

APPLICATION FOR CERTIFICATION

2011 MODEL YEAR

Durability Group:	BGMXHHGVNB03
Test Group:	BGMXV01.4001
Durability Group Description:	Four Stroke, Otto Cycle, Gasoline/Electric Fueled, SFI, Hybrid, Ceramic Monolith Pd/Rh Catalyst
Durability Vehicle:	NA - Aged Components
OBD Group:	11OBDG01
Test Group Description:	1.4L L4
Applicable Standards:	California and Federal CAR BIN 4M / BIN 4
Carlines Covered by Evaporative Family:	1.4L Chevrolet VOLT BGMXR0060800
Vehicles Tested:	1411R60501
For Questions, Contact:	D. S. McGuire (248-444-0239)

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TEST VEHICLE DESCRIPTION

	<u>Durability Vehicle Selection - NA</u>	<u>Emission-Data Vehicle Selection</u>
Test Group	NA	BGMXV01.4001
Evaporative Family		BGMXR0060800
Displacement – Liters		1.4
Engine Code		1
Emission Control System		
Exhaust		SFI/TWC(2)/HO2S(2)
Evap		C/CCP-IC
Model		1RC68
Transmission Type/Code		AV/1
Shift Schedule		NA
(LVW/ALVW) Test Weight – Lbs		4000
GVWR		NA
Roadload HP		9.5
Final Drive		2.16
N/V Ratio – rpm/mph		92.3
Tires		P215/55R17 ALS
Vehicle/EPA Config No./GM Config No.		
FTP & HWFE		11R60501/00/000
SFTP		11R60501/00/000
20° CO		11R60501/00/000

NOTE: For complete vehicle information, see vehicle information submitted in VERIFY database.

Data Vehicle Selection Justification – This vehicle represents the heaviest test weight class, highest total roadload, and highest N/V ratio that is expected to be the worst case for emissions.

EMISSION STANDARDS

BIN 4 (PC &/OR LDT1) and 0.3 FEL Cold NMHC

TIER 2 BIN 4/BIN 4 (PC AND/OR LDT1) NATIONWIDE TEST GROUP

TEST GROUP NAME: BGMXV01.4001

EVAPORATIVE FAMILY NAME(S): BGMXR0060800

CERTIFICATION STANDARDS

FTP/HWY:

Std/DF (Mileage)	Low and High Altitude (20°F NMHC Low Alt. Only)								I/M*2 *5 HC (PPM) @Idle/2500	I/M*2 *5 CO (%) @Idle/2500
	NMOG	CO	20°F NMHC	20°F CO	NOx	HCHO	PM	Hwy NOx		
Std (4K)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Std (50K)	NA	NA	NA	10.0	NA	NA	0.01	NA	NA	NA
Std (120K)	0.070	2.1	0.3	NA	0.04	0.011	0.01	0.05	NA	NA
DF (50K)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DF (120K)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

50° *5:

Std/DF (Mileage)	NMOG	CO	NOx	HCHO
Std (4K)	NA	NA	NA	NA

SFTP *3:

Std/DF (Mileage)	US06 NMHC+NOx	US06 CO	SC03 NMHC+NOx	SC03 CO	COMP*4 NMHC+NOx	COMP*4 PM
Std (4K)	0.14	8.0	0.20	2.7	NA	0.07
Std (120K)	NA	11.1	NA	3.7	0.63	0.07

IN-USE STANDARDS

FTP:

Std/DF (Mileage)	Low and High Altitude (20°F NMHC Low Alt. Only)								I/M*2 HC (PPM) @Idle/2500	I/M*2 CO (%) @Idle/2500
	NMOG	CO	20°F NMHC	20°F CO	NOx	HCHO	PM	Hwy NOx		
Std (50K)	NA	NA	NA	10.0	NA	NA	NA	NA	100/130(170)	1.0/1.0
Std (120K)	0.070	2.1	0.4	NA	0.04	0.011	0.01	0.05	100/130(170)	1.0/1.0

*1 In-use testing limited to 75% of useful life.

*2 The standards listed are the basic California I/M standards that are measured using the BAR 90ET analyzer and the tests are conducted at the base and 2500 rpm idle conditions. For many large urban areas in California, vehicles must additionally pass more stringent ASM5015 and ASM2525 loaded mode enhanced I/M HC, CO and NOx standards (reference Title 16, CCR, Section 3340.42). The enhanced I/M tests use the BAR97 analyzer to measure HC, CO and NOx emissions. The enhanced I/M HC, CO and NOx standards are calculated for each vehicle based on the emission standards category, vehicle type (including GVWR for trucks) and vehicle test weight which is defined as the curb weight plus 300 lbs. For PC the IM HC standard is 100/130, for LDT1 the IM HC standard is 100/170.

*3 Low altitude only.

*4 Composite standard for NMHC+NOx and PM = 35%FTP + 28%US06 + 37%SC03.

*5 Federal Cleaner Vehicle 50 state Bin - No 50° or I/M 4k standard.

ADDITIONAL FEDERAL STANDARDS

BIN 4 (PC &/OR LDT1) and Cold NMHC

TIER 2 BIN 4/BIN 4 (PC AND/OR LDT1) NATIONWIDE TEST GROUP

TEST GROUP NAME: BGMXV01.4001

EVAPORATIVE FAMILY NAME(S): BGMXR0060800

CERTIFICATION STANDARDS:

Std/DF (Mileage)	Low and High Altitude @Idle/2500	CST THC (PPM) @Idle/2500	CST CO (%)
Std (4K)	100	0.5	
Std (120K)	NA	NA	
DF (120K)	NA	NA	

IN-USE STANDARDS:

Std/DF (Mileage)*1	Low and High Altitude @Idle/2500	CST THC (PPM) @Idle/2500	CST CO (%)
Std (120K)	220	1.2	

*1 In-use testing limited to 75% of useful life.

Certification Summary Information Report

Manufacturer	General Motors LLC	Manufacturer Code	GMX
Test Group	BGMXV01.4001	Evaporative/Refueling Family	BGMXR0060800
Certificate Number	N/A	CARB Executive Order #	N/A
Certificate Issue Date	N/A	Certificate Revision Date	N/A
Certificate Effective Date	N/A	Conditional Certificate	--
CSI Revision #	N/A	CSI Submission/Revision Date	09/29/2010
Model Year	2011		

Test Group Information			
CSI Type	Update for Correction	Running Change Reference Number	N/A
Drive Source	Hybrid	EPA Vehicle Class	LDV
Federal Clean Fuel Vehicle	No	Federal Clean Fuel Vehicle Standard	--
Federal Clean Fuel Vehicle ILEV	No	California Partial Zero Emissions Vehicle Indicator	No
Durability Group Name	BGMXHHGVNB03	Durability Group Equivalency Factor	1
Fuel Category	Hybrid	Fuel 1 / Fuel 2	Gasoline, Battery Electric
Reduced Fee Test Group	No	Certification Region Code(s)	FA, CA
Introduction into Commerce Date	--	CAP2000 Conditional Certificate?	N/A
Independent Commercial Importer?	--	Alternative Fuel Converter Certificate?	--
SFTP Compliance Indicator	Yes	SFTP Composite CO Option	--
SFTP SC03 Test Number	BGMX10011416	SFTP US06 Test Number	BGMX91000734
SFTP FTP Test Number	BGMX91000718		
OBD Compliance Type	CARB	OBD Demo Vehicle Test Group	BGMXV01.4001
Mfr Test Group Comments	--		
Mfr Exhaust / Evap Standards Comments	--		

Evaporative/Refueling Family Information			
Evaporative Summary Information Type	New	Submission/Correction Date	09/28/2010
Integrated ORVR?	No	Fuel(s)	Gasoline
Bladder Fuel Tank?	No		
Fuel Tank Material	Metal	Fuel Tank Material Description	Metal
Fill Pipe Seal Type	Liquid seal		
Air Intake System Vapor Storage Device?	Yes	Air Intake System Vapor Storage Device Description	HCA
Fuel System Vapor Storage Canister?	Yes	Other Vapor Storage	N/A
Fuel System Vapor Storage Canister(s) Total Working Capacity (grams)	60	Number of Primary Canisters	1
Number of Bleed Canisters	0	Bleed Canister Total Working Capacity (grams)	N/A
Mfr Evaporative/Refueling Family Comments	--		

Certification Summary Information Report

Test Group		BGMXV01.4001		Evaporative/Refueling Family		BGMXR0060800		
Models Covered by this Certificate								
Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	Trans - # of Gears	Trans - Lockup	Trans - Creeper Gear
General Motors LLC	3 - Chevrolet	121 - VOLT	FA	F	CVT	1	No	No
General Motors LLC	3 - Chevrolet	121 - VOLT	CA	F	CVT	1	No	No
Engine Description								
Hybrid Type		IC Engine/Electric Motor		Hybrid Description		--		
Engine Type		4-Stroke Spark Ignition		Mfr Engine Description		--		
Engine Block Arrangement		Inline		Mfr Engine Block Arrangement Description		--		
Basic Fuel Metering System(s)		Multipoint/sequential fuel injection,		Number of Cylinders/Rotors		4		
After Treatment Device(s) (ATD)								
ATD Number		ATD Type		ATD Precious Metal		Substrate Material		Substrate Construction
1		Three-way catalyst		Paladium + Rhodium		Ceramic		Monolith
2		Three-way catalyst		Paladium + Rhodium		Ceramic		Monolith
Mfr After Treatment Device (ATD) Comments								
		--						
Direct Ozone Reduction (DOR) Device		Not Equipped						
Mfr Emission Control Device Comments		--						
Engine Configuration Number 1								
Engine Displacement (liters)		1.4		Engine Rated Horsepower		99		
Number of Inlet Valves Per Cylinder		2		Number of Exhaust Valves Per Cylinder		2		
Air Aspiration Method		Naturally Aspirated		Number of Air Aspiration Devices		0		
Air Aspiration Device Configuration		--		Charge Air Cooler Type		N/A		
Cylinder Deactivation Description		N/A		Variable Valve Lift System		N/A		
Variable Valve Timing System Description		Cam Phaser						
Number of Knock Sensors		1						
Air/Fuel Sensor # 1 Type		Heated oxygen		Air/Fuel Sensor # 1 Description		N/A		
Air/Fuel Sensor # 2 Type		Heated oxygen		Air/Fuel Sensor # 2 Description		N/A		
Mfr Air/Fuel Sensor Comments		--						
Exhaust Gas Recirculation		No		EGR Type		--		
Cooled Exhaust Gas Recirculation		No						
Closed Loop Air Injection System		No		Air Injection Type		--		
Mfr Engine Configuration Comments		--						

Certification Summary Information Report

Test Group	BGMXV01.4001	Evaporative/Refueling Family	BGMXR0060800
Hybrid Electric Vehicle And Fuel Cell Information			
Energy Storage Device	Battery	Battery Type	Li+
Number of Batteries	1	Total Voltage of Battery Packs	346
Battery Energy Capacity	45	Battery Specific Energy	80
Battery Charger Type	Both	Number of Capacitors	
Capacitor Rating (In Farads)		Mfr Capacitor Comments	
Hydraulic System Description			
Regenerative Braking Type	Electrical Regen Brake		
Regenerative Braking Source	Front Wheels	Driver Controlled Regenerative Braking	No
Mfr Regenerative Braking Description			
Drive Motor(s)/Generator(s)	2		
Motor/Generator Type 1	3 Phase AC	Rated Motor/Generator Power	40
Motor/Generator Type 2	3 Phase AC	Rated Motor/Generator Power	40
Mfr Fuel Cell Description			
Fuel Cell On-Board H2 Storage Capacity (kg)	--	Usable H2 Fill Capacity (kg)	--
Mfr Hybrid Electric/ Electric Vehicle Comments			

Certification Summary Information Report

Test Group	BGMXV01.4001			Evaporative/Refueling Family	BGMXR0060800							
Emission Data Vehicle Information												
Vehicle ID / Configuration	1411R60501 / 0											
Transmission Type	Continuously Variable			# of Transmission Gears	1							
Engine Code	1			Axle Ratio	2.16							
Fuel 1 / Fuel 2	Gasoline / Not Applicable			Vehicle Fuel Category	Hybrid							
Displacement (liters)	1.4			Rated Horsepower	85							
Equivalent Test Weight (pounds)	4000			Air Aspiration Method	Naturally Aspirated							
Test Drive Code	2-Wheel Drive, Front			SIL Usage	Not equipped							
Aged Emission Components	120,000 (mi)											
Dynamometer Coefficients:												
	Target Coefficients			Set Coefficients								
	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)						
City/Highway/Evap	26.05	-0.012	0.0182	0.71	0.2884	0.0136						
Cold CO	28.66	-0.0132	0.02002	2.88	-0.1228	0.01917						
US06	26.05	-0.012	0.0182	0.71	0.2884	0.0136						
Mfr Test Vehicle Comments --												
Test #	BGMX10011552			Test Procedure	11 - Cold CO							
Exhaust Test # for this Evap Test	N/A			Test Fuel Type	25 - Cold CO Premium (CERT)							
Test Date	09/24/2010			Fuel	Gasoline							
Vehicle Class	LDV/Passenger Car			DF Type	Mfr. Determined							
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	50,000 miles	Federal Tier 2 Bin 4	CO	2.05	1	--	--	--	--	2.0	10.0	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	HC-NM	0.29	1	--	--	--	--	0.3	0.3	Pass
CA	50,000 miles	Federal Tier 2 Bin 4	CO	2.05	1	--	--	--	--	2.0	10.0	Pass

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family			BGMXR0060800				
Test #		BGMX91000718			Test Procedure			21 - Federal fuel 2-day exhaust (w/can load)				
Exhaust Test # for this Evap Test		N/A			Test Fuel Type			61 - Tier 2 Cert Gasoline				
Test Date		09/15/2010			Fuel			Gasoline				
Vehicle Class		LDV/Passenger Car			DF Type			Mfr. Determined				
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 2 Bin 4	CO	1.31	1	--	--	--	--	1.3	2.1	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX-COMP	0.043	1	--	--	--	--	0.04	0.63	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	NMOG	0.0703	1	--	--	--	--	0.070	0.070	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	NOX	0.025	1	--	--	--	--	0.02	0.04	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	CO	1.31	1	--	--	--	--	1.3	2.1	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX-COMP	0.043	1	--	--	--	--	0.04	0.63	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	NMOG	0.0703	1	--	--	--	--	0.070	0.070	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	NOX	0.025	1	--	--	--	--	0.02	0.04	Pass

Test #		BGMX91000735			Test Procedure			3 - HWFE				
Exhaust Test # for this Evap Test		N/A			Test Fuel Type			61 - Tier 2 Cert Gasoline				
Test Date		09/16/2010			Fuel			Gasoline				
Vehicle Class		LDV/Passenger Car			DF Type			Mfr. Determined				

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 2 Bin 4	NOX	0.007	1	--	--	--	--	0.01	0.05	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	NOX	0.007	1	--	--	--	--	0.01	0.05	Pass

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family			BGMXR0060800				
Test #		BGMX91000734			Test Procedure			90 - US06				
Exhaust Test # for this Evap Test		N/A			Test Fuel Type			61 - Tier 2 Cert Gasoline				
Test Date		09/16/2010			Fuel			Gasoline				
Vehicle Class		LDV/Passenger Car			DF Type			Mfr. Determined				
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	4,000 miles	Federal Tier 2 Bin 4	CO	1.13	1	--	--	--	--	1.1	8.0	Pass
Fed	4,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX	0.012	1	--	--	--	--	0.01	0.14	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	CO	1.13	1	--	--	--	--	1.1	11.1	Pass
CA	4,000 miles	Federal Tier 2 Bin 4	CO	1.13	1	--	--	--	--	1.1	8.0	Pass
CA	4,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX	0.012	1	--	--	--	--	0.01	0.14	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	CO	1.13	1	--	--	--	--	1.1	11.1	Pass

Test #		BGMX10011416			Test Procedure			95 - SC03				
Exhaust Test # for this Evap Test		N/A			Test Fuel Type			61 - Tier 2 Cert Gasoline				
Test Date		09/02/2010			Fuel			Gasoline				
Vehicle Class		LDV/Passenger Car			DF Type			Mfr. Determined				
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	4,000 miles	Federal Tier 2 Bin 4	CO	1.97	1	--	--	--	--	2.0	2.7	Pass
Fed	4,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX	0.020	1	--	--	--	--	0.02	0.20	Pass
Fed	120,000 miles	Federal Tier 2 Bin 4	CO	1.97	1	--	--	--	--	2.0	3.7	Pass
CA	4,000 miles	Federal Tier 2 Bin 4	CO	1.97	1	--	--	--	--	2.0	2.7	Pass
CA	4,000 miles	Federal Tier 2 Bin 4	HC-NM+NOX	0.020	1	--	--	--	--	0.02	0.20	Pass
CA	120,000 miles	Federal Tier 2 Bin 4	CO	1.97	1	--	--	--	--	2.0	3.7	Pass

Certification Summary Information Report

Test Group	BGMXV01.4001			Evaporative/Refueling Family	BGMXR0060800			
Emission Data Vehicle Information								
Vehicle ID / Configuration	141CRN4523 / 0			# of Transmission Gears	1			
Transmission Type	Continuously Variable			Axle Ratio	2.16			
Engine Code	1			Vehicle Fuel Category	Hybrid			
Fuel 1 / Fuel 2	Gasoline / Not Applicable			Rated Horsepower	99			
Displacement (liters)	1.4			Air Aspiration Method	Naturally Aspirated			
Equivalent Test Weight (pounds)	4000			SIL Usage	Not equipped			
Test Drive Code	2-Wheel Drive, Front							
Aged Emission Components	4,000 (mi)							
Dynamometer Coefficients:								
	Target Coefficients			Set Coefficients				
	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)		
City/Highway/Evap	31.32	-0.0398	0.01921	11.59	0.0625	0.01666		
Mfr Test Vehicle Comments --								
Test #	BGMX10010914			Test Procedure	34 - Federal fuel 3-day evap			
Exhaust Test # for this Evap Test	BGMX10010911			Test Fuel Type	61 - Tier 2 Cert Gasoline			
Test Date	07/02/2010			Fuel	Gasoline			
Vehicle Class	N/A			DF Type	Mfr. Determined			
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal LEV-II Evap	HC-TOTAL	0.452	0.00	0.45	0.50	Pass
CA	150,000 miles	California LEV-II Evap	HC-TOTAL	0.452	0.00	0.45	0.50	Pass
Test #	BGMX10011502			Test Procedure	23 - 2-day evap			
Exhaust Test # for this Evap Test	BGMX10010911			Test Fuel Type	61 - Tier 2 Cert Gasoline			
Test Date	08/21/2010			Fuel	Gasoline			
Vehicle Class	N/A			DF Type	Mfr. Determined			
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal LEV-II Evap	HC-TOTAL	0.356	0.00	0.36	0.65	Pass
CA	150,000 miles	California LEV-II Evap	HC-TOTAL	0.356	0.00	0.36	0.65	Pass

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family		BGMXR0060800	
Test #		BGMX10010913			Test Procedure		32 - Federal Fuel Running Loss	
Exhaust Test # for this Evap Test		BGMX10010911			Test Fuel Type		61 - Tier 2 Cert Gasoline	
Test Date		07/02/2010			Fuel		Gasoline	
Vehicle Class		N/A			DF Type		Mfr. Determined	
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal LEV-II Evap	HC	0.002	0.00	0.00	0.05	Pass
CA	150,000 miles	California LEV-II Evap	HC	0.002	0.00	0.00	0.05	Pass
Test #		BGMX10010916			Test Procedure		24 - Federal fuel refueling test (ORVR)	
Exhaust Test # for this Evap Test		BGMX10010911			Test Fuel Type		61 - Tier 2 Cert Gasoline	
Test Date		07/17/2010			Fuel		Gasoline	
Vehicle Class		N/A			DF Type		Mfr. Determined	
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal LEV-II Evap	HC	0.125	0.00	0.12	0.20	Pass
CA	120,000 miles	California LEV-II Evap	HC	0.125	0.00	0.12	0.20	Pass

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family		BGMXR0060800		
Consolidated List of Standards									
Exhaust Standards									
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		US06		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
4,000 miles	CO	--	1	--	--	--	--	--	8.0
4,000 miles	HC-NM+NOX	--	1	--	--	--	--	--	0.14
120,000 miles	CO	--	1	--	--	--	--	--	11.1
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Cold CO		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
50,000 miles	CO	--	1	--	--	--	--	--	10.0
120,000 miles	HC-NM	--	1	--	--	--	--	--	0.3
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		US06		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
4,000 miles	CO	--	1	--	--	--	--	--	8.0
4,000 miles	HC-NM+NOX	--	1	--	--	--	--	--	0.14
120,000 miles	CO	--	1	--	--	--	--	--	11.1

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family		BGMXR0060800		
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Federal fuel 2-day exhaust (w/can load)		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	CO	--	1	--	--	--	--	--	2.1
120,000 miles	NMOG	--	1	--	--	--	--	--	0.070
120,000 miles	NOX	--	1	--	--	--	--	--	0.04
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		HWFE		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	NOX	--	1	--	--	--	--	--	0.05
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Federal fuel 2-day exhaust (w/can load)		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	CO	--	1	--	--	--	--	--	2.1
120,000 miles	NMOG	--	1	--	--	--	--	--	0.070
120,000 miles	NOX	--	1	--	--	--	--	--	0.04
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		SC03		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
4,000 miles	CO	--	1	--	--	--	--	--	2.7
4,000 miles	HC-NM+NOX	--	1	--	--	--	--	--	0.20
120,000 miles	CO	--	1	--	--	--	--	--	3.7

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family		BGMXR0060800		
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Cold CO		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
50,000 miles	CO	--	1	--	--	--	--	--	10.0
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		SC03		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
4,000 miles	CO	--	1	--	--	--	--	--	2.7
4,000 miles	HC-NM+NOX	--	1	--	--	--	--	--	0.20
120,000 miles	CO	--	1	--	--	--	--	--	3.7
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Federal fuel 3-day exhaust		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	HC-NM+NOX-COMP	--	1	--	--	--	--	--	0.63
Cert Region		Federal			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		Federal fuel 3-day exhaust		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	HC-NM+NOX-COMP	--	1	--	--	--	--	--	0.63

Certification Summary Information Report

Test Group		BGMXV01.4001			Evaporative/Refueling Family		BGMXR0060800		
Cert Region		California + CAA Section 177 states			Cert/In-Use Code		Cert		
Vehicle Class		LDV/Passenger Car			Standard Level		Federal Tier 2 Bin 4		
Fuel		Gasoline			Test Procedure		HWFE		
					Upward Diesel Adjustment Factor		Downward Diesel Adjustment Factor		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC			Mult DF	Add DF	Std
120,000 miles	NOX	--	1	--	--	--	--	--	0.05

Evaporative/Refueling Standards

Evaporative/Refueling Family		BGMXR0060800		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-II Evap	
Test Procedure		Federal Fuel Running Loss					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC	--	0.05	0.00		

Evaporative/Refueling Family		BGMXR0060800		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-II Evap	
Test Procedure		2-day evap					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL	--	0.65	0.00		

Evaporative/Refueling Family		BGMXR0060800		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal LEV-II Evap	
Test Procedure		2-day evap					
Fuel	Useful Life	Emission Name		Rounded Result		Std	Add DF
Gasoline	120,000 miles	HC-TOTAL		--		0.65	0.00

Evaporative/Refueling Family		BGMXR0060800		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal LEV-II Evap	
Test Procedure		Federal Fuel Running Loss					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	120,000 miles	HC	--	0.05	0.00		

Certification Summary Information Report

Test Group		BGMXV01.4001		Evaporative/Refueling Family		BGMXR0060800	
Evaporative/Refueling Family		BGMXR0060800		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal LEV-II Evap	
Test Procedure		Federal fuel 3-day evap					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	120,000 miles	HC-TOTAL	--	0.50	0.00		
Evaporative/Refueling Family		BGMXR0060800		Cert Region		Federal	
Cert/In-Use Code		Cert		Standard Level		Federal LEV-II Evap	
Test Procedure		Federal fuel refueling test (ORVR)					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	120,000 miles	HC	--	0.20	0.00		
Evaporative/Refueling Family		BGMXR0060800		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-II Evap	
Test Procedure		Federal fuel refueling test (ORVR)					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	120,000 miles	HC	--	0.20	0.00		
Evaporative/Refueling Family		BGMXR0060800		Cert Region		California + CAA Section 177 states	
Cert/In-Use Code		Cert		Standard Level		California LEV-II Evap	
Test Procedure		Federal fuel 3-day evap					
Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF		
Gasoline	150,000 miles	HC-TOTAL	--	0.50	0.00		

Certification Summary Information Report

Test Group		BGMXV01.4001	Evaporative/Refueling Family	BGMXR0060800
Glossary				
Useful Life				
4	4,000 miles	120	120,000 miles	
50	50,000 miles	150	150,000 miles	
100	100,000 miles			
Emission Name				
HC-TOTAL	Total Hydrocarbon	HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides	
CO	Carbon Monoxide	CO-COMP	SFTP Composite Carbon Monoxide	
CO2	Carbon dioxide	ETHANOL	Ethanol	
NOX	Nitrogen Oxide	FE BAG 1	Bag 1 Fuel Economy	
PM	Particulate Matter	FE BAG 2	Bag 2 Fuel Economy	
PM-COMP	SFTP Composite Particulate Matter	FE BAG 3	Bag 3 Fuel Economy	
HC-NM	Non-methane Hydrocarbon	FE BAG 4	Bag 4 Fuel Economy	
OMHCE	Organic material Hydrocarbon Equivalent	MFR FE	Manufacturer Fuel Economy	
OMNMHCE	Organic material non-methane HC equivalent	SPITBACK	Spitback	
NMOG	Non-methane organic gas (California)	HC	HC	
HCHO	Formaldehyde	METHANE	Methane	
H3C2HO	Acetaldehyde	METHANOL	Methanol	
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03			
Certification Region				
CA	California + CAA Section 177 states	FA	Federal	
Exhaust Emission Standard Level				
B1	Federal Tier 2 Bin 1	B11	Federal Tier 2 Bin 11	
B2	Federal Tier 2 Bin 2	HDV1	Federal HDV (8500-10,000 GVWR)	
B3	Federal Tier 2 Bin 3	HDV2	Federal HDV (10,001-14,000 GVWR)	
B4	Federal Tier 2 Bin 4	L2	California LEV-II LEV	
B5	Federal Tier 2 Bin 5	L2OP	California LEV-II LEV Optional	
B6	Federal Tier 2 Bin 6	U2	California LEV-II ULEV	
B7	Federal Tier 2 Bin 7	S2	California LEV-II SULEV	
B8	Federal Tier 2 Bin 8	ZEV	California ZEV	
B9	Federal Tier 2 Bin 9	OT	Other	
B10	Federal Tier 2 Bin 10			
Transmission Type Code				
A	Automatic	M	Manual	
AM	Automated Manual	OT	Other	
CVT	Continuously Variable	SA	Semi-Automatic	
Drive System Code				

Certification Summary Information Report

Test Group		Evaporative/Refueling Family	
BGMXV01.4001		BGMXR0060800	
4	4-Wheel Drive	P	Part-time 4-Wheel Drive
F	2-Wheel Drive, Front	A	All Wheel Drive
R	2-Wheel Drive, Rear		
Additional Terms and Acronyms			
AFC	Alternative Fuel Converter	ICI	Independent Commercial Importer
CSI	Certificate Summary Information	ORVR	Onboard Refueling Vapor Recovery
DF	Deterioration Factor	SIL	Shift Indicator Light
Evap	Evaporation, Evaporative	Trans	Transmission

CALIFORNIA CO2 REPORT **

----- TEST CONSTITUENT DATA -----
California

TEST GROUP:	BGMXV01.4001	EVAP FAM:	BGMXR0060800	DURA TYPE:	AGED
VEH/CONFIG/VER:	1411R60501/ 000/ 00	VEH WEIGHT/EMIS CAT:	PC/BIN4M,BIN4		
VEH TYPE:	CAR	EVAP WEIGHT/EMIS CAT:	CAR 0-99999 LDVT/0 LEV2 99.9		
GVWR:	-				

U/L Mileage	RUN #	Test Procedure	EPA TEST#	Emissions	Result	ROUNDED	RAF	DF Calc Tech	DF	Cert Level	Standard	Tier	Test Fuel
120000	13	SC03	BGMX10011416	CO2	273.3500								FAT2
120000	18	COLD	BGMX10011552	CO2	267.2910								HCO
120000	EPA1	EMIS	BGMX91000718	CO2	201.7030								FAT2
120000	EPA2	HWFE	BGMX91000735	CO2	166.3836								FAT2
120000	EPA3	US06	BGMX91000734	CO2	239.0585								FAT2

** These values have not yet been adjusted per the calculation method in GM letter BG075 documented on August 2, 2010.

CALIFORNIA FUEL ECONOMY REPORT **

----- TEST CONSTITUENT DATA -----
California

TEST GROUP:	BGMXV01.4001	EVAP FAM:	BGMXR0060800	DURA TYPE:	AGED
VEH/CONFIG/VER:	1411R60501/ 000/ 00	VEH WEIGHT/EMIS CAT:	PC/BIN4M,BIN4		
VEH TYPE:	CAR	EVAP WEIGHT/EMIS CAT:	CAR 0-99999 LDVT/0 LEV2 99.9		
GVWR:	-				

U/L Mileage	RUN #	Test Procedure	EPA TEST#	Emissions	Result	ROUNDED	RAF	DF Calc Tech	DF	Cert Level	Standard	Tier	Test Fuel
120000	13	SC03	BGMX10011416	MPG	32.1000								FAT2
120000	18	COLD	BGMX10011552	MPG	32.6000								HCO
120000	EPA1	EMIS	BGMX91000718	MPG	43.5000								FAT2
120000	EPA2	HWFE	BGMX91000735	MPG	52.9000								FAT2
120000	EPA3	US06	BGMX91000734	MPG	36.9000								FAT2

** These values have not yet been adjusted per the calculation method in GM letter BG075 documented on August 2, 2010.

2011 MODEL YEAR

COMPLIANCE STATEMENTS

FEDERAL AND CALIFORNIA EMISSION CONTROL SYSTEM CONTINUITY

Based on engineering evaluations of emission testing between 20°F and 86°F, there is no discontinuity in emission performance of NMOG, CO, NOx or HCHO as measured on the Federal Test Procedure in the temperature range of 20°F to 86°F for vehicles in this test group.

CALIFORNIA VEHICLE EMISSION CONTROL LABEL (TUNE-UP) COMPLIANCE

GM attests that the vehicle emission control label complies with the label durability requirements of the "California Motor Vehicle Emission Control and Smog Index Label Specifications", Title 13, CCR, Section 1965.

FEDERAL AND CALIFORNIA LBT+6% COMPLIANCE

Vehicles in this test group are expected to comply with the SFTP / LBT+6% requirement. Enrichment calibrations richer than LBT+6% are to protect from emission control hardware failures, engine component failures, excessive coolant temperatures (hot coolant enrichment) and piston scuff.

FEDERAL AND CALIFORNIA OTTO-CYCLE, GASOLINE FUELED, FORMALDEHYDE EMISSIONS COMPLIANCE

Based on an engineering evaluation of formaldehyde emission test data, vehicles in this test group are expected to comply with the formaldehyde emission standards.

FEDERAL AND CALIFORNIA OTTO-CYCLE, PARTICULATE MATTER EMISSIONS COMPLIANCE

Based on an engineering evaluation of the particulate matter emission test data, vehicles in this test group are expected to comply with the particulate matter emission standards.

FEDERAL HIGH ALTITUDE EMISSIONS COMPLIANCE

Based on an evaluation of high altitude emission test data, vehicles in this test group(s) are expected to comply with the FTP, evaporative and ORVR standards at high altitude.

FEDERAL CERTIFICATION SHORT TEST (CST) EMISSIONS COMPLIANCE

Based on an evaluation of CST emission test data, vehicles in this test group(s) are expected to comply with the CST standards.

FEDERAL SPITBACK EMISSIONS COMPLIANCE

General Motors certifies that all on-board refueling vapor recovery (ORVR) equipped vehicles inherently meet the fuel dispensing spitback standard as part of the compliance with the refueling emission standard.

FEDERAL ON-BOARD DIAGNOSTIC (OBD) COMPLIANCE

Based on 40 CFR 1806-01(j), all vehicles in this test group(s) meet Federal OBD requirements.

2011 MODEL YEAR

COMPLIANCE STATEMENTS (CONT.)

91 RON FUEL TESTING COMPLIANCE

The knock sensor does not activate in any way during the FTP (or the SFTP as applicable) and the HWFET, and the calibration is designed to operate on 91 RON gasoline without the need for spark adjustment.

The city and highway fuel economy test result differences between comparing 91 RON operation and 96 RON operation is within 3%, and there are no emissions increases (beyond normal test variability) using 91 RON fuel when tested on the FTP (or SFTP, as applicable).

FEDERAL TIER 2 AND INTERIM NON-TIER 2 LEAK-FREE EXHAUST

This vehicle has been designed with a leak-free exhaust system. A “leak-free” exhaust system is one in which leakage is controlled so that it will not lead to a failure of the certification exhaust emission standards in-use.

EXHAUST, EVAPORATIVE AND REFUELING EMISSIONS USEFUL LIFE COMPLIANCE

Based on GM's good engineering judgment, all of the vehicles described in GM's application for certification comply with all applicable intermediate and full useful life chassis certified exhaust emissions, evaporative emissions and refueling emissions standards.

CALIFORNIA TWO-DAY DIURNAL LOW SOC COMPLIANCE

The canisters in all vehicles within evaporative family BGMXR0060800 shall have attained a purged condition when the vehicles have consumed at least 85% of their nominal fuel tank capacity. Assurance with this performance is based on the particular design specifications of vehicles within this evaporative family, other inherent battery-charge operation mode characteristics of the vehicle's related systems, and other knowledge possessed by the manufacturer. Providing this assurance relieves the manufacturer of conducting a separate engineering evaluation for demonstrating the capability of purging the canister during a supplemental two-day diurnal plus hot soak emission test sequence in which battery state-of-charge setting is at the lowest level allowed by the manufacturer.

CHARGE DEPLETING TO CHARGE SUSTAINING MODE TRANSITION EMISSION COMPLIANCE

Based on GM's engineering evaluation, all vehicles described in GM's application for certification comply with all applicable emission standards during the transition point between Charge Depleting and Charge Sustaining mode.

CHARGE SUSTAINING MODE EMISSION COMPLIANCE

Based on GM's engineering evaluation, there is no emission performance discontinuity between highest and lowest level of battery state-of-charge in Charge Sustaining mode. All vehicles described in GM's application for certification comply with all applicable emission standards regardless of battery state-of-charge in Charge Sustaining mode.

FLEXIBLE OR ALTERNATE FUELS

Extended Range Electric Vehicle (EREV) System Description

Electric Drive Unit

Two 3-phase asynchronous electric motor
111 kW 10 second peak Power
370 Nm peak torque

Battery

Lithium Ion battery pack
16 kWh pack energy capacity
60 kW charge power

Transmission

Electronically variable transmission

Regenerative braking system

During coasting and during brake applies, the electric motor will be used to decelerate the vehicle and provide electricity to the high voltage battery. The amount of charge the high voltage battery will accept will vary during normal operation depending on the battery state of charge and temperature.

Additional information provided in owner's manual documents:

Proper refueling procedure outlines
Description of warning system(s) for malfunctions
Starting and shifting procedures
Vehicle safety with the following subtopics:
 Information supplied to the customer for safe operation of the vehicle
 Information on safe handling of the battery system
 Description of emergency procedures

SPECIAL TEST INSTRUCTIONS

DRIVER SELECTABLE SWITCHES

Traction Control:

Some vehicles are equipped with an electronic traction control system which continuously operates in a default mode. Before each emission test, the system must be disabled. The system can be disabled by pushing a traction control button, if equipped, located in the center dash board. After an engine restart, the traction control system is automatically reactivated. See "Disabling Traction Control – Extended Range Electric Vehicle (EREV):" for more specific information regarding disabling traction control.

Performance Control:

Some vehicles are equipped with a performance mode switch. Before each emission test, to operate the vehicle in the performance mode, the system must be engaged by depressing the performance switch. The switch is located on the center information panel. Upon an engine restart, the performance mode must be reactivated.

OTHER

Parking Brake:

All front wheel drive vehicles must have the parking brake set prior to any dynamometer emission testing.

Canister Loading:

Most General Motors vehicles have a service port for the evaporative system. For vehicles that are not equipped with a service port, an evap service access port tool must be utilized. The evap service access port tool should be installed between the purge solenoid and the vehicle purge line. Purging and loading of the evaporative emissions canister must be done through this service port or service port tool. The service port and service port tool consists of a Schrader valve which is in series with the purge line. It can be identified by its green cap.

After the canister load, pressure must be relieved from the fuel tank just prior to driving the FTP (City) test. To complete this step, press the refueling button (the upper of the two buttons) on the driver's door. Wait for the "Ready to Refuel" message to appear on the driver's information screen. The fuel door will not "pop" open after the button push. Press on the fuel door to open it, then close and press on the fuel door to complete the canister loading procedure. Please contact General Motors Compliance & Certification organization for instructions on the required vehicle setup procedures for canister purge and loading.

Anti-Lock Braking System (ABS):

Some vehicles come equipped with ABS systems. During dynamometer testing, the ABS system will detect the difference in wheel speed between the front and rear wheels. The ABS system will interpret this as a system malfunction and illuminate the ABS warning lamp on the instrument cluster. This will have no effect on test results. ABS codes must be cleared when testing is complete.

Canister Isolation Method for Evaporative and ORVR Testing:

Canister isolation is required during evaporative and ORVR testing. Canister isolation is achieved through the use of external hoses and a mechanical two-position three-way valve. This valve is installed between the canister and the fuel tank. In one valve position, the system operates as designed. In the other valve position, the canister is isolated from the fuel tank and fuel vapors are vented from the fuel system. Please contact General Motors Compliance & Certification organization for instructions on the required vehicle setup procedures for canister isolation.

SPECIAL TEST INSTRUCTIONS (CONT.)

Emission Test Special Vehicle Cooling:

When conducting an emission test, the front cooling fan is placed on the floor to match the vehicle air inlet area. For the highway test, the variable speed fan used on the US06 was approved for use in place of the Hartzell fan. This special cooling provision does not apply to the FTP, SC03 or 20°F FTP emission test.

Automatic Headlight Systems:

Automatic headlight systems must be disabled prior to any emission or fuel economy testing. DRL can be turned off via a switch on the end of the turn signal stalk. Please contact General Motors Compliance and Certification organization for instructions on how to disable the automatic headlight system.

Daytime Running Lights (DRL):

Daytime running lights must be disabled prior to fuel economy testing. DRL can be turned off via a switch on the end of the turn signal stalk. Please contact General Motors Compliance and Certification organization for instructions on how to disable the daytime running lights.

SPECIAL TEST INSTRUCTIONS – EREV

Advanced Hybrid System – Extended Range Electric Vehicle (EREV):

- The vehicle's hood latch must be engaged during all prep/test sequences to allow for the proper functioning of the hybrid mode. This is achieved by placing a metal hood switch in between the hood latch and latch receptacle and closing the hood on top of the switch.
- Vehicle must be moved between prep/test sequences utilizing a vehicle crab, with engine off.
- FTP testing performed using 4-bag test procedure.
- Highway testing performed using one driving schedule as a prep, two driving schedules to stabilize battery state-of-charge, then one driving schedule to measure emissions.
- US06/SC03 testing performed using one driving schedule as a prep, then one driving schedule to measure emissions.
- HVAC Control set to Off for FTP City, Hwy, and US06
 - Fan only selection & fan at 0 %
 - Verify that HVAC energy display on HVAC display (lower left corner) is at 0%
- Please contact General Motors Compliance & Certification organization for instructions on vehicle setup required for testing on a 2WD dynamometer.
- Please contact General Motors Compliance & Certification organization for additional instructions on attaching battery state of charge (SOC) measurement equipment for testing or set-up.

Disabling Traction Control – Extended Range Electric Vehicle (EREV):

For General Motor's EREV hybrids, traction control must be disabled using a secondary piece of hardware (CANLOG4 device). These instructions are provided for each hybrid test.

*** Perform these steps for every engine start*

- Make sure CANLOG4 connector is unplugged and ignition is off.
- Plug in CANLOG4 connector into ALDL port
- Vehicle can now be started; traction control will be disabled for duration of test.
- Upon completion of prep or test, key down and unplug CANLOG4 after ignition is off to prevent draining the 12V battery

Placing Vehicle in Neutral for Moving – Extended Range Electric Vehicle (EREV):

- Power-up (accessory mode) without engaging traction system by pressing and holding start button for 4 seconds. Do not depress brake pedal. Shift into neutral
- When vehicle move is complete, shift to Park and press Power button to turn the vehicle off. Verify that the vehicle systems power down by leaving the keys in the vehicle and closing all doors. If done properly, the horn will sound 3 quick beeps. If no beeps, cycle accessory power again.

2011 EMISSION CONTROL SYSTEM PARAMETERS SENSED VERSUS PARAMETERS CONTROLLED

	PARAMETERS CONTROLLED																				
	FUEL	IAC	SPARK	EGR	SAIR	ETC	PURGE	BOYSPASS	TRANS*1	TCC*1	ENG SPEED	INPUT CLU	THERMOSTA	SIL*2	COGS*2	O2 HTR	AFM	CAMP SR	EMTORQ*3	AUTO Start / Stop	
ABUSE TORQUE MANAGEMENT REQUESTED																					
ABS WHEEL SLIP (TRACTION CONTROL OFF)																					
ABS WHEEL SLIP (W/TRACTION CONTROL ACTIVE, VSES)	X		X			X															
ABS WHEEL SPEED																					
ACCELERATOR PEDAL POSITION	X					X			X		X	X							X	X	
ACCESSORY LOAD HIGH VOLTAGE	X					X			X		X	X							X	X	
A/C COMPR CLUTCH COMMANDED																					
A/C PRESSURE	X					X			X		X	X							X	X	
A/C REQUESTED	X					X			X		X	X							X	X	
AIR PRESSURE SENSOR																					
AFM ACTIVE																					
ALCOHOL PERCENTAGE IN FUEL																					
ALTERNATOR DUTY CYCLE / APM	X					X			X		X	X							X	X	
AMBIENT AIR TEMPERATURE	X								X				X							X	
BAROMETRIC PRESSURE																					
BATTERY STATE OF CHARGE HIGH VOLTAGE	X		X			X			X		X	X							X	X	
BATTERY TEMPERATURE HIGH VOLTAGE	X		X			X			X		X	X							X	X	
BATTERY VOLTAGE LOW VOLTAGE	X		X			X			X		X	X							X	X	
BOOST IDLE COMMAND																					
BOOST IDLE REQUEST																					
BOOST PRESSURE SENSOR																					
BRAKES APPLIED	X		X			X			X		X	X							X	X	
BRAKE BOOST VACUUM SENSOR																					
CAMSHAFT POSITION	X		X			X												X			
CLUTCH DEPRESSED *2																					
CLUTCH POSITION SENSOR *2																					
COOLANT LEVEL SENSOR																					
COOLING FANS COMMANDED																					
COOLING FANS REQUESTED	X		X			X			X		X	X							X	X	
CRANKSHAFT POSITION	X		X								X							X	X	X	
CRUISE CONTROL (ON AND/OR SET)						X					X								X		
DRIVER INTENDED BRAKE TORQUE	X		X			X			X		X	X							X	X	
ECO MODE																					
EGR ABSOLUTE PRESSURE																					
EGR PINTLE POSITION																					
ELECTRIC MOTOR CURRENT SENSOR																					
ELECTRIC MOTOR POSITION											X									X	
ELECTRIC MOTOR SPEED						X			X											X	
ELECTRICAL SYSTEM VOLTAGE (LOW VOLTAGE)	X		X			X	X		X		X	X						X	X	X	
ELECTRICAL SYSTEM VOLTAGE (HIGH VOLTAGE)	X		X			X	X		X		X	X						X	X	X	
ENGINE COOLANT TEMPERATURE	X		X			X	X		X				X			X		X		X	
ENGINE CRANK REQUESTED																					
ENGINE DETONATION (SPARK KNOCK)			X			X			X		X										
ENGINE OIL PRESSURE																					

COMMAND ROUTED THROUGH HV ACC LOAD

COMMAND ROUTED THROUGH HV ACC LOAD

COMMAND ROUTED THROUGH HV ACC LOAD

COMMAND ROUTED THROUGH HV ACC LOAD

COMMAND ROUTED THROUGH HV ACC LOAD

12V COMMAND ROUTED THROUGH HV ACC LOAD

CAPABLE OF SHUTTING ENGINE DOWN IF VOLTAGE GETS TOO LOW

{COMMAND ROUTED THROUGH HV ACC LOAD}

{COMMAND ROUTED THROUGH HV ACC LOAD}

{COMMAND ROUTED THROUGH HV ACC LOAD}

{COMMAND ROUTED THROUGH HV ACC LOAD}

{12V COMMAND ROUTED THROUGH HV ACC LOAD}

CAPABLE OF SHUTTING ENGINE DOWN IF VOLTAGE GETS TOO LOW

ETC/ENG SPEED DUE TO ENGINE POWER CONSTRAINED BY C3 CAPACITY

86.1844(d)(11)

Engine Code Information

Base Engine Code	1
EC Derivatives	
Test Group	BGMXV01.4001
Durability Group	BGMXHHGVNB03
Engine RPO	LUU
Disp, liters	1.4
Trans RPO	MKA
Trans Type	AV
Product Code	R
Emission RPO	NT7,NU5
Emissions Category	Tier 2
Vehicle Type	CAR
Regulatory Agencies	F,C
Sales Area	FA/CA
Design Altitude	Both
A/C Equipped	Yes
Driver Select Device	Normal/Sport/GBPM
Police Only	No
Horsepower @ RPM	85@4800
Torque @ RPM	93@4250
Emission Ctrl Sys	SFI/TWC(2)/HO2S(2)
TapUp/TapDown	No
Active Fuel Management	No
Description	EREV

Vehicle Parameters - Certificate Coverage

Durability Group BGMXHHGVNB03
TestGroup BGMXV01.4001

													Final	Loaded									
EC	EC	Eng	Evap			Evap	Trans			Drive				Weight	TWC							RLHP	Drv
Der	RPO	Disp	Family	Code	Model	Car	Line	Type/Code	Ratio	GVWR	Tire	NV	Veh/DA	Meth	TWC	TLHP	F0	F1	F2	RPO	Sys	Note	
1		LUU	1.4	BGMXR0060800	100	1RC68	VOLT	AV/1	2.16	--	P215/55R17 ALS GDY	92.3	4051/2435	LVW	4000	9.5	26.05	-0.0119	0.01820	--	FD		

GM elects to test at the next higher test weight class where applicable (reference 40CFR86.1831-01(b)(3)).

TRANSMISSION INFORMATION

Test Group ID	BGMXV01.4001
Transmission Code	1
Transmission RPO	MKA
Transmission Type	AV
Drive Gear Ratios	3.24
Chain Drive Ratio	NA
Shift Calibrations	Computer Controlled
Torque Converter Diameter	NA
Torque Converter Stall Torque Ratio	NA
Torque Converter Lockup RPM'S	NA
Torque Converter Stall Torque Speed	NA
Multimode Feature - # of Modes	3
Shift Indicator Light	NA
Description	MKA
TapUp/TapDown	No

ENGINE STARTING INSTRUCTIONS

Warm or Cold Engine

Do not press down on the accelerator pedal. Press your foot down on the brake pedal and press and hold the “Power” button, located in the lower left-hand corner on the center information panel, for 4 seconds. Release the “Power” button and your foot off the brake.

Reference Owner’s Manual for complete starting instructions.

SHIFT SCHEDULES – NA

<u>Trans Code</u>	<u>Shift Schedule</u>				<u>Recommended Shift Speeds (mph)</u>			
	<u>FTP</u>	<u>Hwy</u>	<u>SC03</u>	<u>US06*1</u>	<u>1-2</u>	<u>2-3</u>	<u>3-4</u>	<u>4-5</u>

*1 The speeds and acceleration rates encountered in the US06 driving schedule may require shift speeds different from the other schedules.

NA – Not Applicable



General Motors

General Motors LLC
Compliance & Certification
MC 483-331-500
Milford Proving Ground
3300 General Motors Road
Milford, Michigan 48380-3726

September 28, 2010

ML-BP133

Mr. S. Healy
U.S. Environmental Protection Agency
Office of Transportation & Air Quality
Certification & Compliance Division
2000 Traverwood
Ann Arbor, MI 48105

Dear Mr. Healy:

Subject: Request for Certificate of Conformity - 2011 General Motors Test Group/
Evaporative Family BGMXV01.4001/BGMXR0060800

General Motors requests that the EPA issue a certificate of conformity for the subject test group. GM requests the EPA review this request to expedite your final approval of the certificate of conformity for the subject test group. Attached to this request is the Part 1 Application and a copy of the EPA Certification Fee Filing form.

GM requests that the confidential information contained within this Part 1 Application, or subsequently submitted for inclusion in this application, which is of a type described in EPA, General Council Class Determination 2-80, be accorded confidential treatment for the time periods specified in this Class Determination.

GM believes that the test group complies with all applicable regulations contained within Title 40 of the CFR, California Amendments to Subparts B, C, and S, Part 86 and Part 88, Title 40 of the CFR, and Title 13 of the California Code of Regulations.

Please review this information as soon as possible and call if you should have any questions regarding this request for a certificate of conformity.

Sincerely,

D. S. McGuire
Total Compliance Engineer
Compliance & Certification

DSM/KJT



General Motors

General Motors LLC
Compliance & Certification
MC 483-331-500
Milford Proving Ground
3300 General Motors Road
Milford, Michigan 48380-3726

September 29, 2010

ML-BP134

Ms. A. Hebert, Chief
Mobile Source Operations Division
Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, CA 91731

Dear Ms. Hebert:

Subject: Request for Executive Order - 2011 General Motors Test Group/Evaporative
Family BGMXV01.4001/BGMXR0060800

General Motors requests that the CARB issue an executive order for the subject test group.

GM requests that the confidential information contained within this Part 1 Application, or subsequently submitted for inclusion in this application, which is of a type described in EPA, General Council Class Determination 2-80, be accorded confidential treatment for the time periods specified in this Class Determination.

GM believes that the test group complies with all applicable regulations contained within Title 40 of the CFR, California Amendments to Subparts B, C and S, Part 86, Title 40 of the CFR, and Title 13 of the California Code of Regulations.

The EPA certificate of conformity for this test group will be forwarded to you when it becomes available.

Please review this information as soon as possible and call if you have any questions regarding this request for an executive order.

Sincerely,

David S. McGuire
Total Compliance Engineer
Compliance & Certification

DSM/KJT

EMISSION DATA RATIOS

TO BE USED FOR ASSEMBLY LINE TESTING

	<u>Data Ratios</u>
NMHC (G/MI) *1	NA
NMOG (G/MI) *2	NA
HCHO (G/MI) *3	NA
NMOG:NMHC *2	1.04
HCHO:NMHC *2	NA

*1 NMHC includes methane response factor.

*2 Effective with the 2004 model year, both EPA and CARB have, through regulatory change, established an industry 1.04 NMHC to NMOG factor which can be used for cert testing for all gasoline tests (does not apply to alcohol fuels).

*3 HCHO requirements will now be met by a compliance statement for both EPA and CARB (does not apply to alcohol fuels).



**U.S. ENVIRONMENTAL PROTECTION AGENCY
MOTOR VEHICLE AND ENGINE COMPLIANCE PROGRAM
ON-HIGHWAY FEE FILING FORM
FOR CERTIFICATION APPLICATIONS RECEIVED IN CALENDAR YEAR 2010**

Manufacturer Name General Motors LLC

Address 3300 General Motors Rd.

City/State/Zip Code/Country Milford, MI 48380-3726 U.S.A.

On-Highway Certification Request Type (check one)

- ☒ LDV/LDT/MDPV/HDV (Chassis cert) **FEDERAL (\$34,849)** ☐ HDV EVAP-ONLY (\$511)
☐ LDV/LDT/MDPV/HDV (Chassis cert) **CAL-ONLY (\$17,575)** ☐ HDE CALIF-ONLY (\$511)
☐ HDE (Engine Dyno cert) **FEDERAL (\$35,967)** ☐ MOTORCYCLE (\$1,337)
☐ LD/MDPV/HDV ICI (\$34,681)

EPA standard engine family or test group or
HDV evaporative family name:

B	G	M	X	V	0	1	.	4	0	0	1
---	---	---	---	---	---	---	---	---	---	---	---

Amount paid (U.S. Funds Only):

\$ 34,849

Enter the check number, or the statement AEFT/WIRE@ or AEFT/ACH@:

005020616

Reduced Fee Section (40 CFR 85.2406)

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/engines covered: _____

Aggregate retail sales price of the vehicles/engines? \$ _____ x 1% = \$ _____

Check box if an Independent Commercial Importer? ☐ List the VIN of imported vehicles/engines below:

Company Representative: Kim Sinacola

Signature: *K. Sinacola*

Title: Staff Assistant

Phone/Fax: 248/685-5641 / 248/685-5604

Date: 03/15/2010

E-mail Address: kimber.l.sinacola@gm.com

Submission of payments and forms:

- (1) Online: **Forms** may be found and/or **payments** may be submitted online at www.Pay.gov.
(2) Send **checks** and this **form** to:

**Environmental Protection Agency
Motor Vehicle and Engine Compliance Program
P.O. Box 979032
St. Louis, MO 63197-9000**

- (3) Transmit offline **EFT/Wire payments** to the New York Federal Reserve Bank. (See Instructions, p. 2)
(4) Transmit offline **EFT/ACH payments** to the Federal Reserve Bank of Cleveland. (Instructions, p.2)
(5) **Forms** not submitted under (1) and (2) above can be sent as email attachments to Fee@epa.gov.
Forms and payments sent in ways other than the above may be delayed or ineffective. See the Instructions for sending checks and forms by private mail service (e.g., Federal Express).

*** VEHICLE INFORMATION ***

Model Year	2011	Certifying Agent	GM
Test Vehicle	1411R60501	GM Config	000
		Run Date	09/29/2010 10:54:53

VEHICLE NO:	1411R60501	CONFIGURATION NO:	000	EPA VERSION NO:	00
				ORIGINAL CERT YEAR:	2011

ENG FAM/TEST GRP:	BGMXV01.4001	ENGINE CODE:	1		
EVAP FAMILY:	BGMXR0060800	EVAP CODE:	100		
TEST PURPOSE:	DATA	DISPL:	1.4	SALES LOC:	BOTH
VEH TYPE: FED=	PC	CAL=	PC	EMIS CATEGORY: FED=	BIN4M
DURA GRP:	BGMXHHGVNB03	DURA VEH NO:		DURA CONFIG:	CAL= BIN4M
FUEL METER:	SFI	BOOST TYPE:	T	VALVES PER CYL:	4

TRANS: TYPE=	AV	CODE= 1	MODE= Normal	SIL EQUIPPED:	No	SIL VERSION:	N/A
SHIFT SCHEDULE:	N/A	SHIFT SCHED NO:					
EVAP CANISTER SIZE(L):	1.10						
TANK CAPACITY (GAL): PRIM=	9.3	AUX=				PRIMARY FUEL:	GAS
PREMIUM FUEL RECOM'D:	Y	USAGE: F=	FA	C=	CA		
DYNAMOMETER DRIVE AXLE:	F						
TIRE PRESS(Psi): FRT=	35	REAR=	35	A/C EQ:	Y		
68d ROADLOAD: F0=	26.05	F1=	-0.012	F2=	0.0182		
20d ROADLOAD: F0=	28.66	F1=	-0.0132	F2=	0.02002		

WEIGHTS (LBS):			TIRES:				
ETW: 4000	EPA CURB: 3751	GVWR:	VENDOR:	GDY	SIZE:	P215/55R17	
			TREAD TYPE:	ALS			

DESIGN:	CURB WEIGHT/TEST WT CLASS TYPE	DRIVE AXLE					
	3751/LVW	2288					

REP VEH MODEL:	1RC68	FIN DR RATIO:	2.16	N/V:	92.1	ENG RPO:	LUU
ACTUAL MODEL NO:	1RC68						
RATED HP:	99	TCC:	Y				
OVERDRIVE:	N	CREEPER:	N	PS:	YES	PB:	YES
MODE LINK CONFS:		C/O CONF:		SIL LINK CONF:			
COMMENTS		ZERO-MILE ODO:	0	ODO CORR:	1.00		

