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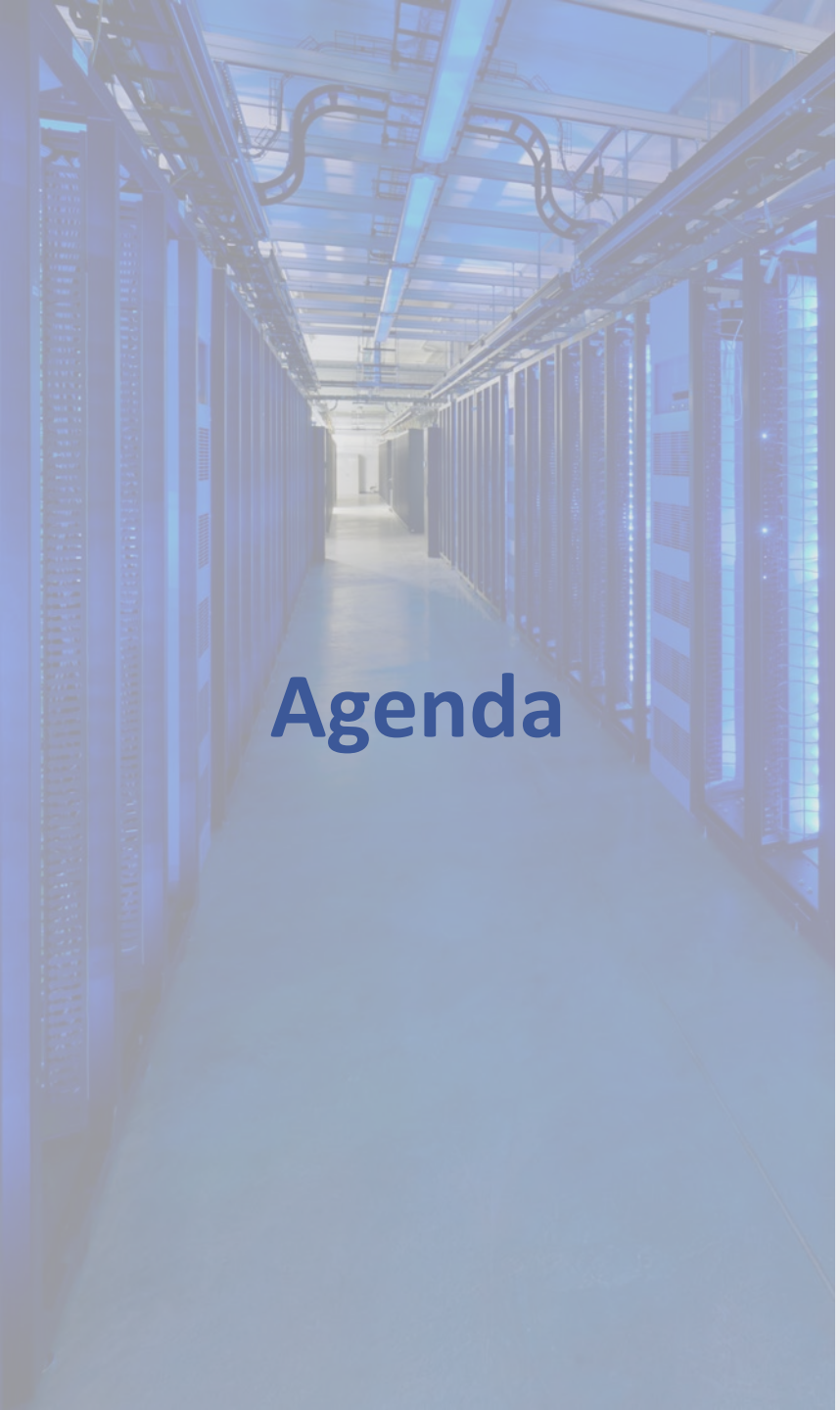
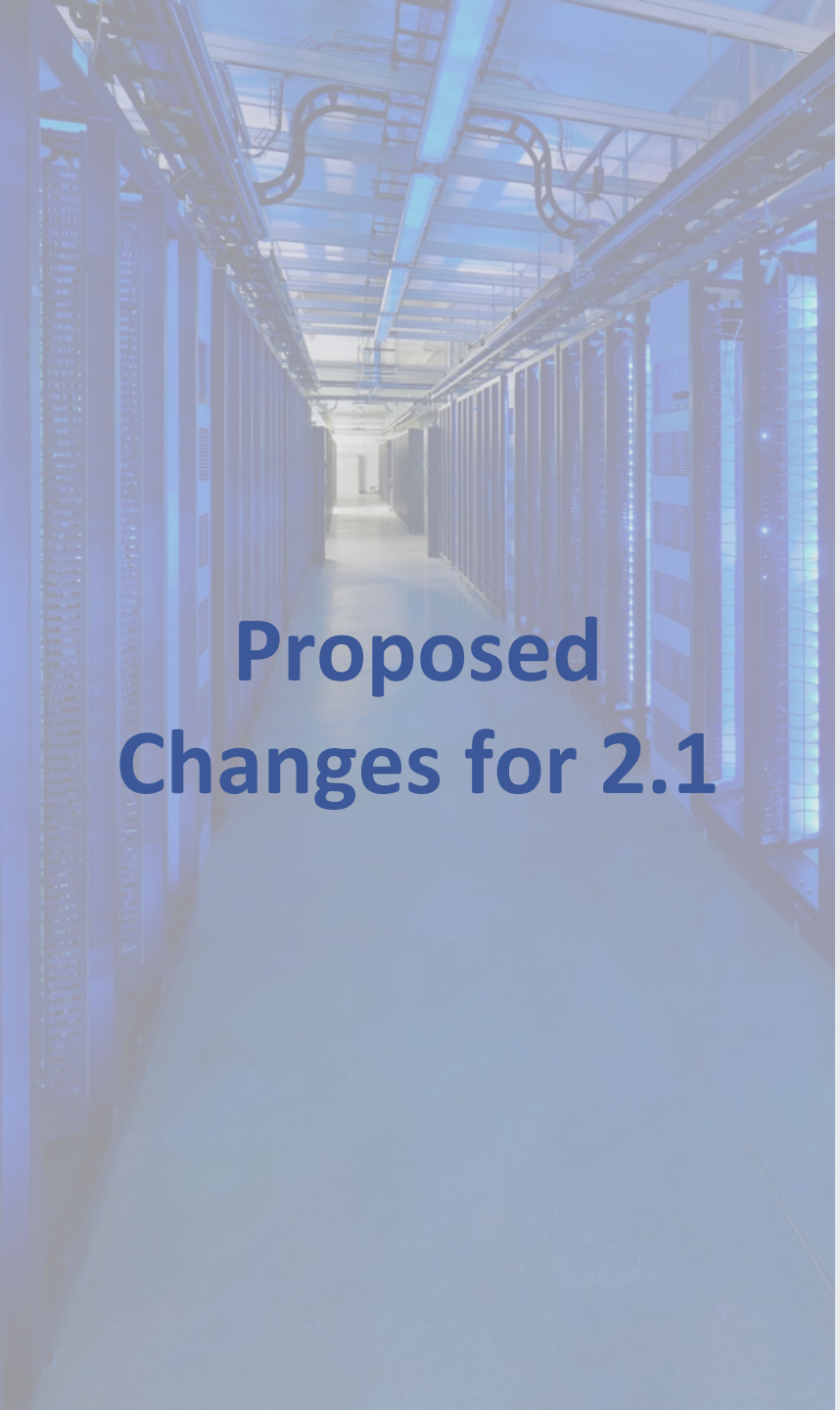
Open Rack Specification 2.1 Update

Steve Mills Technical Lead Facebook



Agenda

- Busbar Thickness Tolerance Reduction
- Reduce Rack Frame Tolerance
- Add Appendix D: Optional Rack-level EMI test guidance
- Replace Deleted Figures 19-22



Proposed Changes for 2.1

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Busbar Thickness Tolerance Reduction

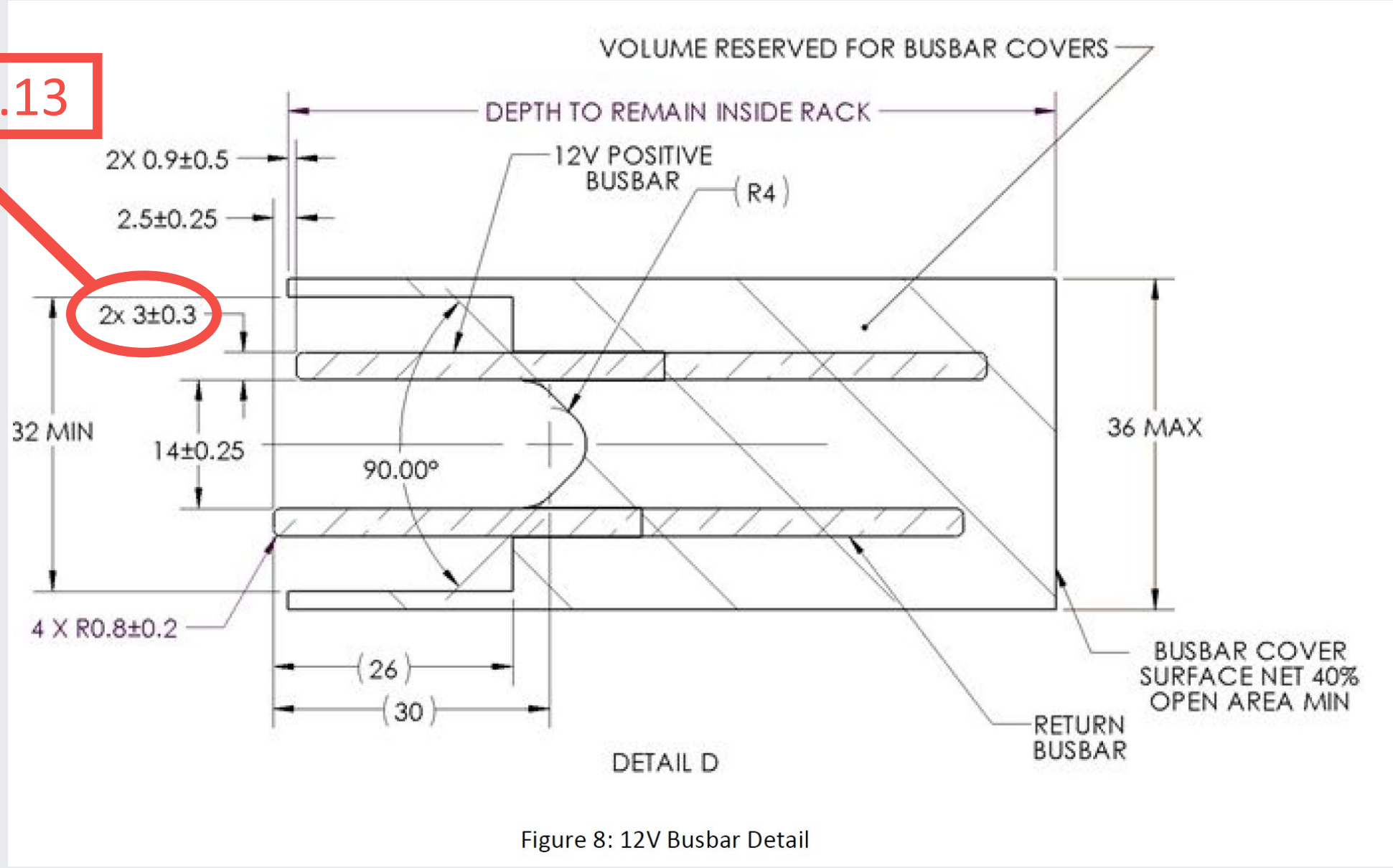
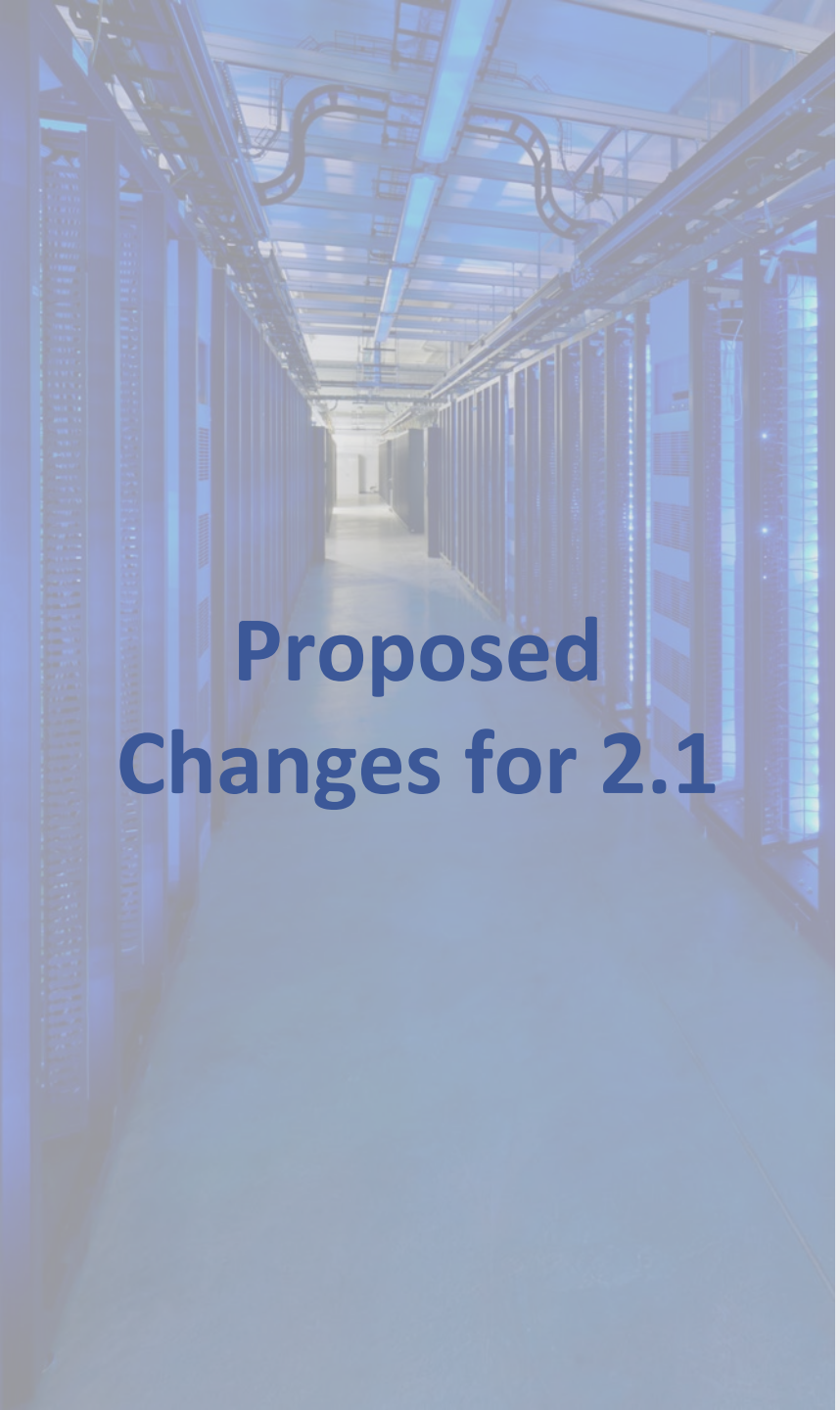


Figure 8: 12V Busbar Detail



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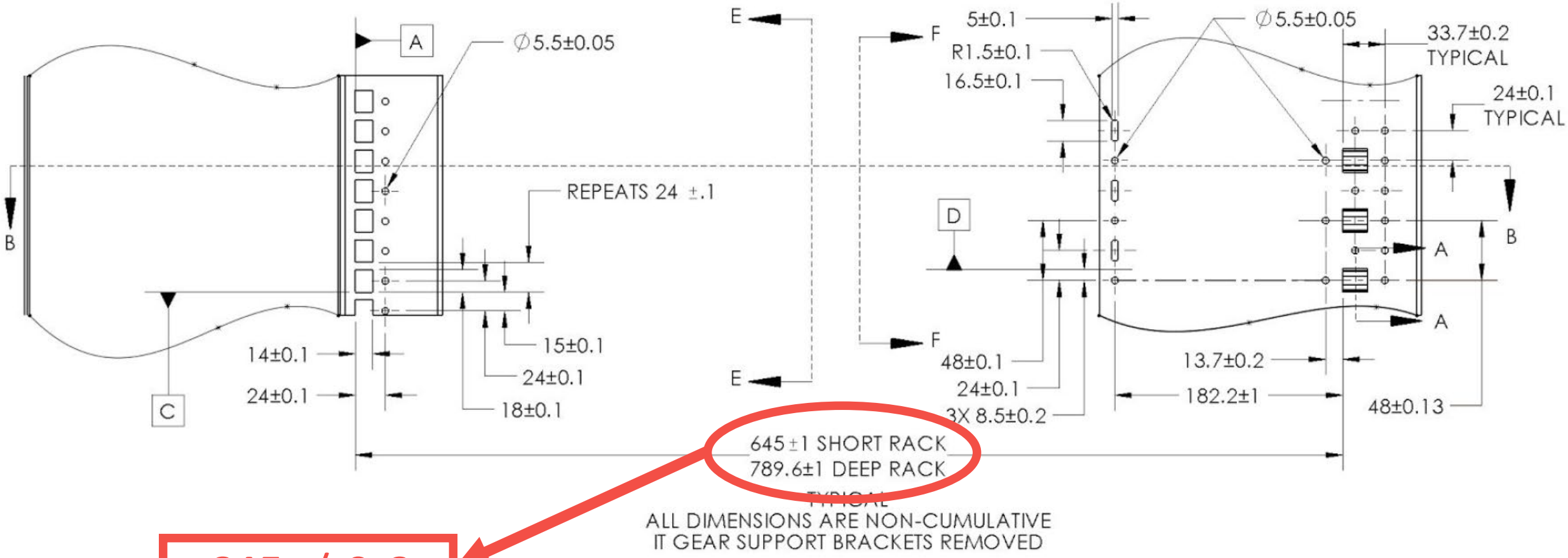
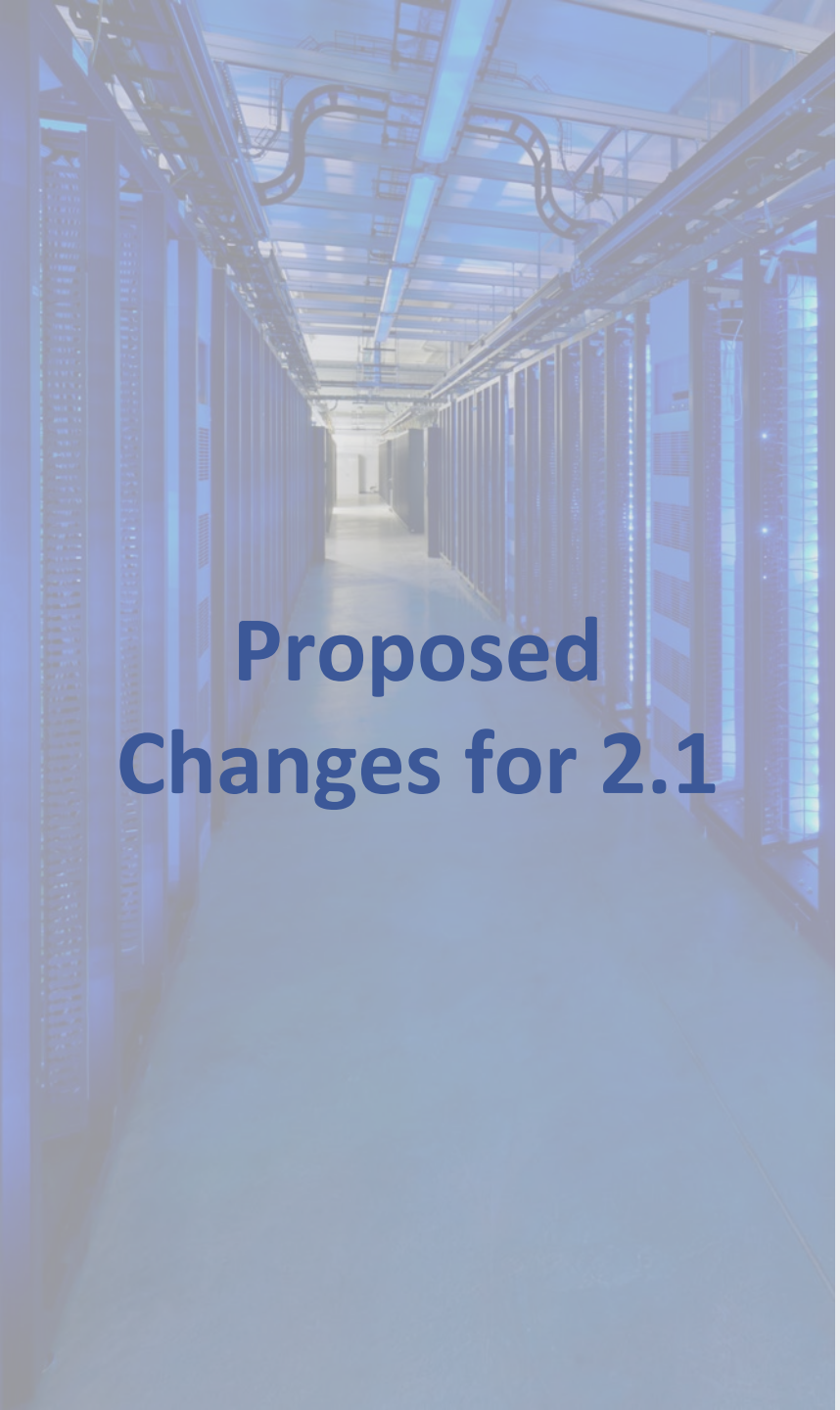
Reduce Rack Frame Tolerance



645+/-0.6

789.6+/-0.6

Figure 3: Open Rack Frame Detail



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Add Appendix D: Optional Rack-level EMI test guidance

D.1 Shielding Effectiveness Measurements

The objective of this section is to provide the technical guideline for shielding effectiveness measurements of the rack. In order to insure EMC compliance to the regulatory agency limits, racks may need to be designed with optional doors and side enclosure that can provide some level of EMI shielding.

Depending on the products contained in the rack and the countries where the rack will be located, different levels of shielding may be required. **Shielding effectiveness (SE) is generally defined as the ratio between the field strength, at a given distance from the source, without the shield interposed and the field strength with the shield interposed.** A target shielding effectiveness can be defined by the final system integrator, when the rack needs to be designed to provide the EMI shielding.

Add Appendix D: Optional Rack-level EMI test guidance

D.2 Shielding Effectiveness Measurement Methodology

The proposed measurement methodology is very similar to the methodology used for the Radiated Emission measurements according to ANSI C63.4 standard.

First a Radiated Emission Reference Level is obtained by using an RF signal source placed inside the empty rack with no shielding doors. Comb generators are the recommended RF signal source for the following SE measurement procedure. The Comb generators should have sufficient strength to be at least 20-30 dB above the noise floor, generating continuous RF signals or discrete harmonics spaced no more than 20 MHz apart. Different Comb generators may be used for different frequency ranges.

Add Appendix D: Optional Rack-level EMI test guidance

Reference Level Measurement: Eref (dBuV/m)

a. Place the empty rack on turntable in EMI chamber. All detachable doors and panels should be removed from the rack.
b. Position a Comb generator (30MHz to 1GHz) inside center of rack, 50 cm above the turntable ground plane, and with the antenna element at least 15 cm from all rack metal surfaces.
c. Measure the reference emission level, Eref (dBuV/m) from antenna at 10m distance from the source. The turntable should be rotated from 0 to 360 degrees, and the antenna should be moved between 1m to 4m height for horizontal and vertical polarizations. Record the maximum reading from spectrum analyzer.
d. The RF source used should have 20MHz (or lower) steps between 30MHz to 1GHz.
e. Change the position of the RF signal source to 1m height, and repeat c) ~e.
f. Change the position of the RF signal source to 1.5m height, and repeat c) ~e.
g. Change the signal source (Comb generator, 1GHz to 18GHz), and repeat b) ~f). For this frequency range, the receiving antenna should be located at 3m distance from the source.

Add Appendix D: Optional Rack-level EMI test guidance

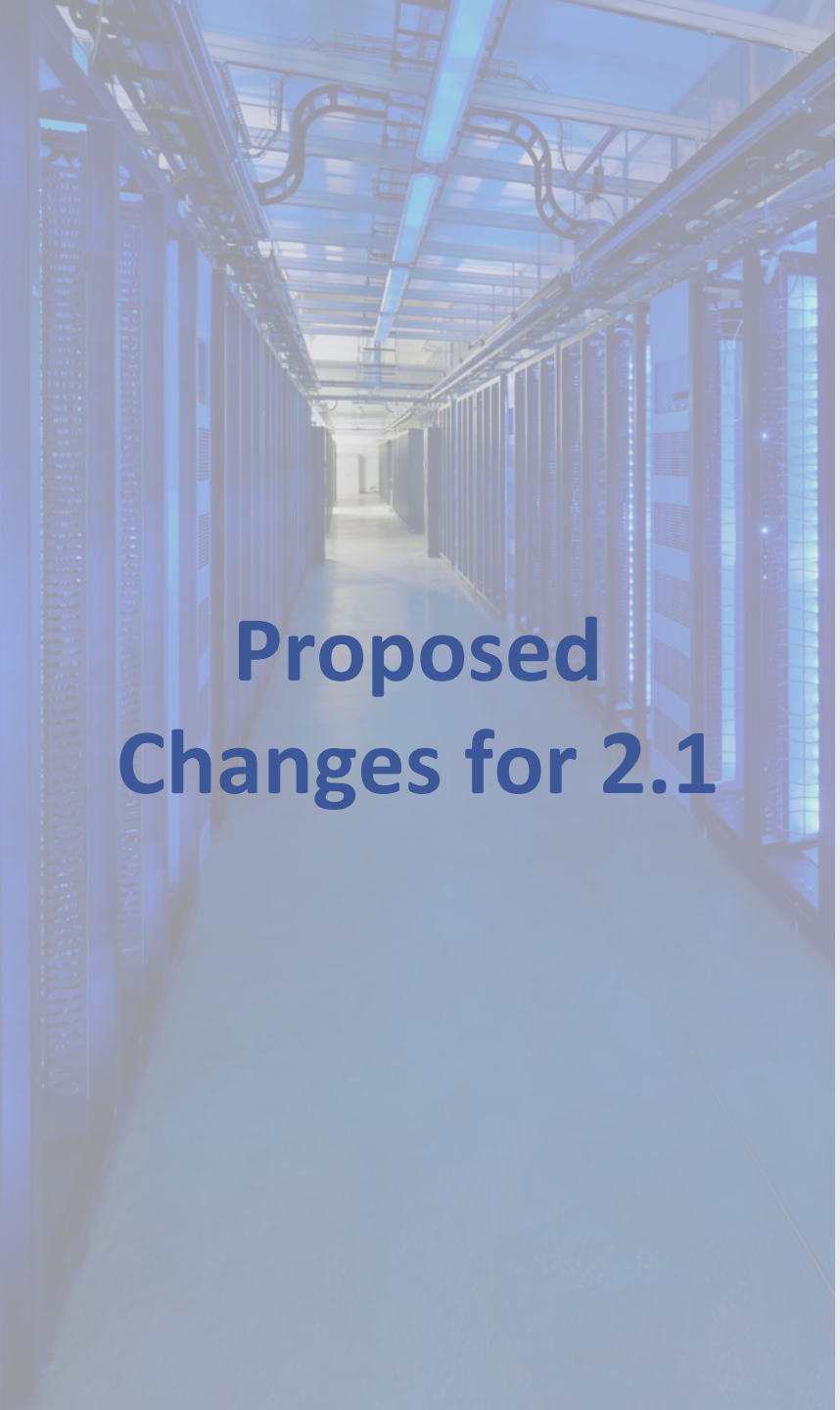
1. Rack Emission Measurement

a. Put all doors and panels back to original position while keeping the rack at same position.

b. Repeat above steps b) ~g), and record the maximum reading, Erack (dBuV/m.

2. SE Calculations

Calculate SE: SE(dB) = Eref (dBuV/m) - Erack (dBuV/m).



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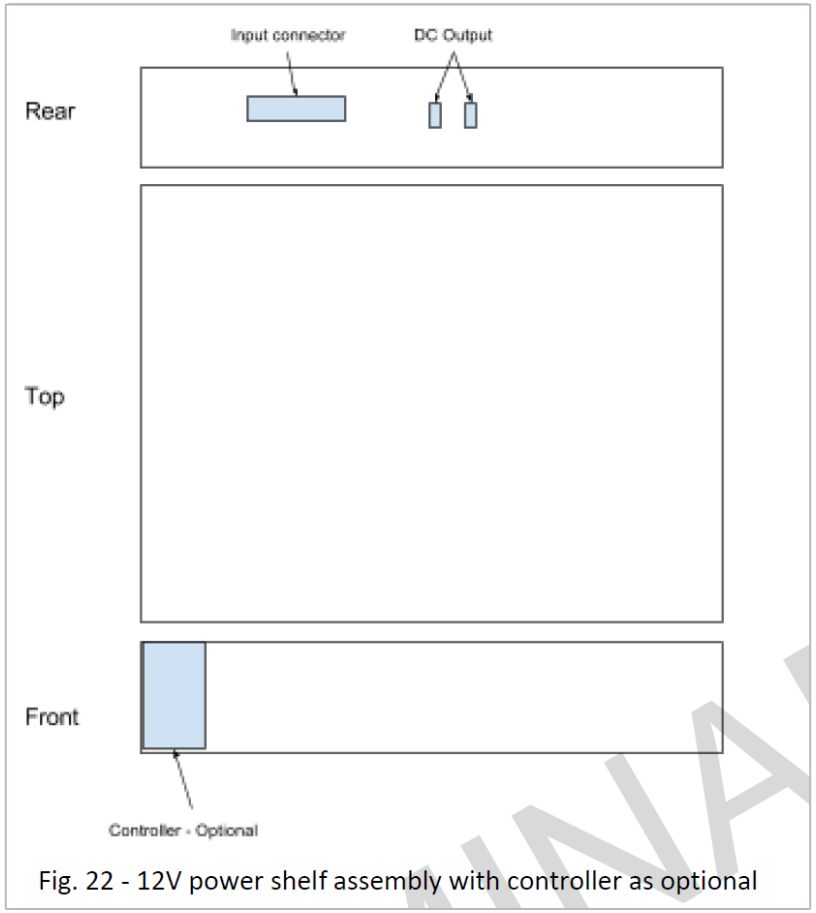

Fig. 22 - 12V power shelf assembly with controller as optional

Questions?

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