

APPLICATION FOR CERTIFICATION

2017 MODEL YEAR

Durability Group:	HGMXEEENN001
Test Group:	HGMXV00.0002
Summary Sheet No:	NA
Durability Group Description:	Battery Electric Vehicle (BEV)
Durability Vehicle:	NA
OBD Group:	NA
Test Group Description:	ZEV - Battery Electric Vehicle
Applicable Standards:	Federal BIN0/California ZEV PC
Carlines Covered by Evaporative Family:	0L Chevrolet BOLT NA
Vehicles Tested:	001HFV5002
For Questions, Contact:	D. S. McGuire (248)444-0239

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(Included in Final Application)

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TEST VEHICLE DESCRIPTION

	<u>Durability Vehicle Selection - NA</u>	<u>Emission-Data Vehicle Selection</u>
Test Group	NA	HGMXV00.0002
Evaporative Family		NA (BEV) – Battery Electric Vehicle
Displacement – Liters		150 kW – Electric Motor
Engine Code		1
Emission Control System		
Exhaust		NA (BEV)
Evap		NA (BEV)
Model		1FB48
Transmission Type/Code		AV /1 (Electric Motor)
Shift Schedule		NA
(LVW/ALVW) Test Weight – Lbs		3875
GVWR		NA
Roadload HP		11.6
Final Drive		7.05
N/V Ratio – rpm/mph		96.0
Tires		215/50R17 - ALS
Vehicle/EPA Config No./GM Config No.		
Multi-Cycle Test		001HFV5002/00/000

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.

Certification Summary Information Report

Manufacturer	General Motors LLC	Manufacturer Code	GMX
Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Certificate Number	--	CARB Executive Order #	--
Certificate Issue Date	--	Certificate Revision Date	--
Certificate Effective Date	--	Conditional Certificate	--
CSI Revision #	--	CSI Submission/Revision Date	09/21/2016 08:54:07 AM
Model Year	2017		
Test Group Information			
CSI Type	Update for Correction	Running Change Reference Number	--
GHG Exempt Status	Not Exempt		
Drive Sources and Fuel(s)			
Drive Source #1:	Electric Motor		
	Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
	Electricity	--	No
Hybrid Indicator	No		
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	Yes
Multiple Fuel Combustion	--	Off-board Charge Capable Indicator	Yes
Fuel Cell Indicator	No	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	HGMXEEENN001	Durability Group Equivalency Factor	5
Reduced Fee Test Group	No	Certification Region Code(s)	FA, CA
Complies with HD GHG 2b/3 regulations?	No		
Introduction into Commerce Date	10/28/2016	CAP2000 Conditional Certificate?	N/A
Independent Commercial Importer?	--	Alternative Fuel Converter Certificate?	--
SFTP Federal Composite Compliance Identifier	Not Applicable	SFTP Tier 2 Composite CO Option	No
SFTP LEV-III Composite Compliance Indicator	No		
OBD Compliance Type	CARB	OBD Demonstration Vehicle Test Group	HGMXV00.0002
Test Group OBD Compliance Level	Full - no deficiencies	Number of Test Group OBD Deficiencies	0
OBD Deficiencies Comments	--		
Mfr Test Group Comments	BEV2		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
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Models Covered by this Certificate

Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup
General Motors LLC	3 - Chevrolet	975 - BOLT	Federal	2-Wheel Drive, Front	Other	1	No
General Motors LLC	3 - Chevrolet	975 - BOLT	California + CAA Section 177 states	2-Wheel Drive, Front	Other	1	No

Engine Description

Hybrid Type	--	Hybrid Description	--
Engine Type	--	Mfr Engine Description	--
Engine Block Arrangement	--	Mfr Engine Block Arrangement Description	--
Camless Valvetrain Indicator	--	Oil Viscosity/Classification	
Number of Cylinders/Rotors	--		

After Treatment Device(s) (ATD)

Mfr After Treatment Device (ATD) Comments	--
Direct Ozone Reduction (DOR) Device	--
Mfr Emission Control Device Comments	--

Official Test Numbers

Test Group	Fuel	FTP	US06	SC03	Cold CO	Highway	EPA City Litmus Value	EPA City Litmus Threshold	EPA Highway Litmus Value	EPA Highway Litmus Threshold	CREE Weighting Factor
Electricity		--	--	--	--	--	--	--	--	--	--

Official Charge Depleting Test Numbers

Test Group Fuel	UDDS	Highway
Electricity	HGMX10044270	HGMX10044791

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Hybrid Electric Vehicle And Fuel Cell Information			
Rechargeable Energy Storage System	Battery(s)	Rechargeable Energy Storage System, if Other	--
Battery Type	Lithium Ion	Number of Battery Packs	1
Total Voltage of Battery Packs	350	Battery Energy Capacity	171.4
Battery Specific Energy	140	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	Yes
Mfr Regenerative Braking Description	--		
Drive Motor(s)/Generator(s)	1		
Motor/Generator Type 1	AC PERMANENT MAGNET	Rated Motor/Generator Power	150
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	HGMXV00.0002	Evaporative/Refueling Family	--						
Emission Data Vehicle Information									
Vehicle ID / Configuration	001HFV5002 / 0	Manufacturer Vehicle Configuration Number	0						
Original Test Group Name	HGMXV00.0002	Original Evaporative/Refueling Family	--						
Original Test Vehicle Model Year	2017								
Vehicle Model									
Represented Test Vehicle Make	CHEVROLET	Represented Test Vehicle Model	BOLT						
Leak Family Details									
Leak Family Identifier	LK1	Leak Family Name	--						
Drive Sources and Fuel System Details									
<table border="1"> <thead> <tr> <th>Drive Source and Fuel#</th> <th>Drive Source</th> <th>Fuel</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Electric Motor</td> <td>Electricity</td> </tr> </tbody> </table>				Drive Source and Fuel#	Drive Source	Fuel	1	Electric Motor	Electricity
Drive Source and Fuel#	Drive Source	Fuel							
1	Electric Motor	Electricity							
Hybrid Indicator	No								
Multiple Fuel Storage	--	Multiple Fuel Combustion	--						
Fuel Cell Indicator	No	Rechargeable Energy Storage System Indicator	Yes						
Rechargeable Energy Storage System	Battery(s)	Rechargeable Energy Storage System, if 'Other'	--						
Off-board charge Capable Indicator	Yes								
Odometer Correction -- Initial	0	Odometer Correction Factor	1						
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles								
Odometer Correction Units	Miles								
Engine Code	1	Rated Horsepower	200						
Displacement (liters)	99.999								
Air Aspiration Method	None	Air Aspiration Method, if 'Other'	None						
Number of Air Aspiration Devices	1	Air Aspiration Device Configuration	Single						
Charge Air Cooler Type	N/A	Drive Mode While Testing	2-Wheel Drive, Front						
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)						
Curb Weight (lbs)	3563	Equivalent Test Weight (pounds)	3875						
GVWR (lbs)	--	N/V Ratio	96						
Axle Ratio	7.05								
Transmission Type	Single Speed	# of Transmission Gears	1						
Transmission Lockup	No	Creeper Gear	No						
Dynamometer Coefficients:									
Target Coefficients			Set Coefficients						
Coefficient Category	A (lbf)	B (lbf/mph)	C (lbf/mph**2)						
City/Highway/Evap	28.4	0.2018	0.01948						
			A (lbf)						
			B (lbf/mph)						
			C (lbf/mph**2)						
			EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients						
			11.6						
Emission Control Device Comments	BOLT - EV								

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Manufacturer Test Vehicle Comments	--		

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Test #	HGMX10044270	Test Procedure	81 - Charge Depleting UDDS
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/02/2016	Fuel	Electricity
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned
Verify Test Lab ID	Milford		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	4479	Odometer Units	M
4WD Test Dyno	No	Diesel Adjustment Factor Usage	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	Road Speed Fan Usage	No

PHEV/EV TEST INFO

Recharge Event Voltage	240	Recharge Event Energy (kiloWatt-hours)	67.4206
Charge Depleting Range (Calculated miles)	364.4	Charge Depleting Range (Actual miles)	364.4
Equivalent All Electric Range (miles)	364.4		
Number of Charge Depleting Bags/Phases Conducted	1		

Charge Depleting Bag/Phase

Charge Depleting Bag/Phase #	Test Result/Emission Name	Unrounded Test Result
1	Actual Distance Driven (miles)	7.413
2	Average System Voltage	0
3	Carbon-Related Exhaust Emissions	0
4	Drive Trace Absolute Speed Change Rating	99.99
5	Drive Trace Energy Economy Rating	99.99
6	Drive Trace Inertia Work Ratio Rating	99.99
7	Integrated Amp-hours	3.2356
8	Manufacturer Fuel Economy	182.2
9	System End State of Charge Watt-hours	0
10	System Start State of Charge Watt-hours	1.2751

Manufacturer Test Comments

4K CD MCT EMIS DATA

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 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	4,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Test #	HGMX10044791	Test Procedure	84 - Charge Depleting Highway
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity
Test Date	08/31/2016	Fuel	Electricity
Fuel Batch ID	--	Fuel Calibration Number	--
Vehicle Class	LDV/Passenger Car	DF Type	Mfr. Assigned
Verify Test Lab ID	EPA		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	5000	Odometer Units	M
4WD Test Dyno	No	Diesel Adjustment Factor Usage	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	Road Speed Fan Usage	No

PHEV/EV TEST INFO

Recharge Event Voltage	238	Recharge Event Energy (kiloWatt-hours)	66.508
Charge Depleting Range (Calculated miles)	310.63	Charge Depleting Range (Actual miles)	310.63
Equivalent All Electric Range (miles)	310.63		
Number of Charge Depleting Bags/Phases Conducted	1		

Charge Depleting Bag/Phase

Charge Depleting Bag/Phase #	Test Result/Emission Name	Unrounded Test Result
1	Actual Distance Driven (miles)	0
2	Average System Voltage	0
3	Carbon-Related Exhaust Emissions	0
4	Drive Trace Absolute Speed Change Rating	99.99
5	Drive Trace Energy Economy Rating	99.99
6	Drive Trace Inertia Work Ratio Rating	99.99
7	Integrated Amp-hours	0
8	Manufacturer Fuel Economy	157.4
9	System End State of Charge Watt-hours	0
10	System Start State of Charge Watt-hours	0

Manufacturer Test Comments

4K CD MCT HWFE DATA - CONFIRMATORY AT EPA

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 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	4,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
Fuel Properties			

Certification Summary Information Report

Test Group		HGMXV00.0002			Evaporative/Refueling Family			--		
Consolidated List of Standards										
Exhaust Standards										
Cert Region		Federal			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			Federal Tier 3 Bin 0		
Fuel		Electricity			Test Procedure			Charge Depleting UDDS		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
4,000 miles	CREE	--	--	--	--	--	--	0	0	
Cert Region		Federal			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			Federal Tier 3 Bin 0		
Fuel		Electricity			Test Procedure			Charge Depleting Highway		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
4,000 miles	CREE	--	--	--	--	--	--	0	0	
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			California ZEV		
Fuel		Electricity			Test Procedure			Federal fuel 3-day exhaust		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
Cert Region		Federal			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			Federal Tier 3 Bin 0		
Fuel		Electricity			Test Procedure			Federal fuel 3-day exhaust		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
4,000 miles	CREE	--	--	--	--	--	--	0	0	

Certification Summary Information Report

Test Group		HGMXV00.0002			Evaporative/Refueling Family			--		
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			California ZEV		
Fuel		Electricity			Test Procedure			Charge Depleting UDDS		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
4,000 miles	CREE	--	--	--	--	--	--	0	0	
<hr/>										
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert		
Vehicle Class		LDV/Passenger Car			Standard Level			California ZEV		
Fuel		Electricity			Test Procedure			Charge Depleting Highway		
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std	
4,000 miles	CO	--	--	--	--	--	--	0	0	
4,000 miles	CREE	--	--	--	--	--	--	0	0	

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
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	METHANOL	CH3OH - Methanol
CO	Carbon Monoxide	N2O	Nitrous Oxide
CO2	Carbon dioxide	SPITBACK	Spitback Hydrocarbon in grams
CREE	Carbon-Related Exhaust Emissions	AMP-HRS	Integrated Amp-hours
OPT-CREE	Optional Carbon-Related Exhaust Emissions	START-SOC	System Start State of Charge Watt-hours
NOX	Nitrogen Oxide	END-SOC	System End State of Charge Watt-hours
PM	Particulate Matter	ACT-DISTANCE	Actual Distance Driven (miles)
PM-COMP	SFTP Composite Particulate Matter	AS-VOLT	Average System Voltage
HC-NM	Non-methane Hydrocarbon	CO2 BAG 1	Bag 1 Carbon Dioxide
OMHCE	Organic material Hydrocarbon Equivalent	CO2 BAG 2	Bag 2 Carbon Dioxide
OMNMHCE	Organic material non-methane HC equivalent	CO2 BAG 3	Bag 3 Carbon Dioxide
NMOG	Non-methane organic gas (California)	CO2 BAG 4	Bag 4 Carbon Dioxide
HCHO	Formaldehyde	NMOG+NOX	Non-methane organic gases plus Nitrogen Oxides
H3C2HO	Acetaldehyde	NMOG+NOX-COMP	SFTP Composite Non-methane Organic Gases + Nitrogen Oxides
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03	DT-IWRR	Drive Trace Inertia Work Ratio Rating
HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides	DT-ASCR	Drive Trace Absolute Speed Change Rating
CO-COMP	SFTP Composite Carbon Monoxide	DT-EER	Drive Trace Energy Economy Rating
ETHANOL	C2H5OH - Ethanol	COMB-CREE	Combined Carbon-Related Exhaust Emissions
FE BAG 1	Bag 1 Fuel Economy	COMB-OPT-CREE	Combined Optional Carbon-Related Exhaust Emissions
FE BAG 2	Bag 2 Fuel Economy	HC-TOTAL-EQUIV	Total Hydrocarbon equivalent - Evap only
FE BAG 3	Bag 3 Fuel Economy	METHANE-COMB	Combined CH4 for HD 2b/3 vehicles only
FE BAG 4	Bag 4 Fuel Economy	N2O-COMB	Combined Nitrous Oxide for HD 2b/3 vehicles only
MFR FE	Manufacturer Fuel Economy	LEAK-DIA	Effective Leak Diameter (inches)
HC	Hydrocarbon for Running Loss and ORVR	LEAK-GAS CAP	Gas Cap Leakage (cc/min)
METHANE	CH4 - Methane	CO2-COMB	Combined Carbon Dioxide for HD 2b/3 Vehicles Only
Certification Region			
CA	California + CAA Section 177 states	FA	Federal
Exhaust Emission Standard Level			
B1	Federal Tier 2 Bin 1	L3ULEV340	California LEV-III ULEV340
B2	Federal Tier 2 Bin 2	L3ULEV250	California LEV-III ULEV250
B3	Federal Tier 2 Bin 3	L3ULEV200	California LEV-III ULEV200
B4	Federal Tier 2 Bin 4	L3SULEV170	California LEV-III SULEV170
B5	Federal Tier 2 Bin 5	L3SULEV150	California LEV-III SULEV150

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family		--
B6	Federal Tier 2 Bin 6	L3LEV630	California LEV-III LEV630	
B7	Federal Tier 2 Bin 7	L3ULEV570	California LEV-III ULEV570	
B8	Federal Tier 2 Bin 8	L3ULEV400	California LEV-III ULEV400	
B9	Federal Tier 2 Bin 9	L3ULEV270	California LEV-III ULEV270	
B10	Federal Tier 2 Bin 10	L3SULEV230	California LEV-III SULEV230	
B11	Federal Tier 2 Bin 11	L3SULEV200	California LEV-III SULEV200	
HDV1	HDV1 (Federal HD chassis Class 2b GVW 8501-10000)	T3B160	Federal Tier 3 Bin 160	
HDV2	HDV2 (Federal HD chassis Class 3 GVW 10001-14000)	T3B125	Federal Tier 3 Bin 125	
L2	California LEV-II LEV	T3B110	Federal Tier 3 Transitional Bin 110	
L2OP	California LEV-II LEV Optional	T3B85	Federal Tier 3 Transitional Bin 85	
U2	California LEV-II ULEV	T3SULEV30	Federal Tier 3 Transitional LEV-II SULEV30 Carryover	
S2	California LEV-II SULEV	T3B70	Federal Tier 3 Bin 70	
ZEV	California ZEV	T3B50	Federal Tier 3 Bin 50	
OT	Other	T3B30	Federal Tier 3 Bin 30	
T1	Federal Tier 1	T3B20	Federal Tier 3 Bin 20	
PZEV	California PZEV	T3B0	Federal Tier 3 Bin 0	
L2LEV160	California LEV-II LEV160	HDV2B395	Federal Tier 3 HD Class 2b Transitional Bin 395	
L2ULEV125	California LEV-II ULEV125	HDV2B340	Federal Tier 3 HD Class 2b Transitional Bin 340	
L2SULEV30	California LEV-II SULEV30	HDV2B250	Federal Tier 3 HD Class 2b Bin 250	
L2LEV395	California LEV-II LEV395	HDV2B200	Federal Tier 3 HD Class 2b Bin 200	
L2ULEV340	California LEV-II ULEV340	HDV2B170	Federal Tier 3 HD Class 2b Bin 170	
L2LEV630	California LEV-II LEV630	HDV2B150	Federal Tier 3 HD Class 2b Bin 150	
L2ULEV570	California LEV-II ULEV570	HDV2B0	Federal Tier 3 HD Class 2b Bin 0	
L3LEV160	California LEV-III LEV160	HDV3B630	Federal Tier 3 HD Class 3 Transitional Bin 630	
L3ULEV125	California LEV-III ULEV125	HDV3B570	Federal Tier 3 HD Class 3 Transitional Bin 570	
L3ULEV70	California LEV-III ULEV70	HDV3B400	Federal Tier 3 HD Class 3 Bin 400	
L3ULEV50	California LEV-III ULEV50	HDV3B270	Federal Tier 3 HD Class 3 Bin 270	
L3SULEV30	California LEV-III SULEV30	HDV3B230	Federal Tier 3 HD Class 3 Bin 230	
L3SULEV20	California LEV-III SULEV20	HDV3B200	Federal Tier 3 HD Class 3 Bin 200	
L3LEV395	California LEV-III LEV395	HDV3B0	Federal Tier 3 HD Class 3 Bin 0	
Transmission Type Code				
AMS	Automated Manual- Selectable (e.g. Automated Manual with paddles)	M	Manual	
A	Automatic	OT	Other	
AM	Automated Manual	SA	Semi-Automatic	
CVT	Continuously Variable	SCV	Selectable Continuously Variable (e.g. CVT with paddles)	
Drive System Code				
4	4-Wheel Drive	P	Part-time 4-Wheel Drive	
F	2-Wheel Drive, Front	A	All Wheel Drive	
R	2-Wheel Drive, Rear			

Certification Summary Information Report

Test Group	HGMXV00.0002	Evaporative/Refueling Family	--
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

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

General Battery Charging Procedures

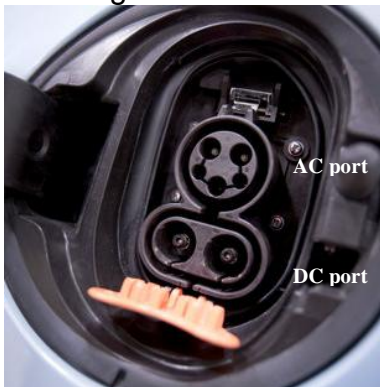
Reference Owner's Manual for additional information.

Charging Plug-In Charging AC/DC Charge Cord Handle

1. Open charge port door by pushing on the plug icon at the rear of the door.



2. Charge Port



3. DC Charge Port (If Equipped – See Owner's Manual)

The high voltage battery can be charged using a household electrical outlet. When using a 240-volt charging station, it will take approximately 9.5 hours to charge the vehicle from empty to full. When using a 120-volt AC wall outlet, it will take approximately 50 hours to charge the vehicle with the 12 amp AC current setting, and considerably longer using the default 8 amp AC current setting. Charge times will vary with outside temperature. There are three ways to program how the vehicle is charged. See *Charging section in Owner's Manual*. If equipped, the vehicle can be charged using DC charging equipment found at service stations and other public locations. When using a DC charging station with at least 50kW of available power, it will take approximately 60 minutes to recharge from a depleted battery to a level of 80% of the driving range available for use. This time estimate is applicable to nominal temperature ranges. In extreme hot or cold conditions, this time may be lengthened. When a full charge is desired, the charging time will be increased. **While the charge cord is plugged into the vehicle, the vehicle cannot be driven.**

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

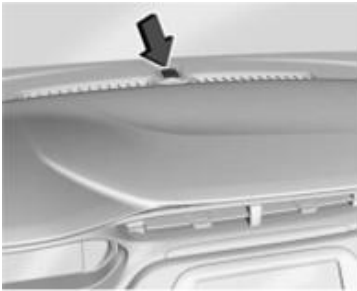
AC Charging Start Charge

1. Make sure the vehicle is in park and turned off.
2. Push the rearward edge of the charge port door in and release to open the door.
3. Connect the provided 240v charger.



4. Plug the charge cord into the metered 240V electrical outlet. See *Electrical Requirements for Battery Charging in Owner's Manual*. Verify the charge cord "power" status light is illuminated. Plug in the vehicle plug of the charge cord into the charge port on the vehicle. Verify that the Charging Status Indicator (CSI) illuminates on top of the instrument panel and a horn chirp occurs.

The CSI is at the center of the instrument panel near the windshield.



When the vehicle is plugged in and the vehicle power is off, the CSI indicates the following:

- § Solid Yellow – Vehicle is plugged in and everything from the wall outlet to the vehicle plug is normally operating. The light should transition to green, then on board vehicle systems pass diagnostic checks. It is normal for the CSI to turn yellow for a few seconds after plugging in a compatible charge cord. The solid yellow may be extended depending on the vehicle and if there is a total utility interruption via OnStar. See *Utility Interruption of Charging on page 9-39*. This may also indicate that the charging system has detected a fault and will not charge the battery. See "Charge Cord Status Indicators" in the charge cord user manual.
- § Solid Green – Vehicle is plugged in. Battery is not fully charged. Battery is charging.
- § Slow Flashing Green – Vehicle is plugged in. Battery is not fully charged. Battery charging is delayed.
- § Fast Flashing Green – Vehicle is plugged in. Battery is fully charged.

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

The system may be thermally conditioning the battery during any of the states above, requiring electrical energy to be transferred to the vehicle. If the vehicle is plugged in and vehicle power is on, the CSI will be blinking green. The same is true during a remote start if the vehicle is plugged in.

End Charge

1. Unlock the vehicle with the keyfob to disarm the charge cord theft alert.
2. Unplug the vehicle plug of the charge cord from the vehicle.
3. Close the charge port door by pressing firmly on the plug icon at the rear of the door.
4. Unplug the charge cord from the electrical outlet.

General Testing Procedures

EV Electric Range Test Sequence for GM Vehicles:

- SAE J1634 (As Revised 2012, Section 8) shall be followed for all EV testing for GM Test Group HGMXV00.0002. Steady State at 65mph.

Vehicle Verification

Verify that vehicle has at least 30 miles worth of charge for the dyno determination sequence. Verify that the Hioki sensor (contact GM for support) is installed and secured in the backseat of the vehicle. Device to read high voltage battery voltage is connected (contact GM for support).

High Voltage Connections – Extreme Caution required

For safety reason GM does not provide any vehicle connections nor directions as to where to connect a Hioki to collect current/voltage data. Experienced personnel familiar with HV should reference the service manual for additional information.

**** Note: GM may supply a Hioki attachment point on Certification test vehicles supplied to the EPA for Confirmatory Testing.**

Crabbing Vehicle

Vehicle shall be crabbed or pushed to charging station, test site, etc. while in any test sequence.

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

Dyno Determination

Starting and stopping the vehicle

Starting Procedure

Move the shift lever to P (Park) or N (Neutral). The propulsion system will not start in any other position. The Remote Keyless Entry (RKE) transmitter must be in the vehicle. The vehicle has an electronic push button start. Press the brake pedal and push and release the POWER button. See power button in Owner's Manual



ON/RUN: This position is for starting and driving. With the vehicle off and the brake pedal applied, pressing the POWER button once will place the vehicle in ON/RUN. When the vehicle ready light is on in the instrument cluster, the vehicle is ready to be driven. This could take up to 15 seconds at extremely cold temperatures. See *Vehicle Ready Light in Owner's Manual*.



A vehicle ready light displays in the lower right corner of the instrument cluster when the vehicle is ready to be driven. The instrument cluster also displays an active battery gauge when the vehicle is ready to be driven.

STOPPING THE VEHICLE/OFF: To turn the vehicle off, push the POWER button with the vehicle in P (Park). Retained Accessory Power (RAP) will remain active until the driver door is opened. See *Retained Accessory Power (RAP) in Owner's Manual*. When turning off the vehicle, if the vehicle is not in P (Park), the vehicle will automatically shift to park.

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

Multi-Cycle RANGE TEST

Soak/Charging

Charge time not to exceed soak time. Minimum charge time of 12 hours 240 VAC CONTINUOUS charging. Disconnect the charger just prior to crabbing vehicle to site.

Prior to Test

- § Verify that all vehicle accessories are turned off
- § Fixed speed fan on during test
- § Hood up with hood latch adapter installed
- § Emission bags off
- § Make sure no battery chargers are connected to 12VDC system
- § Vehicle rear hatch closed
- § Disable Dyno Augmented Braking from Dyno controller.
- § Disable traction control
- § Start vehicle by placing foot on brake and pressing the power button. Confirm "Ready" light on cluster is green (icon is on lower right side of cluster by PRNDL).
- § Turn off the HVAC system completely by turning off auto and setting the fan to off.
- § Turn off radio console stack completely by holding the radio power button until the display asks if you want to fully shut down the console stack. Select yes and the display should turn off.

During 10min Soak Periods

- § Vehicle keyed off and put in Park
- § Shifter button completely released
- § Driver door open and closed
- § Vehicle hood closed
- § Fixed speed fan off

End of Test Criteria

- § The official end of test criteria is when a drive trace error occurs due to the vehicle being unable to keep up with the trace (two second driver violation), per SAE J1634.
- § Bring the vehicle to a controlled stop with the brake within 10 seconds

2017 MODEL YEAR

BATTERY CHARGING AND TESTING PROCEDURE INFORMATION

After UDDS and Highway Test Sequence(s)

To place vehicle in neutral for moving and dyno alignment:

- § Follow neutral instructions from Dyno Determination Sheet.
- § Disconnect all CAN equipment on driver and passenger side OBD-II ports.
- § Verify that car systems power down. With keys left in car:
 - Close all doors – horn will sound 3 quick beeps
 - If no beeps, cycle accessory power again

Vehicle Start-Up Instructions for Operating on a Dyno ** Will Need to contact Manufacturer for setup information and details.

This procedure must be performed after every key-off event and during a dyno determination

Assumption: Vehicle is off

1. Verify CANLogger is plugged into driver's side ALDL and hood latch adapter is installed
2. Place vehicle in "service mode".
 - a. Hold blue "Power" button for ~7sec (**without foot on brake**) until vehicle is awake
 - b. Service Mode is active when instrument cluster display looks like the picture below

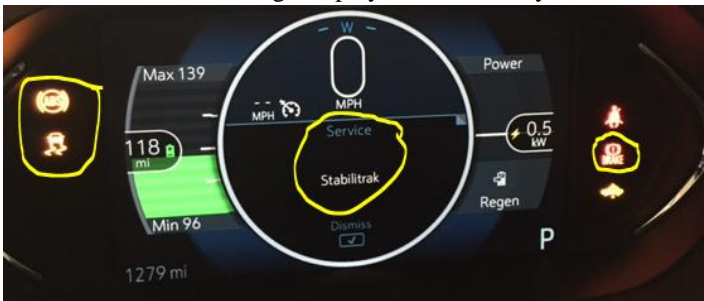


Service Mode Active

3. Enter Dyno Mode (Disable Traction Control for 2WD Dyno)
 - a. Hold down the red thumb trigger for ~3sec until you hear chimes



- b. Dyno mode is active when the instrument cluster display looks like the picture below
Service Stabilitrak message displayed and Stability Control, ABS and Brake tell-tale lights illuminated



Dyno Mode Active

4. Leave the CANLogger plugged into the driver's side ALDL
5. To begin test cycle, start vehicle by putting foot on brake, and pressing the blue "Power" button
 - a. The Green Car with "READY" will be displayed on the bottom right of the DIC.



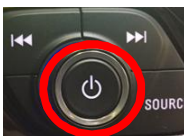
Vehicle Running

6. Confirm HVAC and Radio are off
 - a. Temp should have "--" displayed, and LED indicator above "On" should be off



HVAC Off

- b. Press and hold radio power button for 5 seconds and press yes on screen



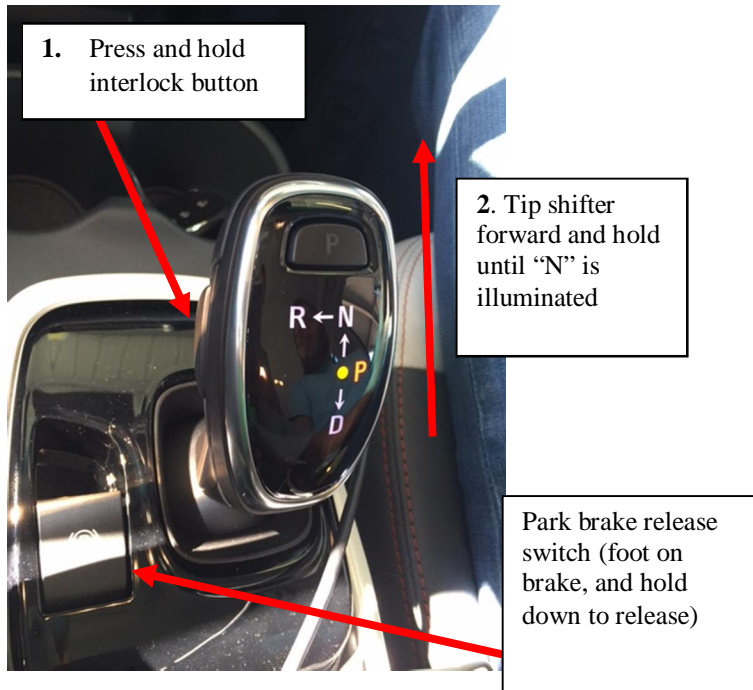
Radio Off

7. If performing a dyno determination, follow procedure on next page to put vehicle in Neutral for Dyno Determination

Vehicle Set-Up Instructions for Dyno Determination

Assumption: Vehicle is running and in dyno mode (instructions on previous page)
To put vehicle in Neutral and prevent Auto-Shift to “Park” when door is opened

1. Place vehicle in park
2. Open driver door
3. Place vehicle in neutral (items 1 & 2 below)



4. Confirm DIC displays Neutral in the bottom right corner



5. **Warning:** Park Brake will auto-apply and vehicle will auto-shift to Park if the following are true. Release it by pressing the brake pedal and holding the park brake switch on the left of shifter stalk down
 - a. Vehicle is not in park
 - b. Driver Door Is open
 - c. Foot is off brake
 - d. Driver seat belt is unbelted
6. Door can be closed once vehicle is in neutral

FLEXIBLE OR ALTERNATE FUELS

Battery Electric Vehicle (BEV) System Description

Electric Drive Unit

One 3-phase AC Permanent Magnet electric motor
150 kW 10 second peak Power
360 Nm peak torque

Battery

Lithium Ion battery pack
60 kWh pack energy capacity
7.6 kW On-Board; 50 kW Off-Board charge power

Transmission

Automatic Variable (Electric Motor)

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 recharging procedure
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

Engine Code Information

Base Engine Code	1
EC Derivatives	
Test Group	HGMXV00.0002
Durability Group	HGMXEEENN001
Engine RPO	EN0
Disp, liters	0.0
Trans RPO	MMF
Trans Type	AV
Product Code	F
Emission RPO	NTB,NC9
Emissions Category	Tier 3-Bin0 / LEV3-ZEV
Vehicle Type	CAR
Regulatory Agencies	F/C
Sales Area	FA/CA
Design Altitude	Both
A/C Equipped	Yes
Driver Select Device	YES - Normal/Sport
Police Only	No
Horsepower @ RPM	NA
Torque @ RPM	NA
Emission Ctrl Sys	NA
TapUp/TapDown	No
Active Fuel Management	No
Description	BOLT - EV

Vehicle Parameters - Certificate Coverage

Durability Group HGMXEEENN001
 TestGroup HGMXV00.0002

EC	EC Der	Eng RPO	Eng Disp	Evap Family	Evap Code	Model	Car Line	Trans Type/Code	Final Drive Ratio	GVWR	Tire	N/V	Loaded Weight Veh/DA	TWC Meth	TWC	TLHP	F0	F1	F2	RLHP RPO	Drv Sys	Note
1		ENO	0.0	NA	NA	1FB48	BOLT	AV/1	7.05	--	215/50R17 ALS MIC	96.0	3863/2154	LVW	3875	11.6	28.40	0.2018	0.01948	--	FD	1
1		ENO	0.0	NA	NA	1FC48	BOLT	AV/1	7.05	--	215/50R17 ALS MIC	96.0	3887/2160	LVW	3875	11.6	28.40	0.2018	0.01932	--	FD	1

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

TRANSMISSION INFORMATION

Test Group ID	HGMXV00.0002
Transmission Code	1
Transmission RPO	MMF
Transmission Type	AV
Drive Gear Ratios	1
Chain Drive Ratio	NA
Shift Calibrations	PCM Controlled
Torque Converter Diameter	NA
Torque Converter Stall Torque Ratio	NA
Torque Converter Lockup RPM'S	PCM Controlled
Torque Converter Stall Torque Speed	NA
Multimode Feature - # of Modes	2
Shift Indicator Light	NA
Description	MMF
TapUp/TapDown	NA

SPECIAL TEST INSTRUCTIONS

OTHER

Parking Brake:

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

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.

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.

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. 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. Please contact General Motors Compliance and Certification organization for instructions on how to disable the daytime running lights.

VEHICLE STARTING INSTRUCTIONS

Warm or Cold Engine

Reference Owner's Manual for complete starting instructions.

SHIFT SCHEDULES – N/A

<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>
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

N/A – 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 9, 2016

HP097

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

Dear Mr. Wright:

Subject: Request for Certificate of Conformity - 2017 General Motors Test Group
HGMXV00.0002

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.

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

D. S. McGuire
Total Compliance Engineer
Compliance & Certification

DSM/CAJ/ks
Attachments



General Motors

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

September 9, 2016

HP098

Ms. A. Hebert, Chief
Emissions Compliance, Automotive Regulations & Science Div.
Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, CA 91731

Dear Ms. Hebert:

Subject: Request for Executive Order - 2017 General Motors Test Group HGMXV00.0002

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.

Based upon our review prior to submitting the application for certification and to the best of our current information and belief, the GM vehicles described in this request for executive order do not employ defeat devices, and do not use alternative maps or AECs that have not been declared. We are submitting this statement to you in good faith. If, in the future, we identify any new relevant information, we will notify CARB in a timely fashion.

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

Sincerely,

D. S. McGuire

D. S. McGuire
Total Compliance Engineer
Compliance & Certification

DSM/CAJ/ks
Attachments

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	NA
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).

*** VEHICLE INFORMATION ***

Model Year 2017 Certifying Agent GM
 Test Vehicle 001HFV5002 GM Config 000
 Run Date 08/31/2016 10:24:54

VEHICLE NO: 001HFV5002 CONFIGURATION NO: 000 EPA VERSION NO: 00
 ORIGINAL CERT YEAR: 2017

ENG FAM/TEST GRP: HGMXV00.0002 ENGINE CODE: 1
 EVAP FAMILY: NA EVAP CODE: NA
 TEST PURPOSE: DATA DISPL: 0.0 SALES LOC: BOTH
 VEH TYPE: FED= PC CAL= PC EMIS CATEGORY: FED= BIN 0 CAL= ZEV

DURA GRP: HGMXEEENN001 DURA VEH NO: DURA CONFIG:

FUEL METER: NA BOOST TYPE: VALVES PER CYL: 0

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): TANK CAPACITY (GAL): PRIM= 0 AUX= PRIMARY FUEL: ELEC
 PREMIUM FUEL RECOM'D: N USAGE: F= FA C= CA
 DYNAMOMETER DRIVE AXLE: F REAR= 38 A/C EQ: Y
 TIRE PRESS(PSI): FRT= 38 F1= 0.2018 F2= 0.01948 TRLHP 68d: 11.6
 68d ROADLOAD: F0= 28.4 F1= 0.222 F2= 0.02143 TRLHP 20d: 12.8
 20d ROADLOAD: F0= 31.24

WEIGHTS (LBS): EPA CURB: 3563 GVWR: TIRES: MIC SIZE: 215/50R17
 ETW: 3875 CURB WEIGHT/TEST WT CLASS TYPE DRIVE AXLE TREAD TYPE: ALS

DESIGN: 3563/LVW 2153

REP VEH MODEL: 1FB48 FIN DR RATIO: 7.05 N/V: 96.0 ENG RPO: EN0
 ACTUAL MODEL NO: 1FB48 TCC: N
 RATED HP: 200 CREEPER: N PS: YES PB: YES
 OVERDRIVE: N C/O CONF: SIL LINK CONF:
 MODE LINK CONFS: ODO CORR: 1.00
 ZERO-MILE ODO: 0

RECHARGEABLE ENERGY STORAGE: BATTERY
 OFF-BOARD CHARGE CAPABLE: YES
 NOMINAL HYBRID BATTERY VOLT: 350
 MAXIMUM HYBRID BATTERY CURRENT: 450

COMMENTS

F EN0 7&NT7 1FB48
201601111120

102 TEST LABEL



20955245



T7 1FB48

VEHICLE EMISSION CONTROL INFORMATION



GENERAL
MOTORS
LLC

Conforms to Regulations: 2017 Fuel: NA
U.S. EPA class / stds: LDV / TIER3
California class / stds: PC / ZEV
Group: HGMXV00.0002
Evap: N/A