Current-carrying capacity shall be de-rated for grouping and for operating temperature.

(b) **Main battery system.** (1) The main battery compartment shall be isolated from the cab and passenger seating areas by a non-combustible barrier.

(2) Battery chargers shall be designed to protect against overcharging.

(3) If batteries are of the type to potentially vent explosive gases, the battery compartment shall be adequately ventilated to prevent the accumulation of explosive concentrations of these gases.

(c) **Power dissipation resistors.** (1) Power dissipating resistors shall be adequately ventilated to prevent overheating under worst-case operating conditions as determined by the railroad.

(2) Power dissipation grids shall be designed and installed with sufficient isolation to prevent combustion.

(3) Resistor elements shall be electrically insulated from resistor frames, and the frames shall be electrically insulated from the supports that hold them.

(d) **Electromagnetic interference and compatibility.** (1) The operating railroad shall ensure electromagnetic compatibility of the safety-critical equipment systems with their environment. Electromagnetic compatibility may be achieved through equipment design or changes to the operating environment.

(2) The electronic equipment shall not produce electrical noise that affects the safe performance of train line control and communications or wayside signaling systems.

(3) To contain electromagnetic interference emissions, suppression of transients shall be at the source wherever possible.

(4) All electronic equipment shall be self-protected from damage or improper operation, or both, due to high voltage transients and long-term over-voltage or under-voltage conditions. This includes protection from both power frequency and harmonic effects as well as protection from radio frequency signals into the microwave frequency range.

§ 238.227 **Suspension system.**

On or after November 8, 1999—

(a) All passenger equipment shall exhibit freedom from truck hunting at all operating speeds. If truck hunting does occur, a railroad shall immediately take appropriate action to prevent derailment. Truck hunting is defined in §213.333 of this chapter.

(b) Nothing in this section shall affect the requirements of the Track Safety Standards in part 213 of this chapter as they apply to passenger equipment as provided in that part. In particular—

(1) **Pre-revenue service qualification.** All passenger equipment intended for service at speeds greater than 90 mph or at any curving speed producing more than 5 inches of cant deficiency shall demonstrate safe operation during pre-revenue service qualification in accordance with §213.345 of this chapter and is subject to the requirements of either §213.57 or §213.329 of this chapter, as appropriate.

(2) **Revenue service operation.** All passenger equipment intended for service at speeds greater than 90 mph or at any curving speed producing more than 5 inches of cant deficiency is subject to the requirements of §213.333 of this chapter and either §213.57 or §213.329 of this chapter, as appropriate.

[78 FR 16125, Mar. 13, 2013]

§ 238.229 **Safety appliances—general.**

(a) Except as provided in this part, all passenger equipment continues to be subject to the safety appliance requirements contained in Federal statute at 49 U.S.C. chapter 203 and in Federal regulations at part 231 of this chapter.

(b) Except as provided in this part, FRA interprets the provisions in part 231 of this chapter that expressly mandate that the manner of application of a safety appliance be a bolt, rivet, or screw to mean that the safety appliance and any related bracket or support used to attach that safety appliance to the equipment shall be so affixed to the equipment. Specifically, FRA prohibits the use of welding as a method of attachment of any such safety appliance or related bracket or support. A “safety appliance bracket or support” means a component or part attached to the equipment for the sole purpose of securing or attaching of the