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## **DGE Inc. Designs Telematics Vehicle Drive Simulator**

As a part of HUGHES Telematics' proprietary engineering, DGE Inc. designed a tool to rapidly and efficiently test the integration of a telematics control unit (TCU) in a vehicle. The vehicle drive simulator (VDS) expedites the process as it allows the TCU supplier and OEM to validate the functionality of the interface in a controlled setting without having to use a test vehicle.

HUGHES Telematics engaged DGE to develop the VDS, which simulates a connected (cellular, satellite and CAN) on-road experience. With this test system, which controls feedback as it relates to the TCU, a user can load a configuration file containing the particulars of a specific vehicle and then simulate all drive-related data. Faults such as shorts to BATT/GND and Opens may be inserted to assess the TCU's behaviors. The system is capable of running scripts remotely, which allows design and test teams in different locations to use the system. The user interface allows the following subsystems to be controlled and monitored:

- Vehicle Configuration Data
- TCU (ECU) Interface
- GPS Interface
- Cellular Interface
- Vehicle CAN Simulation
- Vehicle Diagnostics
- Fault Insertion
- Scripting/Modeling
- Logging

The VDS changes the platform for future telematics systems' development with its flexible and expandable design; test engineers will no longer have to rely on test vehicles from OEMs. Additionally, the closed-loop system allows for the creation of controlled and repeatable tests scenarios impossible to achieve with test vehicles. As a result, the VDS is unparalleled by any other testing system available in the telematics industry.

DGE Inc. is a full service engineering and design company in Rochester Hills, MI serving the automotive and transportation industries.

Located in Atlanta, HUGHES Telematics designs, engineers and manages vehicle- and driver-centric solutions to increase vehicle value, ownership, experience, convenience, efficiency and safety and security.



PASS VDS - JC\_Wheel\_Pulse.vcg

## Vehicle Drive Simulator

### POWER SUPPLIES

**MAIN**

Primary Power Supply  Output

Voltage: 13.532  
Current: 0.324

Backup Battery Supply  Output

Voltage: 0.024  
Current: 0.000

### ECU

ECALL ICALL RACALL

Active Call: S I #  
Message: I A T  
Sounder: H W T  
SMS Full: L A R  
Roaming: A R Y  
Service: Y

LED PWM %: 0  
PWM Freq: 0  
ACTIVE DTCs: 0

AUDIO: TX RX  
0.000 0.000 Freq (Hz)  
0.000 0.000 THD (%)  
0.000 0.000 RMS (mV)

PASS Speaker Audio (RX)

### GPS

Selected GPS Scenario File: DGE\_CircleDR.scn

Scenario Status: Running S

Start Time: 14-Nov-2007 00:00:00  
Current Time: 14-Nov-2007 00:07:19  
End Time: 23-Nov-2007 00:00:00  
Time Into Run: 00:00:07.20  
Duration: 9:00:00:00

GPS Simulation Status

Latitude: -42.110958  
Longitude: -83.600731  
HEIGHT: 33.90  
SPEED: 72.00

### GSM CAN

Mode 1 Signal Status: SOFF  
Mode 2 Signal Status: SOFF

GSM Mode: GSM 1900 Signaling

RF Output:  Signal OFF  
Connection Control:  Connect Host

Clear Received SMS message Window  
Send SMS Message

Received SMS Message

### STATUS

Current Operating Mode: Running

Logging Status: Logging OFF

ECU DTC Status: No DTCs Detected

Fault Insertion: No Faults Inserted

### SUBSYSTEMS

Power Supplies:

ECU Interface:

GPS Interface:

GSM Interface:

Vehicle CAN Interface:

Fault Insertion:

Scripting:

Logging:

### VEHICLE

Vehicle Ignition: LOOK OFF ACC RUN  
LOCK START

Modeled CAN Bus Traffic: Vehicle Traffic Enabled

Crash Sensor Impact Type: No Impact  
CRASH

Network State: AWAKE

Change Vehicle Configuration

### SYSTEM MESSAGES

28135937.2>Logger: Logger\_Sub:PS Element:HWB\_Output