorange		
Remark	TEST #1		

Vehicle Data

3225_GCRXT03.05PV-479

Manufacturer	RAM 1500	Displacement	
Vehicle Model	REDACTED	Engine Family	GCRXT03.05PV
Order Number	3225	Manufacturer	DODGE
Test Group	3225_GCRXT03.05PV-479	Transmission	Automatic
Evaporative Family		Engine Code	

Dyno Data

3225

Dyno Type	SVOR	Inertia ^[lb]	6000.00
	A ^[lb]	B ^[lb/mph]	C ^[lb/mph²]
Street Load	41.990	0.08760	0.036520
Road Load	4.400	0.32000	0.032700

Fuel Data

Diesel-S-000266

Fuel Type	DIESEL	Fuel Temperature ^[°C]	15.00
Fuel Analyze Date		Fuel Density ^[kg/l]	0.8540
Fuel Manufacturer		Net Heat. Val. ^[BTU/lb]	18382
Fuel Tank Number		Carb. Weight Frac.	0.8700
Fuel Charge		HC Ratio	1.7945
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 HWFET_HWFET Operator **REDACTED** Speed Table Date: 4/19/2023
Test Number ONT3_005149 Driver **REDACTED** Shift Table Auto Cold Start

Vehicle	REDACTED	Dyno	Fuel	Test Timing
Vehicle #	REDACTED	Inertia ^(B)	Diesel-S-000268	Start Time 10:54:58
Model	RAM 1500	A ^(B)	Fuel type DIESEL	End Time 11:52:53
Year	2016	B ^{(B)(mph)}	Density 0.8540	
Displacement:		C ^{(B)(mph²)}	NHV 18382	Soak Time
Engine Family	GCRXT03.05PV		CWF 0.8700	
Trans	Automatic	Flow Stream		
Odometer ^(mile)	107621	Remark		

Bag Analysis

PHASE 1	THC ^(ppmC)	CO ^(ppm)	CO ₂ ^(%)	NO _x ^(ppm)	N ₂ O ^(ppm)	CH ₄ ^(ppm)	NMHC ^(ppm)	Temp. ^(°F)	Volume ^(m³)
Range	100	50	4	30		30		75.52	4771
Zero Read	0.00	0.0	0.0	0.0		0.0		Press. ^(inHg) 28.03	D.F. 11.73
Span Read	93.29	46.53	3.721	27.990		27.600		RH ^(%) 35.67	Ph. Start ^(s) 779.3
Sample	0.96	0.51	1.115	0.062		0.265	0.958	AH ^(ppm) 6.916	Ph. End ^(s) 1544.2
Mass.	0.075	0.081	2774.975	0.014		0.024	0.075	Dist. ^(m) 10.26	Ph. Length ^(s) 764.1
Mass per Dist.	0.0073	0.0079	270.398	0.0014		0.0023	0.0073	NO _x Corr. 0.8990	Bag An. Del 647
PSS Massflow Particles [g/h]	0.1504							Dr. Viola. 0	Vio. Durst. ^(s) 0.0
			PSS Mass per Dist. [g/mile]				0.0031	Crank ^(h) 0.00	FE ^(m³/gal) 37.6

Total Result

actual	THC ^(g/mile)	CO ^(g/mile)	CO ₂ ^(g/mile)	NO _x ^(g/mile)	N ₂ O ^(g/mile)	CH ₄ ^(g/mile)	NMHC ^(g/mile)	HC+NO _x ^(g/mile)	Fuel Economy
Mass per Dist.	0.0073	0.0079	270.40	0.0014		0.0023	0.0073	0.0087	mile/gal 37.63
Mass per Dist. (rounded)	0.0073	0.0079	270.4	0.0014		0.0023	0.0073	0.0087	Dist. ^(m) 10.26

Mass per Dist. - Particulate PSS 0.0031

Test Data: HWFET_HWFET
Test Number: ONT3_005149

Operator: REDACTED
Driver: REDACTED

Date: 4/19/2023

Driver Violations

	<u>P1</u>	<u>I1</u>	<u>Phase1</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	0.00	3.72	3.72	-0.03	0.00
CO	1	50	-0.02	0.00	-0.04	46.53	46.56	-0.06	0.00
NO _x	1	30	0.01	0.00	0.02	27.99	27.97	0.07	0.00
THC (ppmC1)	2	30	0.00	0.00	0.00	28.35	28.35	0.00	0.22
CH ₄	1	30	0.00	0.00	0.00	27.60	27.60	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 (%)	2	4	0.00	0.00	0.00	3.72	3.72	-0.04
CO	1	50	0.01	0.00	0.03	46.46	46.56	-0.13
NO _x	1	30	0.00	0.00	-0.01	27.95	27.97	-0.14
THC (ppmC1)	2	100	0.28	0.00	0.20	93.48	93.43	0.14
CH ₄	1	30	0.00	0.00	-0.01	27.57	27.60	-0.10

Operator **REDACTED** Driver **REDACTED** Customer : 3225
 Test Purpose: Certification Legislation: EPA1066 Requirements (Bag) CERTIFICATION
 Conditioning: Emission Standards Default
 Test Intent: TEST #1

VIN **REDACTED**

DYNO Data

	Road Load	Street Load	Phase1	Phase2	Phase3	Phase4	Weighted
Inertia ^[lb]	6000.00						
A ^[N]	19.572	186.781					
B ^[N/km/h]	0.88448	0.24213					
C ^[N/km2/h2]	0.056161	0.062722					
Distance (m)							
Target			16506.54				16506.54
Driven			16512.83				16512.83
Distance Rating (%)			0.0381				0.0381
Cycle Energy (MJ)							
Target			11.60				11.60
Driven			11.60				11.60
Distance per Energy Cycle (m/MJ)							
Target			11.60				1423.10
Driven			11.60				1423.74
Road Load Work Fraction							
Target			0.7239				0.7239
Driven			0.7231				0.7231
Inertial Work (MJ)							
Target			3.20				3.20
Driven			3.21				3.21
Inertial Work Fraction							
Target			0.2761				0.2761
Driven			0.2769				0.2769
Inertial Work Rating (%)			0.2954				0.2954
Absolute Speed Change (m/s)							
Target			130.69				130.69
Driven			130.82				130.82
Absolute Speed Change Rating (%)			0.0987				0.0987
Energy Rating (%)			-0.0070				-0.0070
Energy Economy Rating (%)			-0.0451				-0.0451

Operator **REDACTED** Driver **REDACTED** Customer : 3225
 Test Purpose: Certification Legislatio: *EPA1066* Requirements (Bag) *CERTIFICATION*
 Conditioning: Emission Default

Overall Status **Passed**

Phase 1

Test Record #: ONT3_005149

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)	24.18	22.50	26.20	20.00	30.00	Passed
Barometer (mbar)	983.14	983.10	983.30	800.00	1100.00	Passed
Dew Point Temperature (°C)	8.08	7.70	9.10	-9.44	37.78	Passed
Specific Humidity Test Cell (gr/lb)	48.41	47.04	51.86	38.50	87.50	Passed
Dilution Air Temperature (°C)	24.07	23.95	24.25	15.00	52.00	Passed
Weighted Test Dilution Factor (-)	11.73			7.00	20.00	Passed
Dilution Factor (-)	11.73			7.00	20.00	Passed
Fuel Economy (mpg)	37.63			10.00	50.00	Passed
Zero Offset (%)	-	-0.04	0.02	-2.00	2.00	Passed
Span Offset (%)	-	-0.06	0.07	-2.00	2.00	Passed
Zero Check Drift (%)	-	-0.01	0.20	-2.00	2.00	Passed
Span Check Drift (%)	-	-0.14	0.14	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2) (%)	n.a.	-	-	-10.00	10.00	Passed
Ambient Concentrations						
HC (ppm)	3.24			2.00	10.00	Passed
NO _x (ppm)	0.00			-0.10	10.00	Passed
CO (ppm)	0.06			0.00	15.00	Passed
CO ₂ (ppm)	491.35			300.00	650.00	Passed
CH ₄ (ppm)	2.11			1.30	10.00	Passed
N ₂ O (ppm)				0.20	0.50	
PM Filter Parameters						
Particulate Filter Temperature (°C)	50.31	48.77	51.85	42.00	60.00	Passed
Filter Face Velocity (cm/s)	90.07			0.00	100.00	Passed
Particulate Result Validation (ug)	164.00			1.00	600.00	Passed
Test-Cycle Specific Validations						
Phase Distance (miles)	10.26			10.05	10.46	Passed
Sample Phase Time (s)	764.1			762.9	766.9	Passed
Duration Phase 1 (s)	764.90					NA
Crank Time Phase1 (s)	0.00			0	5	Passed
Crank Time Phase3 (s)				0	5	
Crank Counts	0			0	1	Passed
Shutdown Time Phase 1				0	5	
Shutdown Time Phase 3				0	5	
Hot Soak Time (s)				540.00	660.00	
Test Hold Counts	0					Passed
Duration Test Hold (s)	0.00			0	60	Passed