Abstracts

Surface Electromagnetic Wave Field Strength Measurements on Railroad Tracks

B.C.H. Lai and C.A. Goben. "Surface Electromagnetic Wave Field Strength Measurements on Railroad Tracks." 1980 Transactions on Microwave Theory and Techniques 28.8 (Aug. 1980 [T-MTT]): 919-924.

This paper reports an experimental investigation of surface electromagnetic wave (SEW) energy distribution on railroad tracks. Radial field distribution of SEW on 112-lb/yd rafts were examined utilizing a dipole diode detector. Laboratory and on site measurements were made. The field strength distribution data at frequencies 3.000, 6.000, and 9.733 GHz show that the main part of the SEW TE mode energy (almost 90 percent) is on the head of the rail. Use of dielectric augmentation on the side of raifs resulted in lower attenuation of the propagating SEW. Thick dielectric strip augmentation data shows enhancement of SEW propagation in agreement with McAulay. The intertrack coupling and the characteristic frequency response versus field strength at varied distances from the source were also examined. These data indicate propagation distances of more than 2000 m are possible using dielectric augmentation.

❑ Return to main document.