




## ATDS Emission Lab Test Report

for Exhaust Emission Test Procedures according

<b>Date:</b>	10/25/2023	<b>Start Time:</b>	12:01:23
<b>Test Number:</b>	ONT3_006009	<b>End Time:</b>	13:00:23
<b>Test Vehicle:</b>	3225_GCRXT03.05PV-512		
<b>Test Legislation:</b>	EPA1066		
<b>Test Cycle:</b>	HWFET+HWFET		
<b>Test Purpose:</b>	Certification		
<b>Test Cell:</b>	IGEM-V-TC1		
<b>Order Number:</b>	3225		
<b>Remark:</b>	CONSENT DECREE		

	<b>QUALITY ASSURANCE</b>
<b>INSPECTED BY:</b>	REDACTED
<b>DATE:</b>	10/30/2023
<b>COMMENTS:</b>	REDACTED

**General Data**

Test Number	ONT3_006009		
Test Name	HWFET_HWFET		
Test Cell	IGEM-V-TC1		
Test Type	HWFET_HWFET		
Legislation	EPA1066		
Requirements (Bag)	CERTIFICATION		
Requirements (Modal)	CERTIFICATION		
Date	10/25/2023	CH <sub>4</sub> Response Factor	
Test Start	12:01:23	Odometer Position <sup>[mi]</sup>	16951
Start Time Cycle	2023-10-25 12 28-15-(000)	Delay Time Method	
Test End	13:00:23		
Operator	REDACTED	Air Condition	OFF
Driver	REDACTED	Particle Measurement	USUAL
Shiftable	Auto		
Flow Stream	ModalDirty		
Calibrated Ranges	autorange		
Remark	CONSENT DECREE		

**Vehicle Data** **3225\_GCRXT03.05PV-512**

Manufacturer	RAM 1500	Displacement	
Vehicle Model	REDACTED	Engine Family	GCRXT03.05PV
Order Number	3225	Manufacturer	DODGE
Test Group	3225_GCRXT03.05PV-512	Transmission	Automatic
Evaporative Family		Engine Code	
Made Date	2016	License Plate	
Tire Manufacturer		Trim Level	
Tire Model		Axle Ratio	1
Tire Size		Drive Axle Weight <sup>[lbs]</sup>	
Tire Pressure <sup>[psi]</sup>	0	Tank Volume <sup>[gal]</sup>	0
Engine Code	GCRXT03.05PV	Tank Material	
Number of Cylinders	6		

**Dyno Data** **3225**

Dyno Type	SVOR	Inertia <sup>[lb]</sup>	6000.00
	A <sup>[lb]</sup>	B <sup>[lb/mph]</sup>	C <sup>[lb/mph<sup>2</sup>]</sup>
Street Load	41.990	0.08760	0.036520
Road Load	5.900	0.42700	0.031900

**Fuel Data** **Diesel-S-000266**

Fuel Type	DIESEL	Fuel Temperature <sup>[°C]</sup>	15.00
Fuel Analyze Date		Fuel Density <sup>[kg/l]</sup>	0.8540
Fuel Manufacturer		Net Heat. Val. <sup>[BTU/lb]</sup>	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 <sup>[deg F]</sup>	68.00	Dew Point Max <sup>[deg F]</sup>	100.00
Temp Max <sup>[deg F]</sup>	86.00	Pressure Min <sup>[mbar]</sup>	800.0
Dew Point Min <sup>[deg F]</sup>	15.01	Pressure Max <sup>[mbar]</sup>	1100.0

**Fan Speed Data** **RoadSpeed**

F1 <sup>[%]</sup>	F2 <sup>[%/mph]</sup>	F3 <sup>[%/mph<sup>2</sup>]</sup>
5	0.745999992	0.0031

**Test Data** HWFET\_HWFET Operator **REDACTED** Speed Table Date: 10/25/2023  
**Test Number** ONT3\_906009 Driver Shift Table Auto Cold Start

<b>Vehicle</b>	<b>REDACTED</b>	<b>Dyno</b>	<b>Fuel</b>	<b>Test Timing</b>
Vehicle #	<b>REDACTED</b>	Inertia <sup>(lb)</sup>	Diesel-S-000266	Start Time 12:01:23
Model	RAM 1500	A <sup>(hp)</sup>	Fuel type DIESEL	End Time 13:00:23
Year	2016	B <sup>(lb/ft/mph)</sup>	Density 0.8540	
Displacement:		C <sup>(lb/ft/mph<sup>2</sup>)</sup>	NHV 18382	Soak Time
Engine Family	GCRXT03.05PV		CWF 0.8700	
Trans	Automatic	Flow Stream	Modal Dirty	
Odometer <sup>(mile)</sup>	16951	Remark	CONSENT DECREE	

**Bag Analysis**

PHASE 1	THC <sup>(ppmC)</sup>	CO <sup>(ppm)</sup>	CO <sub>2</sub> <sup>(%)</sup>	NO <sub>x</sub> <sup>(ppm)</sup>	N <sub>2</sub> O <sup>(ppm)</sup>	CH <sub>4</sub> <sup>(ppm)</sup>	NMHC <sup>(ppm)</sup>	Temp. <sup>(°F)</sup>	76.70	Volume <sup>(scf)</sup>	4722
Range	100	50	4	30		30		Press. <sup>(inHg)</sup>	28.99	D.F.	12.16
Zero Read	0.00	0.0	0.0	0.0		0.0		RH <sup>(%)</sup>	40.50	Ph. Start <sup>(s)</sup>	779.3
Span Read	93.31	46.80	3.722	27.490		27.600		AH <sup>(inHg)</sup>	8.149	Ph. End <sup>(s)</sup>	1544.2
Sample	-1.30	0.24	1.076	0.053		0.299	-1.304	Dist. <sup>(mi)</sup>	10.28	Ph. Length <sup>(s)</sup>	763.9
Mass.	0.000	0.037	2652.037	0.013		0.027	0.000	NO <sub>x</sub> Corr.	0.9223	Bag An. Del	672
Mass per Dist.	0.0000	0.0036	257.919	0.0012		0.0026	0.0000	Dr. Viola.	0	Via. Durat. <sup>(s)</sup>	0.0
								Crank <sup>(s)</sup>	0.00	FE <sup>(inHg)</sup>	39.5
PSS Massflow Particles [g/h]	0.0091										
			PSS Mass per Dist. [g/mile]				0.0002				

**Total Result**

actual	THC <sup>(g/mile)</sup>	CO <sup>(g/mile)</sup>	CO <sub>2</sub> <sup>(g/mile)</sup>	NO <sub>x</sub> <sup>(g/mile)</sup>	N <sub>2</sub> O <sup>(g/mile)</sup>	CH <sub>4</sub> <sup>(g/mile)</sup>	NMHC <sup>(g/mile)</sup>	HC+NO <sub>x</sub> <sup>(g/mile)</sup>	Fuel Economy
Mass per Dist.	0.0000	0.0036	257.92	0.0012		0.0026	0.0000	0.0012	mile/gal 39.45
Mass per Dist. (rounded)	0.0000	0.0036	257.9	0.0012		0.0026	0.0000	0.0012	Dist. <sup>(mi)</sup> 10.28
Mass per Dist. - Particulate PSS	0.0002								

**Test Data:** HWFET\_HWFET  
**Test Number:** ONT3\_006009

**Operator:**  
**Driver:**

**REDACTED**

**Date:** 10/25/2023

**Driver Violations**

	<u>P1</u>	<u>I1</u>	<u>Phase1</u>
Number of Violations	0	0	0
Duration of Violations	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 <sub>2</sub> (%)	2	4	0.00	0.00	0.00	3.72	3.72	0.00	0.00
CO	1	50	0.01	0.00	0.02	46.90	46.71	0.38	0.01
NO <sub>x</sub>	1	30	0.01	0.00	0.05	27.49	27.51	-0.07	0.01
THC (ppmC1)	2	30	0.00	0.00	0.01	28.41	28.41	0.00	0.23
CH <sub>4</sub>	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 <sub>2</sub> (%)	2	4	0.00	0.00	-0.01	3.72	3.72	-0.03
CO	1	50	0.05	0.00	0.08	46.74	46.71	-0.31
NO <sub>x</sub>	1	30	0.01	0.00	0.01	27.46	27.51	-0.11
THC (ppmC1)	2	30	0.21	0.00	-0.06	28.74	28.41	1.09
CH <sub>4</sub>	1	30	0.00	0.00	0.00	27.60	27.60	0.00

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

VIN **REDACTED**

**DYNO Data**

	Road Load	Street Load				
Inertia [kg]	6000.00					
A [N]	26.244	186.781				
B [N/km/h]	1.18023	0.24213				
C [N/km <sup>2</sup> /h <sup>2</sup> ]	0.054787	0.062722				
			Phase1	Phase2	Phase3	Phase4
<b>Distance (m)</b>						<b>Weighted</b>
Target			16506.54			16506.54
Driven			16544.14			16544.14
<b>Distance Rating (%)</b>			0.2278			0.2278
<b>Cycle Energy (MJ)</b>						
Target			11.60			11.60
Driven			11.67			11.67
<b>Distance per Energy Cycle (m/MJ)</b>						
Target			11.60			1423.10
Driven			11.67			1417.23
<b>Road Load Work Fraction</b>						
Target			0.7239			0.7239
Driven			0.7289			0.7289
<b>Inertial Work (MJ)</b>						
Target			3.20			3.20
Driven			3.16			3.16
<b>Inertial Work Fraction</b>						
Target			0.2761			0.2761
Driven			0.2711			0.2711
<b>Inertial Work Rating (%)</b>			-1.1630			-1.1630
<b>Absolute Speed Change (m/s)</b>						
Target			130.69			130.69
Driven			129.60			129.60
<b>Absolute Speed Change Rating (%)</b>			-0.8341			-0.8341
<b>Energy Rating (%)</b>			0.6432			0.6432
<b>Energy Economy Rating (%)</b>			0.4128			0.4128

Operator	<b>REDACTED</b>	Driver	<b>REDACTED</b>	Customer :	3225
Test Purpose:	Certification	Legislation:	EPA1066	Requirements (Bag)	CERTIFICATION
Conditioning:		Emission	Default		

Overall Status **Passed**

**Phase 1**

Test Record #: ONT3\_006009

Vehicle ID: **REDACTED**

		<u>Average</u>	<u>Min</u>	<u>Max</u>	<u>Low Limit</u>	<u>Upper Limit</u>	<u>Status</u>
<b>General</b>							
Cell Temperature	(°C)	24.83	23.60	25.90	20.00	30.00	Passed
Barometer	(mbar)	981.85	981.70	982.00	800.00	1100.00	Passed
Dew Point Temperature	(°C)	10.48	8.70	11.60	-9.44	37.78	Passed
Specific Humidity Test Cell	(gr/lb)	57.04	50.32	61.64	38.50	87.50	Passed
Dilution Air Temperature	(°C)	36.40	36.15	36.65	15.00	52.00	Passed
Weighted Test Dilution Factor	(-)	12.16			7.00	20.00	Passed
Dilution Factor	(-)	12.16			7.00	20.00	Passed
Fuel Economy	(mpg)	39.45			10.00	50.00	Passed
Zero Offset	(%)	-	0.00	0.05	-2.00	2.00	Passed
Span Offset	(%)	-	-0.07	0.38	-2.00	2.00	Passed
Zero Check Drift	(%)	-	-0.06	0.08	-2.00	2.00	Passed
Span Check Drift	(%)	-	-0.31	1.09	-2.00	2.00	Passed
Bag vs. Modal Validation (CO2)	(%)	n.a.	-	-	-10.00	10.00	Passed
<b>Ambient Concentrations</b>							
HC	(ppm)	5.27			2.00	10.00	Passed
NO <sub>x</sub>	(ppm)	0.06			-0.10	10.00	Passed
CO	(ppm)	1.33			0.00	15.00	Passed
CO <sub>2</sub>	(ppm)	469.72			300.00	650.00	Passed
CH <sub>4</sub>	(ppm)	2.07			1.30	10.00	Passed
N2O	(ppm)				0.20	0.50	
<b>PM Filter Parameters</b>							
Particulate Filter Temperature	(°C)	52.05	43.15	53.65	42.00	60.00	Passed
Filter Face Velocity	(cm/s)	90.68			0.00	100.00	Passed
Particulate Result Validation	(ug)	10.00			1.00	600.00	Passed
<b>Test-Cycle Specific Validations</b>							
Phase Distance	(miles)	10.28			10.05	10.46	Passed
Sample Phase Time	(s)	763.9			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