RMCNR Test Report

Test 150817_709006_EW1_22533_RMCNR_1 Cycle Number 2

General Data

Test Date	8/17/2015 15:30	Test Cell	EW1	
Test Duration	2 hr, 44 min	Technician	MJONESHOFFMAN	
Certification Test	No	Intake Air Temp	25.7	°C
Start	Hot	Absolute Humidity	13.50	g/kg
Regen	No	Barometric Pressure	758.0	kPa
Customer	ISUZU	Engine Hours	8370	
Engine ID	709006	Fuel	CERT DIESEL 150728	
Aftertreatment 1	DOC	Aftertreatment 3	DNX	
Aftertreatment 2	DPF	Aftertreatment 4	-	
Playback File	150413_709006_EW1_21176_FLS_1_RMCNR_PB.txt			
Engine Calibration	SCRGuidance_SGS1CSF_1			

Test Results

Fuel Meter BSFC	222.04	g/kW.hr	Cycle Work	35.11	kW.hr
Carbon Balance BSFC	221.66	g/kW.hr	NO_x Correction Factor	1.044	

	CO_2	CO	NO_x	N_2O	HC	CH_4	NMHC	NMHC NO_x	PM	MSS	SM
Concentration Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	-	mg/m^3	mg/m^3
Avg. Concentration	1.192	0.152	1.495	-	2.170	1.497	0.493	-	-	0.007	-
Mass Emissions (g)	24847	0.203	3.31	-	0.236	0.020	0.214	3.52	0.072	0.008	-
Brake Specific Emissions (g/kW.h)	708	0.006	0.094	-	0.007	0.001	0.006	0.100	0.002	0.000	-

Quality Checks

Analyzer Check	PASSED	Cold Start Check	N/A
Regression Check	N/A	Combustion Air Check	PASSED
Background Check	FAILED	Intercooler Check	PASSED
PM Sampler Check	FAILED	Fuel/Carbon Balance Check	PASSED
Altitude Simulation Check	PASSED	Aqueous Condensation Check	PASSED
CVS Check	PASSED		

Analyzer Check

PASSED

			Pre-Test		Post-Test		Peak	Avg.		Drift%	
	Units	Range	Zero	Span	Zero	Span	Conc	Conc	Drift%	(FEL)	
CO_2 Analyzer	%	5	0.01	4.49	0.00	4.52	2.33	1.19	0.9%	-	PASSED
CO Analyzer	ppm	200	0.36	179.98	-0.04	183.53	0.60	0.15	-5.6%	0.0%	PASSED
NO_x Analyzer	ppm	300	0.07	265.42	0.00	274.50	13.64	1.49	2.1%	0.5%	PASSED
N_2O Analyzer	ppm	-	-	-	-	-	-	-	-	-	N/A
HC Analyzer	ppm	90	-0.11	90.48	-0.08	91.06	4.31	2.17	0.0%	-	PASSED
CH_4 Analyzer	ppm	100	0.00	91.41	-0.10	91.28	3.08	1.50	2.3%	-	PASSED
NMHC	ppm	-	-	-	-	-	0.98	0.49	-0.3%	0.0%	PASSED
NO_x + NMHC	ppm	-	-	-	-	-	14.18	1.99	2.0%	-	N/A

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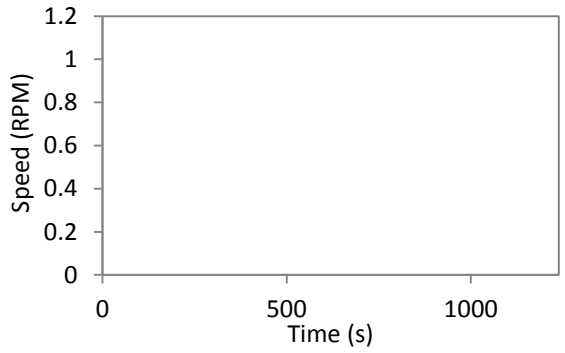
Regression Check

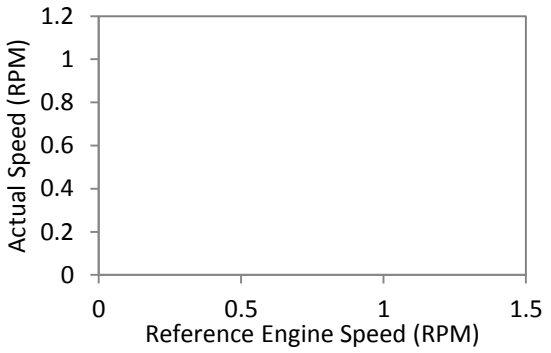
N/A

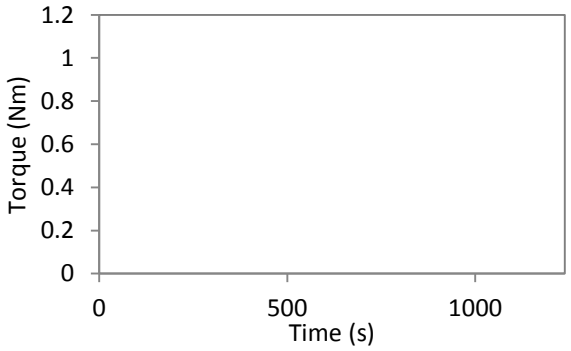
Time Lag - seconds Max Test Speed - RPM Warm Idle Speed - RPM
Max Mapped Torque - Nm Max Mapped Power - kW

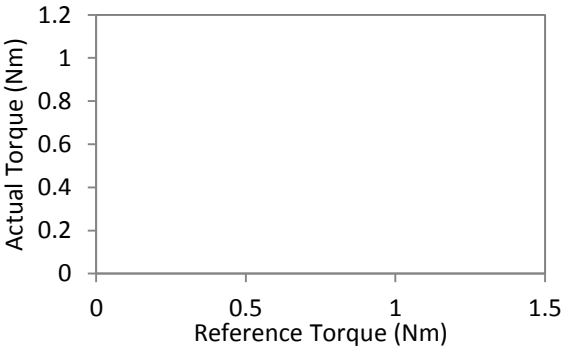
	Lower Limit Slope	Actual Slope	Upper Limit Slope	Lower Limit Intercept	Actual Intercept	Upper Limit Intercept
Speed RPM	0.95	-	1.03	-	-	-
Torque Nm	0.83	-	1.03	-	-	-
Power kW	0.83	-	1.03	-	-	-

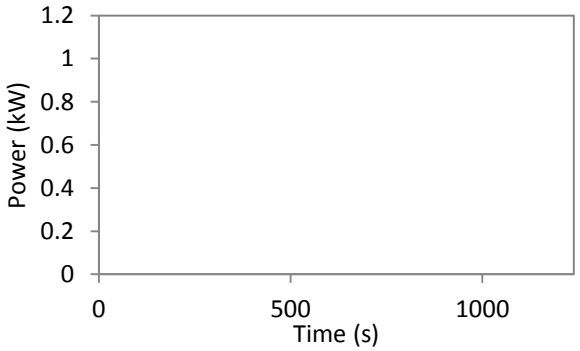
	Actual SEE	Upper Limit SEE	Lower Limit R^2	Actual R^2	Number of Points	
Speed RPM	-	-	0.97	-	-	N/A
Torque Nm	-	-	0.85	-	-	N/A
Power kW	-	-	0.91	-	-	N/A

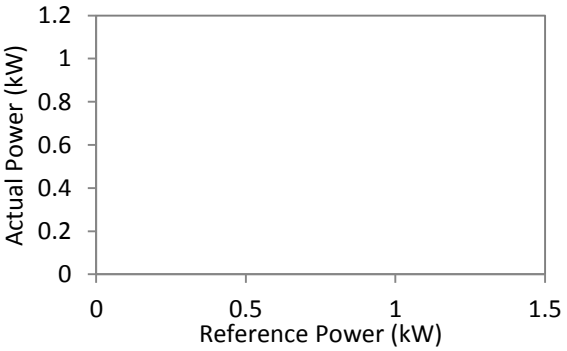












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Background Check — FAILED

	Units	Pre-Test	Post-Test	Min	Max	Avg. FEL	Drift% FEL	
CO_2	%	0.042	0.044	0.03	0.05	NaN	NaN	FAILED
CO	ppm	0.089	0.114	-0.1	2	128.725	0.0%	PASSED
NO_x	ppm	0.080	0.120	-0.1	0.3	6.430	0.6%	PASSED
HC	ppm	1.992	2.013	1.5	3.5	NaN	-	N/A
HHC	ppm	2.122	2.142	1.5	3.5	NaN	-	N/A
CH_4	ppm	1.757	1.749	1	3	NaN	-	N/A
NMHC	ppm	0.025	0.054	-0.2	2	9.872	0.3%	PASSED
NMHC + Nox	ppm	0.105	0.174	-0.3	2.3	NaN	2.3%	PASSED

PM Sampler Check — FAILED

	Units	Minimum	Average	Maximum	Lower Limit	Upper Limit	
Filter Temp	°C	45.2	45.6	46.1	42	52	PASSED
Secondary Dil Temp	°C	31.2	31.4	31.7	20	30	FAILED
SEE (Sample/Total)	%	-	0.35%	-	-	3.50%	N/A
Primary Dilution	-	3.92	-	-	2	-	PASSED
Secondary Dilution	-	1.00	-	-	-	-	N/A
Total Dilution	-	3.92	-	-	5	-	FAILED

PM Filter Tare	mg	-	Average Raw Bench Flow Rate	scfm	1.17
PM Filter Gross	mg	-	Maximum Raw Exhaust Flow*	scfm	353.30
			Average Dilute Exhaust Flow	scfm	1379.44

** Calculated as the maximum value of Raw Exhaust*

Altitude Simulation Check — PASSED

	Units	Minimum	Average	Maximum	Lower Limit	Upper Limit	
Barometric Pressure	mmHg	756.8	758.0	758.7	738.0	778.0	PASSED
Exhaust Pressure	kPa	-	-	-	-	-	N/A
CFV Pressure	kPa	752.6	754.1	755.7	-	-	N/A

CVS Check — PASSED

	Units	Minimum	Average	Maximum	Lower Limit	Upper Limit	
CVS Flow	scfm	1336.6	1379.4	1422.7	1324.3	1434.6	PASSED
Tracer Agreement	%	-	0.03	-	0.02	0.06	N/A
Dilution Air Temp	°C	24.7	25.6	26.4	20.0	30.0	PASSED

Cold Start Check — N/A

	Units	At Test Start	Lower Limit	Upper Limit	
Oil Temperature	°C	-	-	-	N/A
Coolant Temperature	°C	-	-	-	N/A

Combustion Air Check — PASSED

	Units	Minimum	Average	Maximum	Lower Limit	Upper Limit	
Combustion Air Temp	°C	25.5	25.7	25.9	20	30	PASSED
Combustion Air Dew Temp	°C	17.7	18.6	19.2	-	-	N/A
NO_x Correction Factor	-	1.031	1.044	1.051	-	-	N/A

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Intercooler Check — PASSED

	Units	Minimum	Average	Maximum	Lower Limit	Upper Limit	
Intercooler 1 Glycol	°C	24.2	24.8	25.2	20	30	PASSED
Intercooler 2 Glycol	°C	-	-	-	-	-	N/A

Fuel/Carbon Balance Check — PASSED

Fuel Meter g	Carbon Balance g	Fuel Meter g/kW.hr	Carbon Balance g/kW.hr	Percent Difference	Upper Limit	
7795	7781	222.04	221.66	0.17%	6.00%	PASSED

Aqueous Condensation Check — PASSED

Dil Exh Dew Point Above Min Tunnel Temp (s)	0	Fraction of Test Time	0.00	PASSED
Maximum Potential Fraction for Aqueous Drop Out	0			PASSED
Accumulative Potential Fraction for Aqueous Drop Out	0			PASSED