

## 49 CFR Part 221

### Subpart B

#### 221.14

##### Marking devices.

(a) As prescribed in § 221.13, passenger, commuter and freight trains shall be equipped with at least one marking device, which has been approved by the Federal Railroad Administrator in accordance with the procedures included in appendix A of this part, and which has the following characteristics:

(1) An intensity of not less than 100 candela nor more than 1000 candela (or an effective intensity of not less than 100 candela nor more than 1000 candela for flashing lights) as measured at the center of the beam width;

(2) A horizontal beam with a minimum arc width of fifteen (15) degrees each side of the vertical center line, and a vertical beam with a minimum arc width of five (5) degrees each side of the horizontal center line as defined in terms of the 50 candela intensity points;

(3) A color defined by the red-orange-amber color range; and

(4) If a flashing light is used, a flash rate of not less than once every 1.3 seconds nor more than once every .7 seconds.

### Appendix A

As provided in § 221.15 of this part, marking devices must be approved by the Administrator, Approval shall be issued in accordance with the following procedures:

(a) Each submission for approval of a marking device consisting of lighted elements only shall contain the following information: (1) A detailed description of the device including the type, luminance description, size of lens, manufacturer and catalog number, lamp manufacturer, lamp type and model number, and any auxiliary optics used.

(2) A certification, signed by the chief operating officer of the railroad, that-

(i) The device described in the submission has been tested in accordance with the current "Guidelines for Testing of FRA Rear End Marking Devices," copies of which may be obtained from the Office of Safety, Federal Railroad Administration, 2100 Second Street SW., Washington, DC 20590; (ii) The results of the tests performed under paragraph (i) of this subsection demonstrate marking device performance in compliance with the standard prescribed in 49 CFR 221.15; (iii) Detailed test records, including as a minimum the name and address of the testing organizations, the name of the individual in charge of the tests, a narrative description of the test procedures, the number of samples tested, and for each sample tested, the on-axis beam candela, the beam candela at the  $\pm 15$  degree points in the horizontal plane, the beam candela at the  $\pm 5$  degree points in the vertical

plane, and the chromaticity coordinates, are maintained by the railroad and are available for inspection by the FRA at a designated location which is identified in the submission; (iv) Marking devices of this type installed in the operating environment shall consist of the same type and model of components as were used in the samples tested for purposes of this approval submission. (3) Unless otherwise qualified, acknowledgement of the receipt of the submission required by this section shall constitute approval of the device. The FRA reserves the right to review the test records maintained by the railroad, or to test independently any device submitted for approval under these procedures, and to withdraw the approval of such device at any time, after notice and opportunity for oral comment, if its performance in the operating environment fails to substantiate the test results or to comply with 49 CFR 221.15.

(b) --

(1) Each submission for approval of a marking device consisting of non-lighted elements or a combination of lighted and non-lighted elements shall contain the following information: (i) A detailed description of the device including the type of material, the reflectance factor, the size of the device, and the manufacturer and catalogue number; (ii) A detailed description of the external light source including the intensity throughout its angle of coverage, and the manufacturer and catalogue number; (iii) A detailed description of the proposed test procedure to be used to demonstrate marking device compliance with the standard prescribed in 49 CFR 221.15, including any detailed mathematical data reflecting expected performance. (2) FRA will review the data submitted under subsection (1) of this section, and in those instances in which compliance with 49 CFR 221.15 appears possible from a theoretical analysis, the FRA will authorize and may take part in testing to demonstrate such compliance. (3) Where authorized testing has demonstrated compliance with 49 CFR 221.15, a railroad shall submit a certification, signed by the chief operating officer of the railroad, that-- (i) The device described in the original submission has been tested in accordance with the procedures described therein; (ii) The results of the tests performed under paragraph (i) of this subsection demonstrate marking device performance in compliance with the standard prescribed in 49 CFR 221.15; (iii) Detailed test records, including as a minimum the name and address of the testing organization, the name of the individual in charge of the tests, a narrative description of the test procedure, a description of the external light source used, the number of samples tested, and for each sample tested, the on-axis beam candela, the beam candela at the  $\pm 15$  degree points in the horizontal plane, the beam candela at the  $\pm 15$  degree point in the vertical plane, and the chromaticity coordinates, are maintained by the railroad and are available for inspection by the FRA at a designated location which is identified in the submission; (iv) Marking devices of this type installed in the operating environment and the external light source used to illuminate them shall consist of the same type and model of components as were used in the samples tested for purposes of this approval submission. (4) Unless otherwise qualified, acknowledgement of the receipt of the submission required by this subsection shall constitute approval of the device. The FRA reserves the right to review the test records maintained by the railroad, or to test independently any device submitted for approval under these

procedures, and to disapprove the use of such device at any time if its performance fails to comply with 49 CFR 221.15.

(c) Whenever a railroad elects to use a marking device which has been previously approved by the FRA, and is included in the current list in appendix B to this part, the submission shall contain the following information: (1) The marking device model designation as it appears in appendix B. (2) A certification, signed by the chief operating officer of the railroad that (i) Marking devices of this type installed in the operating environment shall consist of the same type and model of components as were used in the samples tested for the original approval.

(d) Each submission for approval of a marking device shall be filed in triplicate with the Office of Standards and Procedures, Office of Safety, Federal Railroad Administration, 2100 Second Street SW., Washington, DC 20590.