

E-Cert Data Requirements for Light-Duty Certification

Workshop

On-Road Light-Duty Certification Section
Data Development Services Section

Seongyup Kim
January 10, 2013

Overview

- 2008 workshop: E-Cert with LEV2 only
- 2013 workshop: E-Cert with LEV2, LEV3, ZEV and GHG
- Data requirements
- InfoPath form & XML Schema
- Timeline
- Q & A

Data Requirements

- Certification requirements for LEV2 and LEV3
 - CSI 1: General information of test group
 - CSI 2A: Official exhaust emission standards and cert levels
 - CSI 2B: Official evaporative emission standards and cert levels
 - CSI 3: Test group description
 - CSI 4: Exhaust emissions control system (ECS) information
 - CSI 5A: Exhaust emission data vehicle (EDV) information
 - CSI 5B: Exhaust durability data vehicle (DDV) information
 - CSI 6A: Evaporative family description
 - CSI 6B: Evaporative EDV information
 - CSI 6C: Evaporative DDV information
 - CSI 7: Vehicle model summary
 - CSI 10A: Hybrid electric vehicle (HEV) information
 - CSI 10B: Zero emission vehicle (ZEV) information
- http://www.arb.ca.gov/msprog/arb.cert/files/database/ecert_ldv_data_requirements.pdf

* CSI: Certification Summary Information

Data Requirements: Example

- CSI 3 for test group description

| Name | Optional | SQL Data Type | SQL Type Qualifiers | Database Comment | Table Name |
|------------------------|----------|---------------|---------------------|--|--------------------------|
| TG_OPFUEL_TYPE | NO | VARCHAR2 | 3 | Select the operating fuel type for the test group. Applicable values: GAS: GASOLINE, DSL: DIESEL, CNG: COMPRESSED NATURAL GAS, E85: 85% ETHANOL, H: HYDROGEN, LNG: LIQUEFIED NATURAL GAS, LPG: LIQUEFIED PETROLEUM GAS, OTH: OTHER. | LDV_TEST_GROUP_DESC_FUEL |
| TG_FUEL_METERING | NO | VARCHAR2 | 4 | Select fuel metering type for this test group. Applicable values: CARB: CARBURETOR, CMIX: CNG MIXER, DFI: DIRECT FUEL INJECTION, IFI: INDIRECT FUEL INJECTION, LMIX: LPG MIXER, MFI: MULTIPOINT FUEL INJECTION, SFI: SEQUENTIAL MULTIPOINT FUEL INJECTION, TBI: THROTTLE BODY INJECTION, OTH: OTHER. | LDV_TEST_GROUP_DESC_FUEL |
| TG_FUEL_METERING_OTHER | YES | VARCHAR2 | 20 | Briefly describe the fuel metering type for this test group, if not listed in available fuel metering types. | LDV_TEST_GROUP_DESC_FUEL |

Name: data field name

Optional: if no, the field is required field, if yes, the field is optional

SQL data type: type of data field (number, character, variable character)

SQL type qualifiers: length of data field

Database comment: explanation about data field

Table name: name of table where data field is located

Which CSI to fill out?

- Required CSIs for a particular vehicle fuel category and operating fuel type

| Vehicle fuel category | Operating fuel | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | | CSI 10B |
|--------------------------------------|-----------------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|-----------|--------|---------|
| | | | | | | | | | | | | | HEV, PHEV | Others | |
| Dedicated single fuel vehicle | gasoline, LPG | R | R | R | R | R | R | R | R | R | R | R | R | NA | NA |
| | diesel | R | R | NA | R | R | R | R | NA | NA | NA | R | R | NA | NA |
| | CNG | R | R | R | R | R | R | R | NA | NA | NA | R | R | NA | NA |
| FFV | E85 + gasoline | R | R | R | R | R | R | R | R | R | R | R | R | NA | NA |
| Dual-fuel vehicle | (CNG, LPG) + gasoline | R | R | R | R | R | R | R | R | R | R | R | R | NA | NA |
| Bi-fuel vehicle | CNG + diesel | R | R | R | R | R | R | R | NA | NA | NA | R | R | NA | NA |
| ZEV (battery electric, H2 fuel cell) | NA | R | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | R |

R: required

NA: not applicable

How to create XML files for submittal

Two ways

- **InfoPath Form:** user-friendly form that a manufacturer can use for entering cert data and save it as an XML file
(<http://www.arb.ca.gov/msprog/arb.cert/files/infopath/ldv.xsn>)
- **XML Schema:** design for IT department to automate the process for creating an XML file
(http://www.arb.ca.gov/msprog/arb.cert/files/xml_schema/ldv.xsd)

InfoPath Help Tab

CARB LDV E-Cert Form

Version 2.0.2.1

Please enter all data in UPPERCASE.

| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs | Help | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|------|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|--------|-------------------------------|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|--------|---|---|-----|---|---|---|---|---|-----|-----|-----|---|---|---|-----|-----|--|-----|---|---|---|---|---|---|---|---|-----|-----|-----|---|---|---|-----|-----|-----|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|-----|-------------------|-----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|-----|-----------------|--------------|---|---|---|---|---|---|---|---|-----|-----|-----|---|---|---|-----|-----|--------------------------------------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| <table border="1"> <thead> <tr> <th></th> <th>HEV, PHEV</th> <th>Others</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Dedicated Single Fuel Vehicle</td> <td>Gasoline, LPG</td> <td>R</td> <td>N/A</td> </tr> <tr> <td>Diesel</td> <td>R</td> <td>R</td> <td>N/A</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td></td> <td>CNG</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>FFV</td> <td>E85 + Gasoline</td> <td>R</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Dual-Fuel Vehicle</td> <td>(CNG, LPG) + Gasoline</td> <td>R</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Bi-Fuel Vehicle</td> <td>CNG + Diesel</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>R</td> <td>R</td> <td>R</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>ZEV (Battery Electric, H2 Fuel Cell)</td> <td>N/A</td> <td>R</td> <td>N/A</td> <td>R</td> </tr> </tbody> </table> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HEV, PHEV | Others | Dedicated Single Fuel Vehicle | Gasoline, LPG | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | Diesel | R | R | N/A | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | | CNG | R | R | R | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | FFV | E85 + Gasoline | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | N/A | Dual-Fuel Vehicle | (CNG, LPG) + Gasoline | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | N/A | Bi-Fuel Vehicle | CNG + Diesel | R | R | R | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | ZEV (Battery Electric, H2 Fuel Cell) | N/A | R | N/A | R |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HEV, PHEV | Others | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dedicated Single Fuel Vehicle | Gasoline, LPG | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Diesel | R | R | N/A | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNG | R | R | R | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FFV | E85 + Gasoline | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dual-Fuel Vehicle | (CNG, LPG) + Gasoline | R | R | R | R | R | R | R | R | R | R | R | R | R | R | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bi-Fuel Vehicle | CNG + Diesel | R | R | R | R | R | R | R | R | N/A | N/A | N/A | R | R | R | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZEV (Battery Electric, H2 Fuel Cell) | N/A | R | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R: Required, N/A: Not Applicable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



File Naming Convention

When saving the InfoPath form, please follow the naming convention for all XML file submissions to the California Air Resources Board through the E-Cert Application Loader website.

The naming convention for the XML files consists of three parts as shown: *CARB MFR CODE* _LDV_ *TEST GROUP*.xml

1. CARB MFR Code

- This is the manufacturer code that was assigned to each manufacturer by the California Air Resources Board.

2. _LDV_

- This will remain the same for each file.

3. Test Group

- This is the name of the test group for the particular application.

The only portions of the file name that change are the ones identified by *red italics*.

An example file name would be MFR_LDV_EMFRV02.0ABC.xml

InfoPath General Info

CARB LDV E-Cert Form

Version 2.0.2.1

Please enter all data in UPPERCASE.

| | | | | | | | | | | | | | | | | |
|----------------------------|--------------------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs | Help |
| General Information | | | | | | | | | | | | | | | | |
| CARB MFR Code: | <input type="text"/> | | | | | | | | | | | | | | | |
| Model Year: | <input type="text"/> | | | | | | | | | | | | | | | |
| Test Group Name: | <input type="text"/> | | | | | | | | | | | | | | | |
| Application Type: | Select... | | | | | | | | | | | | | | | |
| | Select... | | | | | | | | | | | | | | | |
| | NEW | | | | | | | | | | | | | | | |
| | CARRYOVER (CO) | | | | | | | | | | | | | | | |
| | RUNNING CHANGE (RC) | | | | | | | | | | | | | | | |
| | FIELD FIX (FF) | | | | | | | | | | | | | | | |
| | CORRECTION (COR) | | | | | | | | | | | | | | | |
| | PART 2 PRELIMINARY (P2P) | | | | | | | | | | | | | | | |
| | PART 2 FINAL (P2F) | | | | | | | | | | | | | | | |

* means required field

Make sure required fields (*) are filled out before saving InfoPath or it will not be loaded into E-Cert

InfoPath CSI 1

General test group information

| | | | | | | | | | | | | | | | | |
|---|---|--------------|--------|--------|-------|-------|--------|--------|---------------------------------|--------|--------|-------|---------|---------|----------|------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs | Help |
| CSI 1 | | | | | | | | | | | | | | | | |
| Durability Group Name: | EARBDGNA1234 | | | | | | | | | | | | | | | |
| Running Change Reference Number/Name: | LEV3 ULEV125 gasoline PC | | | | | | | | | | | | | | | |
| CARB TG Classification: | 50 STATES | | | | | | | | | | | | | | | |
| CARB TG Interim / In-Use FTP Standard: | NMOG+NOx | | | | | | | | | | | | | | | |
| CARB TG Interim / In-Use SFTP Standard: | NMOG+NOx | | | | | | | | | | | | | | | |
| Federally-Certified Vehicle (Cleaner Federal Vehicle): | NO, THIS TEST GROUP COMPLIES WITH CA LOW EMISSION VEHICLE STANDARDS | | | | | | | | | | | | | | | |
| CARB FTP Standard: | LEV3 ULEV125 | | | | | | | | | | | | | | | |
| EPA FTP Standard: | TIER2 BIN5 | | | | | | | | | | | | | | | |
| SFTP Standard: | LEV 3 COMPOSITE | | | | | | | | | | | | | | | |
| Please select a vehicle class of a TG, or a vehicle class to which the most stringent standard is applied, if multiple vehicle classes are in the TG: | PASSENGER CAR | | | | | | | | | | | | | | | |
| Does this TG meet optional LEV NOx exhaust emission standard certification for "Work Trucks"?: | NO | | | | | | | | | | | | | | | |
| TG Fuel Category: | DEDICATED SINGLE FUEL VEHICLE | | | | | | | | | | | | | | | |
| Light-Duty Specially Constructed Vehicles (SPCNS): | NO, THIS TEST GROUP IS NOT SPCNS | | | | | | | | | | | | | | | |
| | Light-Duty Specially Constructed Vehicles Only | | | | | | | | | | | | | | | |
| | Weight of Worst Case Vehicle (lbs) | | | | | | | | N/V Ratio of Worst Case Vehicle | | | | | | | |
| TG NMOG or NMOG+NOx for Fleet Average Calculation: | 0.125 | | | | | | | | | | | | | | | |
| TG VEC Factor for VEC Calculation of MDV: | | | | | | | | | | | | | | | | |
| OBD Approval Reference Number: | E-14-010 | | | | | | | | | | | | | | | |
| Date this TG will be introduced into commerce?: | 1/30/2013 | | | | | | | | | | | | | | | |
| CSI 1 Manufacturer Notes: | | | | | | | | | | | | | | | | |

InfoPath CSI 2A

Official exhaust emission standards and cert levels

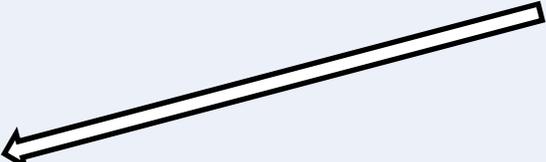
| | | | | | | | | | | | | | | | |
|--------------|--------------|-------|---------------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--------------|--------------|-------|---------------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|

CSI 2A

| | | | |
|---|----------------------|------------------|----------------------|
| NMOG Fleet Average Value for PC and LDT (LVW<3751): | <input type="text"/> | Standard: | <input type="text"/> |
| NMOG Fleet Average Value for LDT (3751 LVW ~ 8500 GVWR): | <input type="text"/> | Standard: | <input type="text"/> |
| NMOG+NOx Fleet Average Value for PC & LDT (LVW<3751): (LEV3 Only) | 0.094 | Standard: | 0.100 |
| NMOG+NOx Fleet Average Value for LDT (3751 LVW ~ 8500 GVWR): (LEV3 Only) | <input type="text"/> | Standard: | 0.119 |
| Exhaust Emissions UL Years: | 15 | Miles: | 150000 |
| Is any model in the TG granted DOR? | NO | | |
| Does NMOG Cert include DOR NMOG Credit? | NO | | |
| Is any model in the TG granted Non-PZEV Zero Evap? | NO | | |
| Does NMOG Cert include Non-PZEV Zero-Evap NMOG Credit? | NO | | |
| Direct measurement of NMOG? | NO | | |
| NMOG/NMHC ratio: | 1.1 | HCHO/NMHC ratio: | <input type="text"/> |
| RAF for NMOG: | <input type="text"/> | RAF for Methane: | <input type="text"/> |

LEV3 SULEV30 gasoline PC
(150k UL, E10 test fuel)

In case of FFV, DFV, please enter additional NMOG/NMHC ratio for secondary fuel into manufacturer note



FTP Exhaust Emissions:

| | |
|---|---|
| FTP Exhaust Emissions Test Fuel: | E10 - 10% ETHANOL + 90% CA PHASE 2 GAS (CA ExTP II A 100.3.4.3) |
| If Other, Specify: | <input type="text"/> |
| Exhaust FTP xxHC Type: | NON-METHANE ORGANIC GAS (NMOG) |
| If Other, Specify: | <input type="text"/> |
| Modified Test Procedure for FTP Test? (If yes, describe modification & approval ref # in FTP Manufacturer Note) | YES |
| Does this TG have a FFH? | NO |
| Is the FFH operable above 40°F? | NOT APPLICABLE |
| Does FTP CERT include FFH exhaust? | NOT APPLICABLE |

InfoPath CSI 2A cont'd

| Units: (g/mi) | | | | | | | | | |
|----------------|------|-----|------------|------|--------------|-------|-------------|--------------------|---------|
| Air Pollutant | xxHC | NOx | NMOG + NOx | CO | HCHO (mg/mi) | PM | Highway NOx | Highway NMOG + NOx | Cold-CO |
| 4K CERT (50°F) | | | 0.0222 | 0.86 | 6.5 | | | | |
| 4K STD (50°F) | | | 0.060 | 1.0 | 8 | | | | |
| 50K CERT | | | | | | | | | |
| 50K STD | | | | | | | | | |
| UL CERT | | | 0.0156 | 0.22 | 2.8 | 0.007 | | 0.001 | |
| UL STD | | | 0.030 | 1.0 | 4 | 0.01 | | 0.03 | |

Insert additional FTP Exhaust Emissions

CSI 2A Manufacturer Note for FTP Exhaust Emissions:

CARB APPROVAL NUMBER FOR MODIFIED TEST

- Enter STD with exact significant figures as specified by regulation
- Enter CERT levels with one more significant figure than STD

SFTP Exhaust Emissions:

SFTP Exhaust Emissions Test Fuel:

E10 - 10% ETHANOL + 90% CA PHASE 2 GAS (CA ExTP II A 100.3.4.3)

If Other, Specify:

Modified Test Procedure for SFTP Test? (If yes, describe modification & approval ref # in SFTP Manufacturer Note)

YES

Exhaust SFTP xxHC Type:

NMOG

| SFTP Test Cycle | US06/UC (LA92) | | | SC03 | | Composite | |
|-----------------|-------------------|-----------|------------|-------------------|-----------|-------------------|-----------|
| | xxHC + NOx (g/mi) | CO (g/mi) | PM (mg/mi) | xxHC + NOx (g/mi) | CO (g/mi) | xxHC + NOx (g/mi) | CO (g/mi) |
| 4K CERT: | | | | | | | |
| 4K STD: | | | | | | | |
| UL CERT: | 0.0333 | 5.47 | 6.4 | 0.0144 | 1.55 | | |
| UL BIN: | | | | | | | |
| UL STD: | 0.050 | 9.6 | 10 | 0.020 | 3.2 | | |

InfoPath CSI 3

Test group description

| | | | | | | | | | | | | | | | |
|--------------|--------------|-------|--------|--------|--------------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--------------|--------------|-------|--------|--------|--------------|-------|--------|--------|--------|--------|--------|-------|---------|---------|----------|

CSI 3

Test Group Description:

Engine Set Number: (Select a sequential number, starting with 1 for each Set Number.)

Engine Location (relation to the front of the vehicle):

TG Combustion Cycle: If Other:

Cylinder/Block Arrangement: If Other:

Number of Cylinders/Rotors:

Engine Cooling Medium: If Other:

Engine Displacement (L):

E85 FFV

| Intake Valves per Cylinder: | Exhaust Valves per Cylinder: |
|--------------------------------|--------------------------------|
| <input type="text" value="2"/> | <input type="text" value="2"/> |

Insert Additional Cylinders

Engine Valvetrain: If Other:

Intake Variable Valve Timing (VVT):

Exhaust Variable Valve Timing (VVT):

Intake Valve Lift: Exhaust Valve Lift:

Cylinder Deactivation:

| Engine Special Features 1 | Engine Special Features 2 |
|---|---|
| <input type="text" value="NOT APPLICABLE"/> | <input type="text" value="NOT APPLICABLE"/> |

Insert Additional Engine Special Features 1 Insert Additional Engine Special Features 2

| TG Operating Fuel | TG Fuel Metering | TG Fuel Metering (If Other) | Rated Power (hp) | @RPM | Peak Torque (foot-pounds) | @RPM |
|--|---|-----------------------------|------------------|-------|---------------------------|-------|
| <input type="text" value="85% ETHANOL"/> | <input type="text" value="SEQUENTIAL MULTIPOINT FUEL INJECTION"/> | <input type="text"/> | 83 | 4,800 | 92 | 5,000 |
| <input type="text" value="GASOLINE"/> | <input type="text" value="SEQUENTIAL MULTIPOINT FUEL INJECTION"/> | <input type="text"/> | 95 | 4,800 | 105 | 5,000 |
| <input type="text" value="Select..."/> * | <input type="text" value="Select..."/> * | <input type="text"/> | * | * | * | * |

Insert Additional Fuel Information

CSI 3 Manufacturer Note:

Click here to add more fuel information

InfoPath CSI 4

Exhaust ECS information

| | | | | | | | | | | | | | | | |
|---|---|-------|--------|--------|-------|--------------|--------|--------|--------|--------|--------|-------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
| CSI 4 (All fields in red are considered CBI) | | | | | | | | | | | | | | | |
| Exhaust Emissions Control System (ECS) Information: | | | | | | | | | | | | | | | |
| ECS Set Number: | 1 (Select a sequential number, starting with 1 for each Set Number.) | | | | | | | | | | | | | | |
| Electronic Controls: | ECM If Other: | | | | | | | | | | | | | | |
| ECS Configuration: | TWC, HO2S, SFI, AIR | | | | | | | | | | | | | | |
| Exhaust Gas Recirculation (EGR): | NO | | | | | | | | | | | | | | |
| Cooled EGR: | NOT APPLICABLE | | | | | | | | | | | | | | |
| EGR Type: | NOT APPLICABLE If Other: | | | | | | | | | | | | | | |
| Air Aspiration Method in the TG: | NATURALLY ASPIRATED If Other: | | | | | | | | | | | | | | |
| Number of Air Aspiration Devices: | | | | | | | | | | | | | | | |
| Air Aspiration Configuration: | NONE | | | | | | | | | | | | | | |
| Charge Air Cooler Type: | NOT APPLICABLE | | | | | | | | | | | | | | |
| Number of Charge Air Coolers: | | | | | | | | | | | | | | | |
| Charge Air Cooler Configuration: | NONE | | | | | | | | | | | | | | |
| Air Injection: | SECONDARY AIR INJECTION-ELECTRIC If Other: | | | | | | | | | | | | | | |
| Direct Ozone Reduction (DOR) Device: | NO | | | | | | | | | | | | | | |
| Total Number of Physical Container(s) of ATD(s): | 1 | | | | | | | | | | | | | | |
| This ECS Set is used for Production Vehicles: | YES | | | | | | | | | | | | | | |
| This ECS Set is used for EDV: | YES | | | | | | | | | | | | | | |
| This ECS Set is used for DDV: | NOT APPLICABLE | | | | | | | | | | | | | | |
| CSI 4 Manufacturer Note: | | | | | | | | | | | | | | | |
| After-Treatment Device (ATD) Information: | | | | | | | | | | | | | | | |
| ATD Container Number: | 1 (Select a sequential number, starting with 1 for each ATD container.) | | | | | | | | | | | | | | |
| After Treatment Type: | THREE-WAY CATALYST | | | | | | | | | | | | | | |
| 200k Miles Extended Warranty for Particulate Filter: | Select... | | | | | | | | | | | | | | |
| Total Number of Physical Substrates (bricks) in this | 1 | | | | | | | | | | | | | | |

Click here to add more ECS

ECS of Three-way catalyst, heated oxygen sensor, sequential multiport fuel injection, secondary air injection is described in CSI 4

InfoPath CSI 4 cont'd

Brick (Substrate) Information:

| | | |
|---|---|-----------|
| Size of Substrate (liters): | <input type="text" value="0.5"/> | |
| Substrate Precious Metals: | <input type="text" value="PLATINUM/RHODIUM"/> | If Other: |
| Substrate Material: | <input type="text" value="CERAMIC"/> | If Other: |
| Substrate Construction: | <input type="text" value="MONOLITH"/> | If Other: |
| Cell Geometry: | <input type="text" value="HONEYCOMB"/> | If Other: |
| Substrate Cell Density (# of cell / in ²): | <input type="text" value="2,000"/> | |
| Substrate Active Surface Area (m ²): | <input type="text" value="5,000"/> | |
| Precious Metal Loading Rate (g/liter): | <input type="text" value="1"/> | |
| Precious Metal Composition: | <input type="text" value="1/1.5"/> | |
| Uniform Loading of Precious Metals? | <input type="text" value="YES"/> | |

Insert an additional Brick (Substrate)

Insert an additional ATD

Exhaust Feedback Sensor Information:

| | |
|--|---|
| Sensor Type: | <input type="text" value="HEATED OXYGEN SENSOR"/> |
| Sensor Min Distance from Exhaust Manifold (distance from nearest exhaust port to the sensor, inches) | <input type="text" value="10"/> |
| Sensor Max Distance from Exhaust Manifold (distance from nearest exhaust port to the sensor, inches) | <input type="text" value="12"/> |

Insert an additional Exhaust Feedback Sensor

Other Sensor Information:

| | |
|--|--|
| Sensor Type: | <input type="text" value="KNOCK (DETONATION) SENSOR"/> |
| If Other, Specify: Number of Sensors: | <input type="text" value="1"/> |

Insert an additional Sensor

Insert an additional CSI 4

InfoPath CSI 5A

Exhaust EDV information

| | | | | | | | | | | | | | | | |
|---|---|--|--------|--------|-------|-------|---------------|--------|--------|--------|--------|-------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
| CSI 5A (All fields in red are considered CBI) | | | | | | | | | | | | | | | |
| Exhaust Emission Data Vehicle (EDV) Information: | | | | | | | | | | | | | | | |
| EDV Set Number: | 1 | (Select a sequential number, starting with 1 for each Set Number.) | | | | | | | | | | | | | |
| Test Group Name: | EARBV1.55ABC | | | | | | | | | | | | | | |
| EDV Division Name: | CARB | | | | | | | | | | | | | | |
| EDV Model Name: | MODEL1 | | | | | | | | | | | | | | |
| EDV Test Vehicle ID: | 001 | | | | | | | | | | | | | | |
| EDV Test Data Type: | CARRYOVER DATA | | | | | | | | | | | | | | |
| Original TG of EDV: | DARBV1.55ABC | | | | | | | | | | | | | | |
| Original Evap Family of EDV: | AARBR0120600 | | | | | | | | | | | | | | |
| EDV Engine Code: | 2 | | | | | | | | | | | | | | |
| EDV Displacement (liters): | 1.5 | | | | | | | | | | | | | | |
| EDV Cylinder (Block) Arrangement: | INLINE | | | | | | | | | | | | | | |
| If Other, Specify: | | | | | | | | | | | | | | | |
| EDV Number of Cylinders: | 4 | | | | | | | | | | | | | | |
| EDV Number of Intake Valves per Cylinder: | 2 | | | | | | | | | | | | | | |
| EDV Number of Exhaust Valves per Cylinder: | 2 | | | | | | | | | | | | | | |
| EDV Drive System: | FRONT WHEEL DRIVE | | | | | | | | | | | | | | |
| EDV N/V Ratio: | 92.3 | | | | | | | | | | | | | | |
| EDV Curb Weight (lb): | 3715 | | | | | | | | | | | | | | |
| EDV LVW (lb): | | | | | | | | | | | | | | | |
| EDV ALVW (lb): | | | | | | | | | | | | | | | |
| EDV ETW (lb): | 4000 | | | | | | | | | | | | | | |
| EDV GVWR (lb): | 4539 | | | | | | | | | | | | | | |
| EDV ECS Set Number: | 1 (enter the ECS set number from CSI 4) | | | | | | | | | | | | | | |
| EDV Rated Power (hp): | 84 @ RPM: 2,500 | | | | | | | | | | | | | | |
| EDV Transmission Type: | AUTOMATIC | | | | | | | | | | | | | | |
| EDV Number of Transmission Gears: | 6 | | | | | | | | | | | | | | |
| Alternate Shift: | NO | | | | | | | | | | | | | | |
| Shift Indicator Lamp (SIL): | NO | | | | | | | | | | | | | | |

Carryover EDV info

InfoPath CSI 5A cont'd

Raw Test Results without DF:

Test Type: FEDERAL TEST PROCEDURE (FTP)

Tested By: EPA

Test ID: DARB001

Test Date: 12/20/2011

Exh Test Fuel: GASOLINE - TIER 2 UNLEADED (40CFR86.113-04(a)(1))

If Other, Specify:

Tested For: EPA CONFIRMATORY TEST

Target Coefficient A (lb_f): 26.06 Set Coefficient A (lb_f): 6.48

Target Coefficient B (lb_f/mph): -0.12 Set Coefficient B (lb_f/mph): -0.2382

Target Coefficient C (lb_f/mph²): 0.01821 Set Coefficient C (lb_f/mph²): 0.01608

PHEV Operating Mode: NOT APPLICABLE

Is this the official certification test?: YES

FTP raw test data

| THC (g/mi) | NMHC (g/mi) | NMOG (g/mi) | NOx (g/mi) | CO (g/mi) | HCHO (mg/mi) | PM (g/mi) | CO ₂ (g/mi) | MPG | CH ₄ (g/mi) | N ₂ O (g/mi) |
|------------|-------------|-------------|------------|-----------|--------------|-----------|------------------------|------|------------------------|-------------------------|
| 0.0081 | 0.0065 | 0.0068 | 0.009 | 0.24 | 0 | | 180.7 | 49.1 | 0.005 | |

Raw Test Results without DF:

Test Type: COLD-CO (20F)

Tested By: MANUFACTURER

Test ID: DARB002

Test Date: 11/21/2011

Exh Test Fuel: GASOLINE - COLD CO HIGH OCTANE (40CFR 86.213-04)

If Other, Specify:

Tested For: EPA CONFIRMATORY TEST

Target Coefficient A (lb_f): 28.67 Set Coefficient A (lb_f): 3.5

Target Coefficient B (lb_f/mph): -0.0132 Set Coefficient B (lb_f/mph): -0.2382

Target Coefficient C (lb_f/mph²): 0.02002 Set Coefficient C (lb_f/mph²): 0.02121

PHEV Operating Mode: NOT APPLICABLE

Is this the official certification test?: YES

Cold CO raw test data

| THC (g/mi) | NMHC (g/mi) | NMOG (g/mi) | NOx (g/mi) | CO (g/mi) | HCHO (mg/mi) | PM (g/mi) | CO ₂ (g/mi) | MPG | CH ₄ (g/mi) | N ₂ O (g/mi) |
|------------|-------------|-------------|------------|-----------|--------------|-----------|------------------------|------|------------------------|-------------------------|
| 0.2729 | 0.2628 | 0.2733 | 0.008 | 1.37 | 0 | | 279.3 | 31.4 | 0.004 | |

InfoPath CSI 6C

Evaporative DDV information

| | | | | | | | | | | | | | | | |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|---------------|-------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|---------------|-------|---------|---------|----------|

CSI 6C

Evaporative DDV and Durability Test Information:

Evaporative DDV Set Number: (Select a sequential number, starting with 1 for each Set Number.)

Evaporative Family:

Evap DF Type:

DDV Evap Type:

Evap Family of Evap DDV:

TG of Evap DDV:

Evap DDV Test Vehicle Model:

Displacement:

Fuel Tank Set Number (From CSI6A):

Evaporative DDV Note:

Once DDV and durability test info is entered, manufacturer doesn't have to enter the test info for carryover evap family

Durability Information:

Evaporative Durability Info Number: (Select a sequential number, starting with 1 for each Set Number.)

Durability Information Type:

Manufacturer Durability Set (Bench/Vehicle/Rig Test) ID: (Start with 1 and increment to the total number of different evaporative durability test)

Vehicle Test ID: (Vehicle Evap DF Test Only)

Evaporative Test Type:

Test ID Number:

Test Point (miles):

Test Date:

Evap Durability Test Fuel:

If Other, Specify:

| | 1 st Day | 2 nd Day | 3 rd Day | Hot Soak |
|--|----------------------|----------------------|----------------------|----------------------|
| Raw Evap Test for 3D+HS (g/test) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Raw Evap Test for 2D+HS (g/test) | 0.09 | 0.07 | | 0.0008 |
| Raw Evap Test for Running Loss (g/mi): | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

InfoPath CSI 6C cont'd

Manufacturer Durability Set (Bench/Vehicle/Rig Test) ID: (Start with 1 and increment to the total number of different evaporative durability test)
 Vehicle Test ID: (Vehicle Evap DF Test Only)
 Evaporative Test Type:
 Test ID Number:
 Test Point (miles):
 Test Date:
 Evap Durability Test Fuel:
 If Other, Specify:

| | 1 st Day | 2 nd Day | 3 rd Day | Hot Soak |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|
| Raw Evap Test for 3D+HS (g/test) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Raw Evap Test for 2D+HS (g/test) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Raw Evap Test for Running Loss (g/mi):
 Raw Evap Test for ORVR (g/gallon):
 Used For DF Calculation:

- Insert additional durability test data
- Insert additional durability information

Deterioration Factors (DF):

| | 3-Days + Hot Soak (g/test) | 2-Days + Hot Soak (g/test) | Running Loss (g/mi) | ORVR (g/gallon) |
|--------------------------------|----------------------------|----------------------------|----------------------|----------------------|
| Overall Bench Evap DF: | 0.04 | 0.04 | 0.000 | 0.000 |
| Vehicle Evap DF: | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Overall Certification Evap DF: | 0.04 | 0.04 | 0.000 | 0.000 |

Bench DF Manufacturer Notes:

Vehicle DF Manufacturer Notes:

InfoPath CSI 7

Vehicle model summary

| | | | | | | | | | | | | | | | |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------------|---------|---------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------------|---------|---------|----------|

CSI 7 (All fields in red are considered CBI)

Vehicle Model Summary:

| | | |
|---------------------------------|-------------------|--|
| Model Number: | 1 | (Select a sequential number, starting with 1 for each Model Number.) |
| Vehicle Make: | CARB | |
| Carline Name: | MODEL1 | |
| Badge Name: | MODEL1 | |
| Body Style: | SEDAN | |
| MFR Model Code: | | |
| Trim Level (i.e., CE, LE, etc): | | |
| TG Vehicle Class: | PASSENGER CAR | |
| ECS Set Number: | 1 | |
| Engine Code: | 2 | |
| Engine Set Number (From CSI 3): | 1 | |
| Curb Weight (lbs): | 3715 | |
| LVW (lbs): | | |
| ALVW (lbs): | | |
| ETW (lbs): | 4000 | |
| GVWR (lbs): | 4350 | |
| Drive System: | FRONT WHEEL DRIVE | |

Electric Drive Motor Set # (From CSI 10A):

| |
|---|
| 1 |
|---|

Insert additional drive motors

| | |
|--------------------------------|-----------|
| Regenerative Braking: | BOTH |
| Modified Test Procedure: | YES |
| ATD Grouping Statistic: | 7.39 |
| Shift Indicator Lamp (SIL): | Select... |
| Driver Selectable Modes: | NO |

If Yes, Describe the Modes:
Manufacturer Shift Schedule No. (City, Hwy, US06, SC03):

| | |
|-------------|-----------|
| Label Type: | 50 STATES |
|-------------|-----------|

| | |
|----------------------------------|------|
| CA Projected Sales: | 100 |
| Total US Projected Sales: | 1000 |

Click here to add model

InfoPath CSI 7 cont'd

Section 177 States Projected Sales: 30

NMOG Credit Non PZEV Zero Evap: 0

NMOG Credit DOR Vehicle: 0

PZEV Allowances:

Baseline PZEV Allowance: 0.2

Zero Emissions VMT Allowance:

Advanced ZEV Componentry Allowance:

High Pressure Gaseous or Hydrogen Fuel Storage: 0

Allowance for Qualifying HEV Electric Drive System: 0

Fuel Cycle Emissions: 0

Hydrogen Internal Combustion Engine: 0

Allowance for US06 Capability: 0

Qualifying HEV Electric Drive System: NOT APPLICABLE

Model Type:

Transmission Set Number: 1 (Select a sequential number, starting with 1 for each Transmission Set Number.)

Transmission Type: AUTOMATIC

If Other, Specify:

Transmission Gear #: 6

Model Type: MODEL1

N/V Ratio

92.3

Insert additional N/V Ratios

Insert additional Transmissions

| Evap Family Set Number | Fuel Tank Set Number |
|------------------------|----------------------|
| 1 | 1 |

Insert additional Fuel Tanks

| Tire Size Front | Tire Size Rear |
|-----------------|----------------|
| P215/55R17 | P215/55R17 |

Insert additional Tires

CSI 7 Manufacturer Note:

Insert an additional CSI 7

Click here to add different transmission within same model

Model type specific info (model type, N/V ratio)

InfoPath CSI 10A

Hybrid electric vehicle (HEV) information

| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--|--------------|--|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|----------------|-------------|----------|
| CSI 10A | | | | | | | | | | | | | | | |
| HEV Set Number: | | 1 (Select a sequential number, starting with 1 for each Set Number.) | | | | | | | | | | | | | |
| HEV Energy Storage Device Category: | | BATTERY | | | | | | | | | | | | | |
| If Other, Specify: | | | | | | | | | | | | | | | |
| Does the Test Group include a BEVx? | | NO | | | | | | | | | | | | | |
| If yes, select the type of BEVx: | | Select... | | | | | | | | | | | | | |
| Battery: | | | | | | | | | | | | | | | |
| Battery Type: | | LI+ (LITHIUM ION) | | | | | | | | | | | | | |
| If Other, Specify: | | | | | | | | | | | | | | | |
| Number of Batteries (cells): | | 45 | | | | | | | | | | | | | |
| Number of Battery Modules: | | 9 | | | | | | | | | | | | | |
| Number of Battery Packs: | | 1 | | | | | | | | | | | | | |
| Total Weight of Battery Pack (kg): | | 150 | | | | | | | | | | | | | |
| Total Battery Pack(s) Voltage: | | | | | | | | | | | | | | | |
| Complete Battery Pack(s) Specific Energy (Whr/Kg): | | 70.2 | | | | | | | | | | | | | |
| Battery Thermal Management: | | LIQUID | | | | | | | | | | | | | |
| If Other, Specify: | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> Insert an additional battery | | | | | | | | | | | | | | | |
| Level One Charging Compliant?: | | YES | | | | | | | | | | | | | |
| Total Number of Capacitors: | | 0 | | | | | | | | | | | | | |
| Capacitor Rating (Farads) | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> Insert an additional capacitor | | | | | | | | | | | | | | | |
| Drive Motor: | | | | | | | | | | | | | | | |
| Number of Drive Motors: | | 1 | | | | | | | | | | | | | |
| Electric Drive Motor Set Number: | | 1 (Select a sequential number, starting with 1 for each Set Number.) | | | | | | | | | | | | | |
| Drive Motor Type: | | DC PERMANENT MAGNET, BRUSHLESS | | | | | | | | | | | | | |
| If Other, Specify: | | | | | | | | | | | | | | | |
| Drive Motor Rated Powers (kW): | | 60 | | | | | | | | | | | | @RPM: 6,000 | |
| Drive Motor Peak Torque (Nm): | | 120 | | | | | | | | | | | | @RPM: 6,000 | |
| <input checked="" type="checkbox"/> Insert an additional drive motor | | | | | | | | | | | | | | | |
| HEV Test Parameter Information Section: | | | | | | | | | | | | | | | |
| HEV Test Vehicle ID: | | HEV01 | | | | | | | | | | | | | |
| HEV Electric Drive System Peak Power Output (kW): | | 10 | | | | | | | | | | | | | |
| HEV Traction Drive System Voltage (V): | | 5 | | | | | | | | | | | | | |
| HEV Traction Drive System Boost: | | NO | | | | | | | | | | | | | |

InfoPath CSI 10A cont'd

HEV Regenerative Braking: ELECTRICAL REGENERATIVE BRAKING

If Other, Specify:
Off-Vehicle Charge Capable Hybrid Electric Vehicles:

| Urban | |
|--|------|
| Manufacturer Urban Test #: | |
| Charge Depleting Cycle Range (R_{cdcu} , mi): | 12.3 |
| Charge Depleting Actual Range (R_{cda} , mi): | 12.0 |
| Charge Depleting to Charge Sustaining Range (R_{cdcsu} , mi): | 15.0 |
| All Electric Range (AER_u , mi): | 15.0 |
| Equivalent All Electric Range ($EAER_u$, mi): | 17.2 |
| Equivalent Electric Range Fraction (ERF_u , %): | 85 |
| Equivalent All-Electric Range Energy Consumption ($EAEREC_u$, kWh/mi): | 0.1 |
| Highway | |
| Manufacturer Highway Test #: | |
| Charge Depleting Cycle Range (R_{cdch} , mi): | 20.4 |
| Charge Depleting Actual Range (R_{cdah} , mi): | 18.9 |
| Charge Depleting to Charge Sustaining Range (R_{cdcsh} , mi): | 21 |
| All Electric Range (AER_h , mi): | |
| Equivalent All Electric Range ($EAER_h$, mi): | 24.0 |
| Equivalent Electric Range Fraction (ERF_h , %): | 87.0 |
| Equivalent All-Electric Range Energy Consumption ($EAEREC_h$, kWh/mi): | 0.1 |
| Charge Depleting to Charge Sustaining Range (R_{cdcs} , mi): | 20 |
| Charge Depleting Net Energy Consumption (E_{cd} , kWh): | 5 |
| Net DC Energy from battery expended during test (kWh): | 3 |
| AC energy required to fully charge battery after charge sustaining test (kWh): | 12 |
| CSI 10A Manufacturer Note: | |

Insert an additional CSI 10A

InfoPath CSI 10B

Zero emission vehicle (ZEV) information

| | | | | | | | | | | | | | | | |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|----------------|----------|
| Contact Info | General Info | CSI 1 | CSI 2A | CSI 2B | CSI 3 | CSI 4 | CSI 5A | CSI 5B | CSI 6A | CSI 6B | CSI 6C | CSI 7 | CSI 10A | CSI 10B | ALL CSIs |
|--------------|--------------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|-------|---------|----------------|----------|

CSI 10B (All fields in red are considered CBI)

ZEV Set Number: (Select a sequential number, starting with 1 for each Set Number.)

ZEV Energy Storage Device Category:

If Other, Specify:

Battery:

Battery Type:

If Other, Specify:

Number of Batteries (cells):

Number of Battery Modules:

Number of Battery Packs:

Total Weight of Battery Pack (kg):

Total Battery Pack(s) Voltage:

Minimum Battery SOC or Voltage:

Battery Pack(s) Energy Capacity using C3 Procedure (Ah):

Complete Battery Pack(s) Specific Energy (Whr/Kg):

Battery Charger Type:

Battery Charging Method:

If Other, Specify:

Battery Thermal Management:

If Other, Specify:

Insert an additional battery

Level One Charging Compliant?

Total Number of Capacitors:

Capacitor Rating (Farads)

Insert an additional capacitor

Drive Motor:

Number of Drive Motors:

ZEV Electric Drive Motor Set Number: (Select a sequential number, starting with 1 for each Set Number.)

Drive Motor Type:

If Other, Specify:

Drive Motor Rated Powers (kW): @RPM:

Drive Motor Peak Torque (Nm): @RPM:

- ZEV: battery, fuel cell
- CSI 10B includes all ZEV related info (battery, motor, test info, ZEV model info)

InfoPath CSI 10B cont'd

ZEV Test Parameter Information Section:

ZEV Test Vehicle ID:

ZEV Regenerative Braking:

If Other, Specify:

ZEV Regenerative Braking Source:

Driver Controlled Regenerative Braking:

ZEV Vehicle Configuration:

Tire Size: Front: Rear:

Curb Weight (lb):

LVW (lb):

GVWR (lb):

ALVW (lb):

ETW (lb):

Target Coefficient A (lb_f): Set Coefficient A (lb_f):

Target Coefficient B (lb_f/mph): Set Coefficient B (lb_f/mph):

Target Coefficient C (lb_f/mph²): Set Coefficient C (lb_f/mph²):

Road Load Horsepower (RLHP):

Transmission Type:

If Other, Specify:

of Forward Transmission Gears:

All Electric Range Test Information:

| | | | | | |
|---|-----------------------------------|-----------------------------------|----------------------|----------------------|----------------------|
| Manufacturer Test Number: | <input type="text" value="1"/> | | | | |
| | Urban | Highway | Cold CO | SC03 | US06 |
| All Electric Range (mi): | <input type="text" value="200"/> | <input type="text" value="250"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Net DC Energy Output during Test (kWh/mi): | <input type="text" value="0.22"/> | <input type="text" value="0.23"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Total AC Energy required to fully charge Batteries after Test (kWh/mi): | <input type="text" value="2.5"/> | <input type="text" value="2.5"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Total DC Energy required to fully charge Batteries after Test (kWh/mi): | <input type="text" value="0.1"/> | <input type="text" value="0.1"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

InfoPath CSI 10B cont'd

ZEV Model Information:

ZEV Model Number: (Select a sequential number, starting with 1 for each Model Number.)
Zero Emission Vehicle Tier:

ZEV Electric Drive Motor Set Number for Model

Insert an additional electric drive motor set number

Fast Refueling: Recharging/Refueling Time to replace (min):

Fast Refueling UDDS ZEV Range Mileage:

CARB ZEV Multiplier:

CARB ZEV Credit (without multiplier):

ZEV Vehicle Make:

ZEV Model Name:

ZEV Category:

If Other, Specify:

Fuel Type:

Model Vehicle Class:

Model Specific Label Type:

NEV+ Only:

ZEV Projected Sales-CA Only:

ZEV Projected Sales-Total US (includes CA Sales):

ZEV Projected Sales-Section 177 States:

Insert an additional model

CSI 10B Manufacturer Note:

Insert an additional CSI 10B

Data Requirements for GHG

Following GHG data requirements will be included in future E-Cert update for 2017MY implementation

| | Name | Optional | SQL Data Type | SQL Type Qualifiers | Database Comment |
|--------|--------------------|----------|---------------|---------------------|--|
| CSI 2A | GHG_FTP_N2O_STD_UL | YES | NUMBER | 4,3 | Enter N2O standard in g/mi at UL. Do not enter the standard if N2O is included in Fleet Averaging Program. |
| CSI 2A | GHG_FTP_CH4_STD_UL | YES | NUMBER | 4,3 | Enter CH4 standard in g/mi at UL. Do not enter the standard if CH4 is included in Fleet Averaging Program. |
| CSI 2A | GHG_FTP_N2O_CL_UL | YES | NUMBER | 5,4 | Enter N2O FTP exhaust emission level (g/mi) at UL measured on FTP. Do not enter the emission level if N2O is included in Fleet Averaging Program. |
| CSI 2A | GHG_FTP_CH4_CL_UL | YES | NUMBER | 5,4 | Enter CH4 FTP exhaust emission level (g/mi) at UL measured on FTP. Do not enter the emission level if CH4 is included in Fleet Averaging Program. |
| CSI 7 | GHG_CO2_FP | YES | NUMBER | 4,1 | Enter foot print in ft2 for CO2 determination/calculation. |
| CSI 7 | GHG_CO2_COEF_A | YES | NUMBER | 3,2 | Enter coefficient a for CO2 calculation. |
| CSI 7 | GHG_CO2_COEF_B | YES | NUMBER | 3,1 | Enter coefficient b for CO2 calculation. |
| CSI 7 | GHG_CO2_TARGET | YES | NUMBER | 4,1 | Enter Target CO2 in g/mile. This could be determined value or calculated value. |
| CSI 7 | GHG_FTP_N2O_CL_UL | YES | NUMBER | 5,4 | Enter N2O FTP exhaust emission level (g/mi) at UL if manufacturer elects to add N2O into the CO2 fleet average calculation. This is the value before applying the GWP (298). |
| CSI 7 | GHG_HWY_N2O_CL_UL | YES | NUMBER | 5,4 | Enter N2O HWFET exhaust emission level (g/mi) at UL if manufacturer elects to add N2O into the CO2 fleet average calculation. This is the value before applying the GWP (298). |
| CSI 7 | GHG_FTP_CH4_CL_UL | YES | NUMBER | 5,4 | Enter CH4 FTP exhaust emission level (g/mi) at UL if manufacturer elects to add CH4 into the CO2 fleet average calculation. This is the value before applying the GWP (25). |
| CSI 7 | GHG_HWY_CH4_CL_UL | YES | NUMBER | 5,4 | Enter CH4 HWFET exhaust emission level (g/mi) at UL if manufacturer elects to add CH4 into the CO2 fleet average calculation. This is the value before applying the GWP (25). |

Timeline

- Next workshop July, 2013: how to upload XML file
- Additional testing by ARB: July - September, 2013
 - In 2012, staff successfully tested various scenarios and created XML files
- Voluntary testing by manufacturers: August - September, 2013
- Full production: October, 2013

Contacts

- Cert related issues:
 - Seongyup Kim: 626-450-6164, skim@arb.ca.gov
 - Duc Nguyen: 626-575-6844, dnguyen@arb.ca.gov
 - Cert staffs
- IT related issues:
 - Mina Fanous: 626-575-6867, mfanous@arb.ca.gov
 - Dilip Patel: 626-450-6141, dpatel@arb.ca.gov

Questions and Answers
