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Summary: Request for Public Comments for Petition of Testing an Electric Passenger Transport Vehicle with a Fully Automated Driving System on Public Roads

Agency: National Highway Traffic Safety Administration (NHTSA)
Parent Agency: Department of Transportation (DOT)
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Action:
Notice of request for public comments

Action Reply: Public Submission
Date Posted: April 02, 2019
Comments Submitted By:
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Attachments: (File Name)
DOT-NHTSA-ADS-Passenger-Testing-Levels_David-DeVeau.pdf

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Introductory

The following public comments are not intended to address the approval, postponement or rejection of this petition. These comments are only within the capacity of an independent advocate for public safety.

This petition is for the use of an electric vehicle to be used as a fully automated test vehicle for passenger transport at moderate speeds with no human driver interface ability on public roads.

These comments are in regards toward support of cooperation for the DOT / NHTSA / NCAP Rating System for all road vehicles that by nature of specifying applicable testing will clarify safety requirements or exemptions and will further budgets for engineering designs and engineered testing.

The level of these tests are defined by the petitioner at driving capacity Level-4 as defined by SAE International Levels of Automation as specified in SAE-J3016.

SAE-J3016 is a standard for design feature descriptions and conditions of use at levels from human driver to full automation.

NHTSA is a DOT safety administrator of all road vehicles to include testing and approval of all safety features.

To expedite the development of all vehicle safety innovations for crash protection features and for collision avoidance at all levels of automated vehicle features, all types of testing must be perfectly clear.

As to any developing innovation being tested on public roads, there must be a minimum requirement for public safety that must be proven and therefore tested by an independent NHTSA certified testing facility.

Further self-certification of minimum public safety requirements must not be allowable for any level of permitted public road testing.

Therefor in the interest of this and like petitions the testing levels and testing conditions must be defined as per the following examples.

All Testing Levels

YEAR – MAKE – MODEL

Crash Protection Levels:

L0: Occupant Safety Systems
Structural Absorption and or Diversion for Compartment Integrity
Personal Restraints and or Movement Absorption for All Seat Locations

L0-P: Pedestrian Safety Systems
Structural Absorption and or Diversion

Collision Avoidance Levels:

L1: Warning Systems (Not Applicable, No Human Driver Systems)
Audio and or Visual and or Tactile Vibration Alerts

L1-P: Pedestrian Warning Systems
External Audio and or Visual Alerts

L2: Assist Systems (Not Applicable, No Human Driver Systems)
Tactile Resistance and or Initial Intervention
Directional and or Speed Counter Measures

L3: Automatic Systems (Not Applicable, No Human Driver Systems)
Complete Intervention and or Activation
Directional and or Speed Control

L4: Autonomous Systems
Directional and or Speed Control
No Human Driver Interface and or Intervention

Passenger Crash Protection Measurements

PASS: External Bruising and Abrasions
PASS: Internal Joint Sprains
PASS: Internal Organ Bruising
FAIL: External or Internal Damage

FONT / SIDE / REAR:

ALL MAIN SEAT LOCATIONS: (Nearest to Doors or Windows)
Humanoid Crash Dummy
225 Pound Male Adult
180 Pound Female Adult
80 Pound Adolescent Child

ANY SECONDARY SEAT LOCATION: (In the Middle or Center)
Humanoid Crash Dummy In Additional Safety Seat
Up to 80 Pound Child

CONDITIONS:

- Vehicle Areas Defined Collide At Speed Specified
- All Occupants Are Measured and Visually Inspected For Crash Results
- Occupant Compartment Is Observed For Intrusion Of Occupied Areas
- Laboratory Conditions Simulate Actual Crash Conditions Within 80%

ADS Collision Avoidance Measurements

AUTOMATED DRIVING SYSTEMS:
Autonomous Directional and Speed Control
No Human Driver Interface or Intervention

CONDITIONS:

- Autonomous Systems Are Measured On Ability To Anticipate and or Calculate Course and Perform Actions

- All Systems Are Measured On Ability To Perform Specific Tasks On Specified Road Types Within A Range of Environmental Conditions Up To Speed Specified.

- Laboratory Conditions Simulate Actual Collision Conditions Within 80%

ADS Testing Request Conditions

YEAR – MAKE – MODEL

Forward / Rearward Brake:

Automatic: Brake Control; Moderate Weather; Day Only; City Street Traffic Conditions; Other Vehicle, Pedestrian, and Bicycle Recognition; Collision Avoidance Abilities
Proximity; Front 75 feet from 39 to 0 mph / Rear 20 feet from 19 to 0 mph
Note: Braked Stopping Ability Is Dependent On Conditions and or Obstacles Introduced

Speed Control:

Warning: External Audio & Visual Alerts; Moderate Weather; Day Only; City Street Traffic Conditions; Other Vehicle, Pedestrian, and Bicycle Recognition; Collision Warning Abilities

Automatic: Speed Control; Moderate Weather; Day Only; City Street Traffic Conditions; Other Vehicle, Pedestrian, and Bicycle Recognition; Course Awareness Abilities
Speed Range; Front 0 to 39 / Rear 0 to 19 mph
Note: Forward / Rearward Brake Is Active

Lane Keep / Lane Departure:

Warning: External Audio & Visual Alerts; Moderate Weather; Day Only; City Street Traffic Conditions; Other Vehicle, Pedestrian, and Bicycle Recognition; Lane Change Warning Abilities

Automatic: Lane Keep / Lane Departure Steering Control; Day Only; City Street Traffic Conditions; Other Vehicle, Pedestrian, and Bicycle Recognition; Course Maneuvering Abilities
Speed Range; Front 0 to 39 / Rear 0 to 19 mph
Note: Forward / Rearward Brake and Speed Control Are Active

Note:

Additional Information May Be Required To Cite Exemption To Existing Law and Explain ADS Substitute Safety Feature

All Testing Request Levels

YEAR – MAKE – MODEL

DOT Testing Level	DOT Testing Speed	Testing Conditions Vehicle Direction of Travel and/or Area Location of Vehicle Impact	SAE-J3016 Design Level
L0	41 to 49 mph	Front; Center to 3/4 / All Passengers Pass Crash Protection	Not Applicable
L0	31 to 39 mph	Front; 1/2 to 1/4 / All Passengers Pass Crash Protection	Not Applicable
L0	21 to 29 mph	Rear; Center to 3/4 / All Passengers Pass Crash Protection	Not Applicable
L0	21 to 29 mph	Side; Center to 3/4 / All Passengers Pass Crash Protection	Not Applicable
L0p	11 to 19 mph	All; Absorption and/or Diversion Of Pedestrian Impact Forces	Not Applicable
L1p	21 to 29 mph	Front; Pedestrian Warning	L0
L1p	11 to 19 mph	Rear; Pedestrian Warning	L0
L4	0 to 39 mph	All; Fully Automated Driver – No Human Driver Interface	L4
L4	0 to 39 mph	All; Course Ability / City Street & Traffic Conditions	L4
L4	21 to 29 mph	Front; Pedestrian & Bicycle Collision Avoidance	L4
L4	11 to 19 mph	Rear; Pedestrian & Bicycle Collision Avoidance	L4

DOT / NHTSA / NCAP Safety Rating Sticker

YEAR – MAKE – MODEL

Example: Passenger Transport Vehicle Safety Rating Sticker

Protection / Avoidance

Are Relative To All Passengers and Pedestrians that are also
Inclusive of Bicycle and Like Pedestrian Operated Vehicles
As Rated by Official Authority with Applicable Statements

Safety Features

Are Included By Manufacturer and Relative To This Vehicle Only

Note:

Speed Based Rating System Equals More Stars For Faster Safer Cars

Conclusion

As stated in this introductory the SAE-J3016 Standard from its initial implementation and throughout its revision process is only about the levels of design perimeters. Although proving to be very useful for design engineering, is lacking in clarity for testing engineering.

Test design engineering can not have overlapping levels. A division of testing levels must be clearly defined for accurate and provable testing. Further manufacturing engineers must have clear testing directives for achievements of provable safety design innovations at all levels.

As shown in this proposal by implementing a DOT Testing Level Standard in conjunction with the SAE J3016 Design Level Standard all design and testing conditions in interest with compliance to the Safety Act are clearly addressed as follows:

- Applicable Testing Levels are clearly distinguished per vehicle design
- Applicable Testing Conditions are clearly defined per vehicle design
- Replaces the Manufacturer Petition with NHTSA Certified Testing
- Expedites Competitive Development of Safety Innovations at All Levels
- SAE J3016 is clarified as a Engineering Design Standard Reference
- NHTSA Crash / Collision Testing is clarified as a simplified Standard
- DOT / NHTSA / NCAP Speed Based Rating System is Perfectly Clear

DOT / NHTSA / NCAP

10 Star Speed Based Rating System

For All Levels Of Public Road Vehicle Safety
From Prototype Testing To Production
Certified Officially Proven Public Safety