

DEPARTMENT OF FOOD AND AGRICULTURE
DIVISION OF MEASUREMENT STANDARDS
Pre-Rulemaking Workshop: December 3, 2015

The California Department of Food and Agriculture (CDFA), Division of Measurement Standards (DMS) wishes to provide stakeholders an opportunity to comment on an upcoming regulation to establish legal metrology standards for software applications used to provide on-demand transportation services. Several businesses, including Transportation Network Companies, have developed new technologies for measuring time and distance in the transportation sector which are distinctly different from existing taximeter technology. Please visit <https://www.cdfa.ca.gov/dms/regulations.html> for additional details.

The following text is a starting point for regulations which to be included in the California Code of Regulations, Title 4, Division 9, Chapter 1. Tolerances and Specifications for Commercial Weighing and Measuring Devices, Article 2. Specifications and Tolerances and Other Technical Requirements for Commercial Weighing and Measuring Devices Not Included in Handbook 44.

Article 2.4. Transportation Network Systems

A. Application

A.1. General. – This code applies to systems that utilize Global Positioning System (GPS) software and associated equipment or other comparable software-based system to determine distance and time, separately or simultaneously, to calculate a rate or rates and indicate the charge for hire of a vehicle or other mode of transport.

A.2. Exceptions. – This code does not apply to taximeters that use distance measurement transducer or odometers on vehicles that are rented on a distance basis (for which see Section 5.53. Code for Odometers).

A.3. Additional Code Requirements. – In addition to the requirements of this code, Transportation Network Systems shall meet the requirements of Section 1.10. General Code.

S. Specifications

S.1. Design of Indicating and Recording Elements.

S.1.1. General. – A system shall be equipped with a primary indicating element and may be equipped with a recording element.

S.1.1.1. Recording Elements. – A receipt providing information as required in S.1.9. Recorded Representations shall be available from the system or other means through an integral or separate recording element for all transactions conducted.

S.1.2. Identification. – The system shall be clearly and permanently marked for the purposes of identification with the following information:

- (a) the name, initials, or trademark of the manufacturer or distributor;
- (b) the current software version or revision identifier shall be:
 - (1) prefaced by words or an abbreviation that clearly identifies the number as the required version or revision.

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- i. Abbreviations for the word “Version” shall, as a minimum, begin with the letter “V” and may be followed by the word “Number”;
 - ii. Abbreviations for the word “Revision” shall, as a minimum, begin with the letter “R” and may be followed by the word “Number.” The abbreviation for the word “Number” shall, as a minimum, begin with the letter “N” (e.g., No or No.);
- (2) directly linked to the software itself.
- (c) If the system is it designed such that it consists of more than one part, the part dedicated to the metrologically significant software shall be clearly identified.

S.1.3. Location of Marking Information. – The required information in S.1.2. Identification. shall be:

(a) continuously displayed; or

(b) accessible through an easily recognized menu and, if necessary, a submenu. Examples of menu and submenu identification include, but are not limited to, “Help,” “System Identification,” “Weights and Measures Identification,” or “Identification.”

S.1.4. Advancement of Indicating Elements. – Except when a system is being reset, the primary indicating and recording elements shall be susceptible of advancement only by the movement of the vehicle or the time mechanism.

S.1.5. Visibility of Indications. – The indication of fare shall be available at the beginning of the transaction. All fares shall be available whenever the vehicle is hired and in operation. All indications of passenger interest shall be displayed to the passenger, either in the vehicle from a distance of 1.2 m (4 ft) under any condition of normal operation, or on a device operated by the passenger. If the display is not on continuously, it shall be accumulated continuously so that real-time measurement is displayed during activation, no more than every 60 seconds. (Nonretroactive as of 20XX)

S.1.5.1. Minimum Height of Figures, Words, and Symbols. – If the indications are displayed in the vehicle, the minimum height of the figures used to indicate the fare shall be 10 mm and for extras, 8 mm. The minimum height of the figures, words, or symbols used for other indications, including those used to identify or define, shall be 3.5 mm.

S.1.5.2. Lighting of Indications. – If the indications are displayed in the vehicle, integral lighting shall be provided to illuminate the fare and extras.

S.1.5.3. Supplemental Indications. – If a supplementary indicating element is installed in a vehicle to provide information regarding the service to the passenger, it shall clearly display the current total of all charges incurred for the transaction. The accruing total of all charges must remain clearly visible on the passenger’s display unless disabled by the passenger at all times during the transaction.

S.1.5.3.1. Fare and extras charges – The indication of fare and extras charges on the indicating element shall agree with similar indications displayed on all other indicating elements in the system.

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S.1.6. Actuation of Fare-Indicating System. – A system shall be designed to calculate fares upon the basis of a combination of distance traveled and time elapsed.

S.1.7. Operating Condition.

S.1.7.1. Fare Identification. – Fare indications shall be identified by the word “Fare” or by an equivalent expression. Values shall be defined by suitable words or monetary signs.

S.1.7.2. Extras. – Extras shall be indicated as a separate item and shall not be included in the fare indication. They shall be identified by the word “Extras” or by an equivalent expression. Values shall be defined by suitable words or monetary signs. Means may be provided to totalize the fare and extras if the totalized amount returns to separate indications of fare and extras within 5 seconds or less.

S.1.7.2.1. Nonuse of Extras. – If and when system extras are prohibited by a legal authority or are discontinued by a vehicle operator, the extras mechanisms shall be rendered inoperable or the extras indications shall be effectively obscured by permanent means.

S.1.8. Protection of Indications. – All indications of fare and extras shall be protected from unauthorized alteration or manipulation.

S.1.9. Recorded Representation. – A receipt issued from a system, whether through an integral or separate recording element, shall include the following:

- (a) date;
- (b) unique vehicle identification number, or other identifying information as specified by the statutory authority;
- (c) start and end time of trip, and total time of trip, maximum increment of one second;
- (d) distance traveled, maximum increment of 0.01 kilometer or 0.01 mile;
- (e) the associated fare in \$ at each rate;
- (f) additional charges where permitted such as extras; and
- (g) total fare in \$ (total charge).

S.2. Basis of Fare Calculations. – A system may calculate fares upon the basis of:

- (a) distance traveled;
- (b) time elapsed; or
- (c) a combination of distance traveled and time elapsed.

S.3. Interference. – For systems that determine distance and time separately there shall be no interference between the time and the distance portions of the mechanism device at any speed of operation.

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S.4. Provision for Sealing.

S.4.1. System Security. – A system shall be designed with provisions to ensure that no change can be made that detrimentally affects its metrological integrity.

S.4.2. Changelog. – The system shall provide a changelog, with the information available electronically to the weights and measures official. The changelog shall include a chronological record of all changes affecting the metrological integrity of the system.

S.4.3. Software Authenticity. Technical means shall be employed to guarantee the authenticity of the loaded software, to ensure that it originates from the owner of the type approval certificate.

S.5. Provisions for Power Loss.

S.5.1. Transaction Information. – In the event of a power loss, the system shall be capable of determining the information needed to complete any transaction in progress at the time of the power loss.

N. Notes

N.1. Distance Tests.

N.1.1. Test Methods. – To determine compliance with distance tolerances, a distance test of a system shall be conducted utilizing a distance test or a transfer standard test where applicable.

(a) **Specific Distance Test.** – The test consists of operating the conveyance over a precisely measured course at least one mile in length.

(b) **Transfer Standard Test.** - When comparing a system with a calibrated transfer standard, the distance shall be equal to at least the distance traveled on the specific distance test.

N.1.2. Test Procedures. - Not less than two test runs shall be conducted for a distance test and shall be at a speed approximating the average speed traveled by the vehicle in normal service.

N.1.3. Test Conditions. – Tests shall be conducted under conditions that are usual and customary with respect to the location and use of the device.

N.2. Time Test. – A system equipped with a timing device shall be tested during the specific distance and transfer standard tests.

N.3. Isolation Test. – If a system is designed to calculate fares for time and distance separately, tests for time and distance shall be conducted independently.

N.4. Software Tests. – The system software shall be loaded onto a smartphone and tested for authenticity and version number.

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T. Tolerances

T.1. Tolerance Values.

T.1.1. Distance Tests. – Maintenance and acceptance tolerances shall be as follows:

(a) On Overregistration: 1 %

(b) On Underregistration: 4 %

T.1.2. Time Tests. – Maintenance and acceptance tolerances shall be as follows:

(a) On Overregistration: 5 seconds per test

(b) On Underregistration: 5 seconds per test

T.2. Tests Using Transfer Standards. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.

UR. User Requirements

UR.1. System Indications. – Unless the customer has a system under their control that displays indications of the transaction, a system within the conveyance shall be so positioned and illuminated such that its indications can be conveniently read by a customer.

UR.2. Statement of Rates. – The distance and time rates for which a system is set, including minimum fare, and the schedule of extras is provided where applicable, shall be made available to the customer on their device or conspicuously displayed in the conveyance. The words “Rate,” “Rates,” or “Rates of Fare” shall precede the rate statement. The rate statement shall be fully informative, self-explanatory, and readily understandable by the ordinary customer.

Appendix D

recording element. – An element incorporated in a weighing or measuring device by means of which its performance relative to quantity or money value is permanently recorded on a tape, ticket, card, electronic data storage device, or the like, in the form of a printed, stamped, punched, perforated, or electronic representation. [1.10, 2.21, X.XX]

global positioning system. – A navigational system that uses use of satellites and computers to provide position, velocity, and time navigation information to users by computing the time difference for signals from different satellites to reach the receiver. [X.XX]