Test = HWFET with Warmup

Options = CVS Bag Dil Sec ShowTol Methane ModalMethane MethaneRF

Test Init Start	= 28 April 2021 10:23:20	Test Start	= 28 April 2021 10:37:26
Posttest Completed At	= 28 April 2021 11:14:04	Test Finish	= 28 April 2021 11:03:11
Hot Soak Start Time	= 27 April 2021 21:00:00		

Personnel Information::

Driver	=REDACTED	Operator	=REDACTED
Requestor	=REDACTED	Supervisor	=REDACTED

Vehicle Information:

VIN	=REDACTED		
Vehicle Model	= JEEP GRAN CHEROKEE	Cert Tracking ID	= 3029-ECRXT0305PV-244
Engine Family	= ECRXT03.05PV	Model Year	= 2014
Ignition Status	= No	Eng. Disp.	= 3.0L
Automatic	= 1	Transmission	=
Sample Delay	=	Idle RPM	=

Vehicle Conditions:

Soak Start Time:	= APR 27, 2021 21:00	Ambient Limit Type	= OTHER7

Test Specifications:

TO-Number	= W0110	CVS BulkStream Flow :	= 2) 350 scfm
TestNet Number	= 3029		

Dynamometer:

Inertia	= 5500 (lb)	Road Load A	= 17.89 (lbs)
Road Load B	= 0.3804	Road Load C	= 0.02537

Fuel Information:

Fuel	= DIE-DJ1621HW10	Specific gravity	= 0.8520
NHV	= 18083.00	Fuel R-Factor	= 0.60
CWF	= 0.8710	OWF	= 0.0000
HWF	= 0.1290	Fuel Calculation Type	= Diesel/EPA Calcs

Phase Information:

	Shift Tables
Phase 1	N/A
Phase 2	N/A

Response Factors:
Bag Methane = 1.05

Pre Test Remarks:
TEST #1 AS RECEIVED

Post Test Remarks:

Non-Critical Information:

Begin Odo	= 66518	Idle RPM	=
Test end Odometer	= 66539	Driveability	= Good
Engine performance	= No Problem	Brakes	= No Problem
Transmission	= No Problem	Vehicle stalls	= None

QUALITY ASSURANCE
REDACTED
INSPECTED BY: _____
DATE: 4-28-21
COMMENTS: Okay

SUMMARY REPORT

Test = HWFET with Warmup Test Id = ONT52254 TestNet Number = 3029
Options = CVS Bag Dil Sec ShowTol Methane ModalMethane MethaneRF
Test Init Start = 28 April 2021 10:23:20 Fuel Calculation Type = Diesel/EPA Calcs Idle RPM = Driver = **REDACTED**

MASS calculated by DF method

Phase 1 Bag 2	THC (ppmC)	CO (ppm)	NOX (ppm)	CO2 (%)	CH4 (ppmC)	NM-HC (wRF)	FE (mpg)
Range	10.0	50.0	100	2.00	10.0		
Sample	3.379	0.384	0.10	1.2445	2.254		
Range	10.0	50.0	100	2.00	10.0		
Ambient	3.517	0.665	0.08	0.0699	2.231		
Net Conc.	0.189	0.000	0.02	1.1811	0.230	0.0000	
Modal Corr.	0.0007	0.0002	0.0000	8.5933	0.0006	0.0002	
Grams/ph	0.0136	0.0002	0.0046	2553.7744	0.0187	0.0002	40.8662
Grams/mi	0.0013	0.0000	0.0004	248.8534	0.0018	0.0000	

----- Dyno Information -----

Inertia = 5500

Inertia Units = lb

Dynamometer will be set manually = False

Dyno Coefficient Units = 2

Road Load A = 17.89

Road Load B = 0.3804

Road Load C = 0.02537

Use Augmented Braking System? = False

MODE NO.	MODE TYPE	TEST TIME sec	MODE TIME sec	DIST mi	SAMPLE POINT	DILUTE CONCENTRATIONS THC ppmC	CO ppm	NOX ppm	CO2 %	CH4 ppmC	CVS VOLUME ft3 20 C	MODAL GRAMS THC	CO	NOX	CO2	CH4	NMHC wRF	F.E. mpg	D/V
|PHASE One MODAL SUMMARY|																			
ACCEL			2.341	DIL							1074.66	0.009	0.00	-0.001	542.0	0.046	0.000	43.96	0.0
CRUISE			6.162	DIL							2339.59	0.018	-0.02	-0.001	1574.7	0.097	0.000	39.82	0.0
DECEL			1.758	DIL							757.81	0.006	0.00	-0.001	435.7	0.032	0.000	41.07	0.0
TOTAL			10.262	DIL							4172.06	0.032	-0.03	-0.003	2552.4	0.174	0.000	40.91	0.0

QUALITY ASSURANCE
REDACTED
INSPECTED BY: _____
DATE: 4-28-21
COMMENTS: Okay

CVS Bag report
MASS calculated by DF method

Phase 1 Bag 2	THC (ppmC)	CO (ppm)	NOX (ppm)	CO2 (%)	CH4 (ppmC)	NM-HC (wRF)	FE (mpg)
Range	10.0	50.0	100	2.00	10.0		
Sample	3.379	0.384	0.10	1.2445	2.254		
Range	10.0	50.0	100	2.00	10.0		
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Grams/ph.	0.0136	0.0002	0.0046	2553.7744	0.0187	0.0002	40.8662
Grams/mi	0.0013	0.0000	0.0004	248.8534	0.0018	0.0000	

Test Info		
Baro(inHg)	=	29.03
Temp(F)	=	75.2
Tdew(F)	=	48.6
Rhum(%)	=	39.1
Ahum(gr/lb)	=	52.2
NOX Factor	=	0.9032
Vmix(ft3 20 C)	=	4158.55
Dilu. Factor	=	10.7642
Dist(mi)	=	10.2622

Times Info	
Phase Start	= 10:50:26
Phase Finish	= 11:03:11
Analysis End	= 11:08:33
Elapsed (sec)	= 765.0
Bag Fill (sec)	= 765.0
Bag Anl (sec)	= 322.3
Drv Err (sec)	= 0.0

Legend
* denotes Unstable Reading
(wRF) denotes with Response Factor
(woRF) denotes without Response Factor

DATA VALIDATION

PARAMETER DESCRIPTION	VALUE OF PARAMETER	LIMIT OF PARAMETER
Temperature	VALID	68 - 86 (degF)
Barometer	VALID	26.99 - 33.0001 (inHg)
Dew Point	VALID	-20 - 200 (degF)
Absolute Humidity	VALID	0 - 150 (gr/lb)
Pretest Soak Time	VALID	12 - 36 (hr)
Phase Length	VALID	2 (%)
Distance	VALID	2 (%)
Test Hold Conditions	VALID	60 (sec)
Leak Check	VALID	1
Bag Analysis Time	VALID	1200 (sec)
Bag Fill Time	VALID	5 (sec)
Ambient Bag Readings	VALID	THC -0.55 - 10 (ppm) CO -0.55 - 15 (ppm) NOX -0.55 - 2 (ppm) CO2 350 - 850 (ppm) CH4 -0.55 - 10 (ppm)
Sample Bag Readings	VALID	THC -0.55 (ppm) CO -0.55 (ppm) NOX -0.55 (ppm) CO2 350 (ppm) CH4 -0.55 (ppm)
Bag Read Sequence	VALID	Stabilization Time (T2) 10 (sec) Integration Time (T3) 3 (sec) Stability Time Out (T4) 30 (sec) Stability Chk Tolerance 2 (%)
Bag Zero/Span Sequence	VALID	Pre-Bag Z/S Offset 25 (%) Pre-Bag Zero Drift 1 (%) Post-Bag Z/S Drift 2 (%) Stabilization Time (T2) 10 (sec) Integration Time (T3) 3 (sec) Stability Time Out (T4) 30 (sec) Stability Chk Tolerance 2 (%)
Analyzer Overscale	VALID	10 (sec)
Venturi Inlet Temperature	VALID	32 - 300 (degF)

BAG Zero/Span Results
* Single Roll Dyno Configuration *

Bag Pair 2 Zero/Span Concentrations (Offset Limit = 25.0% ReZero Limit = 1.0%)

Samp	Gas	Range	Fullscale	Zero	Offset	Std Dev	Spec	Span	Offset	Std Dev	Rezero	Drift	Std Dev	Status
BAG	LCO	(1)	50.0ppm	0.236	0.47	0.04296	47.235	47.239	0.01	0.09065	0.034	0.07	0.04469	PASS
BAG	CO2	(2)	2.00%	0.0021	0.11	0.01094	1.8723	1.8675	-0.24	0.04058	0.0006	0.03	0.00980	PASS
BAG	THC	(1)	10.0ppm	0.106	1.06	0.03033	9.355	9.325	-0.30	0.04585	-0.019	-0.19	0.03168	PASS
BAG	NOX	(3)	100ppm	0.84	0.84	0.07795	91.84	91.99	0.15	0.25552	0.01	0.01	0.06138	PASS
BAG	CH4	(1)	10.0ppm	0.156	1.56	0.07360	9.219	9.206	-0.14	0.06626	0.021	0.21	0.08655	PASS

Bag Pair 2 Post Bag Check (Drift Limit = 2.0%)

Samp	Gas	Range	Fullscale	Zero	Drift	Std Dev	Spec	Span	Drift	Std Dev	Status
BAG	LCO	(1)	50.0ppm	-0.008	-0.02	0.02840	47.235	47.153	-0.16	0.04606	PASS
BAG	CO2	(2)	2.00%	0.0009	0.04	0.00599	1.8723	1.8770	0.23	0.02407	PASS
BAG	THC	(1)	10.0ppm	-0.018	-0.18	0.01958	9.355	9.363	0.08	0.03658	PASS
BAG	NOX	(3)	100ppm	0.12	0.12	0.07981	91.84	91.42	-0.42	0.13357	PASS
BAG	CH4	(1)	10.0ppm	0.000	0.00	0.05914	9.219	9.248	0.29	0.07231	PASS