

APPENDIX C

MEASUREMENT DISTANCE EXTRAPOLATION

C.1 INTRODUCTION

The distance extrapolation calculation based on use of the slant path distance from the BPL device and power lines under test and the measurement antenna was discussed in Section 2.5 of the report. Some of the resulting plots from NTIA's NEC power line model simulations were reported in that section. The remaining plots are included in this appendix.

C.2 BPL FIELD STRENGTH SIMULATION RESULTS

C.2.1 Extrapolated Field Strength Levels Meeting the Part 15 Limits

Figure C-1 shows the extrapolated electric field strength levels that satisfy the Part 15 limits using slant range distance extrapolation, assuming a power line height of 12 meters. The simulated measurement antenna height is assumed to be 1 meter.

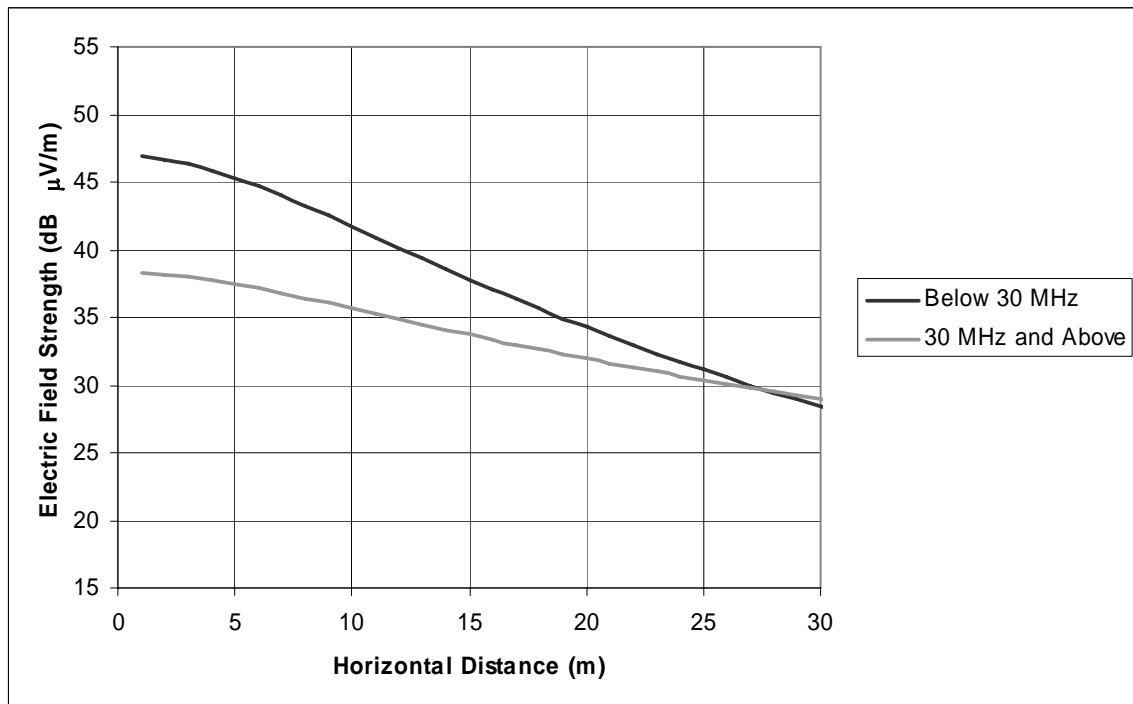


Figure C.1 - Extrapolated field strength levels meeting Part 15 emissions limits based on slant-range distance to the BPL device under test

C.2.2 Simulation Results

Figures C-2 through C-15 shows the simulated electric field strength moving away from the power line for a number of power line structures that were previously defined in Section 2.2 of the BPL Phase 2 Study. The extrapolated field strength levels meeting the Part 15 emissions limit below 30 MHz are displayed on each figure for comparison. The simulations determined the vertical electric field strength from the horizontal magnetic field strength using the methodology for compliance testing in the Part 15 rules for Access BPL and assuming the electric field strength is related to the magnetic field strength by $\eta = 377$ ohms (Ω). The peak field strength value was chosen from among the values calculated at points along the line, as defined in the measurement guidelines, at a distance of 10 meters away from the line. The plots of field strength relative to distance are taken from this corresponding location for each case.

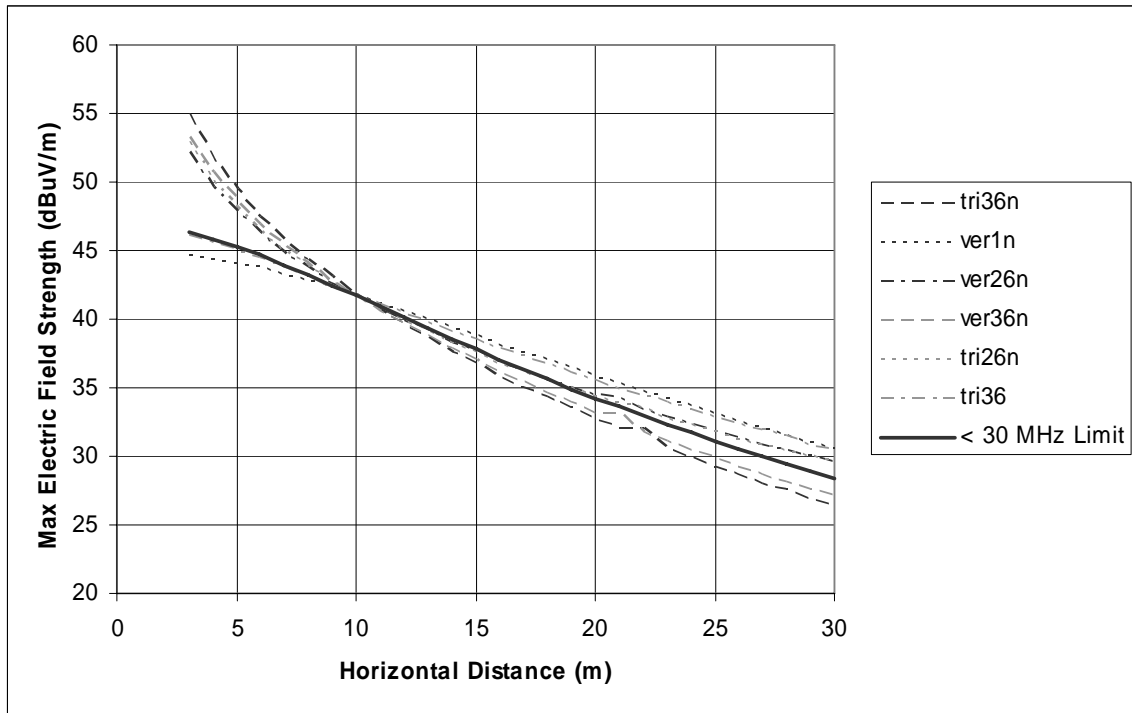


Figure C-2: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 2 MHz

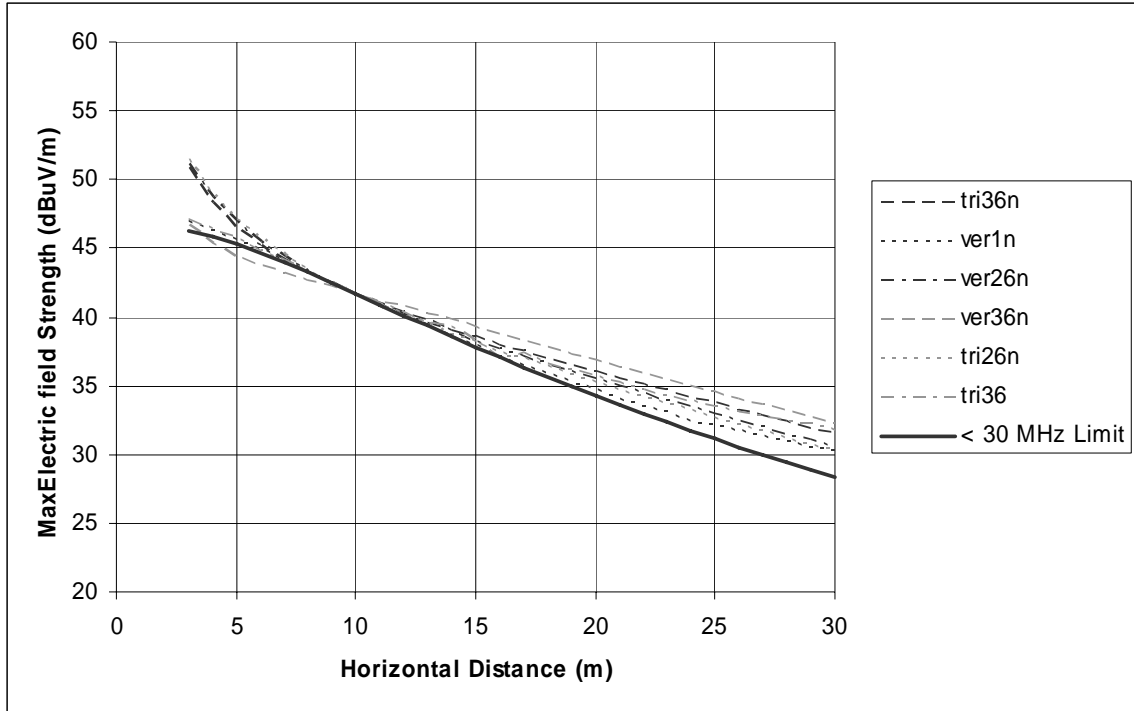


Figure C-3: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 4 MHz

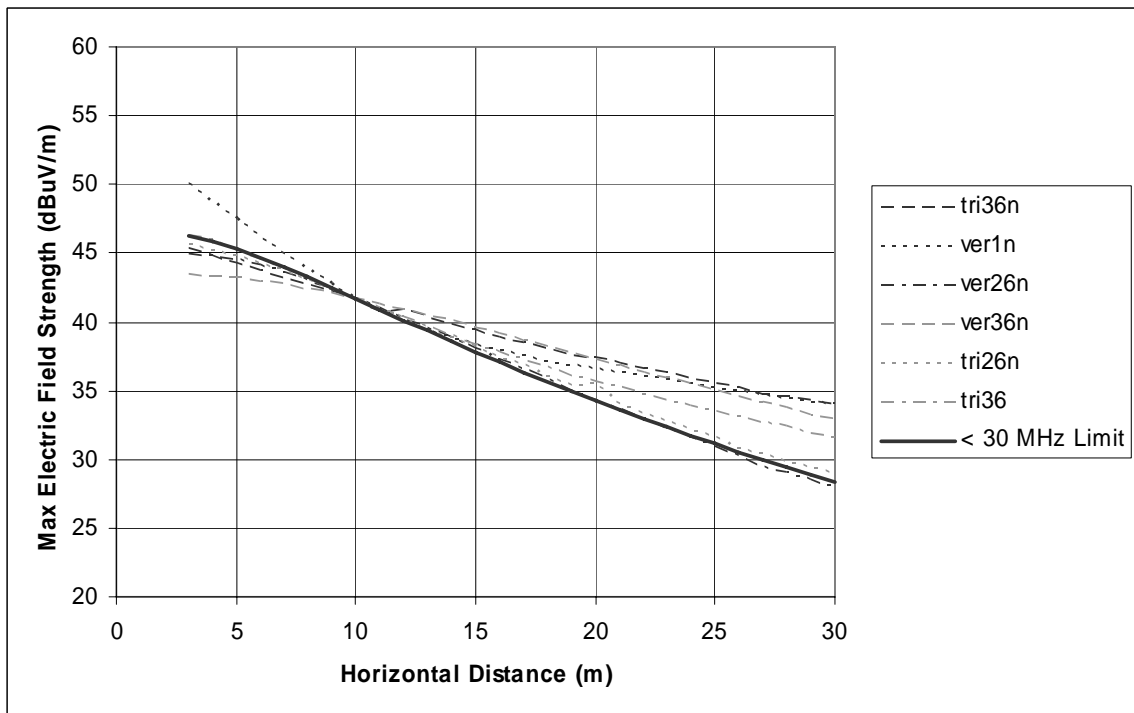


Figure C-4: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 6 MHz

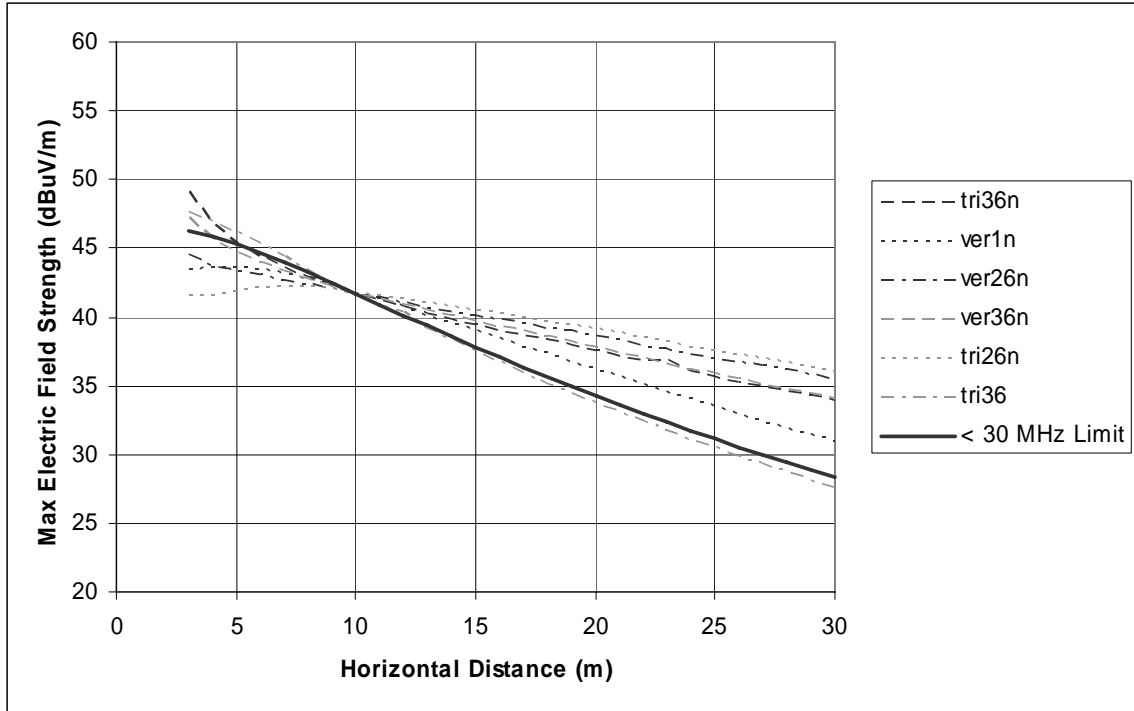


Figure C-5: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 8 MHz

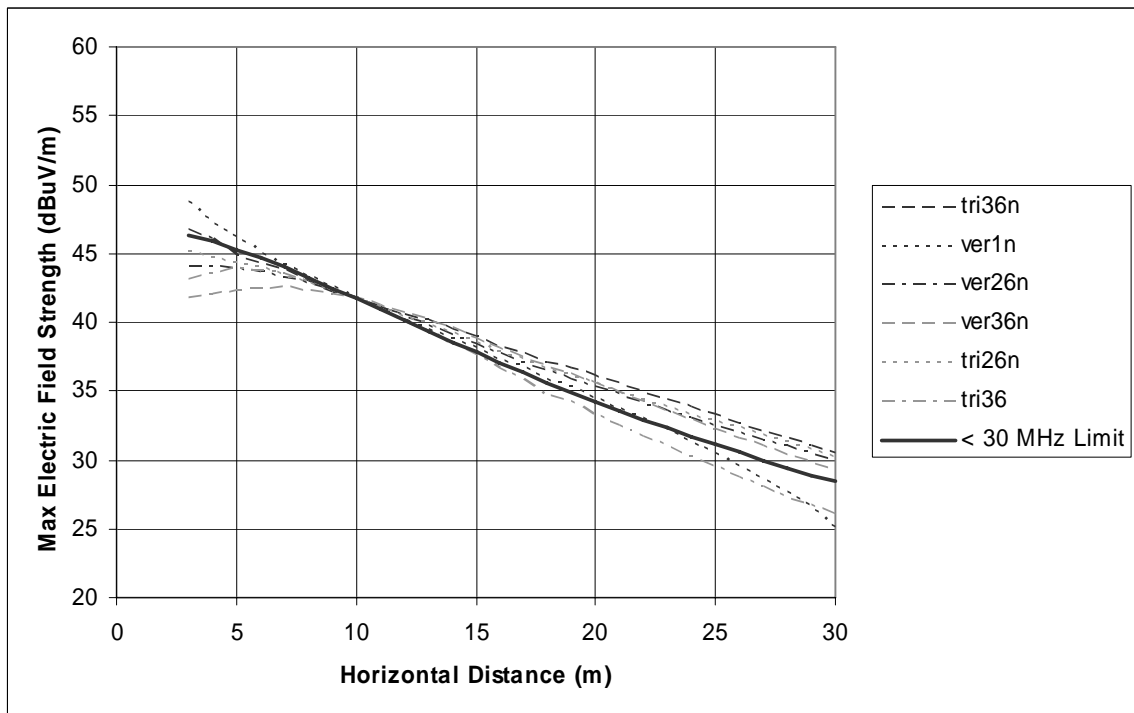


Figure C-6: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 10 MHz

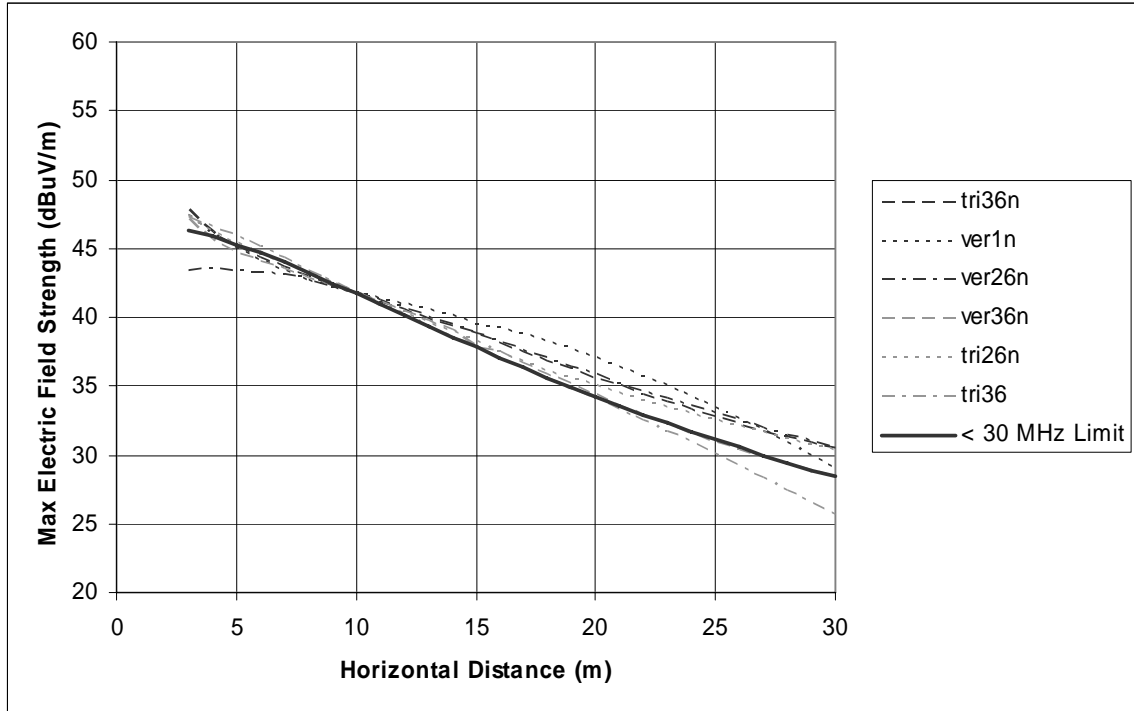


Figure C-7: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 12 MHz

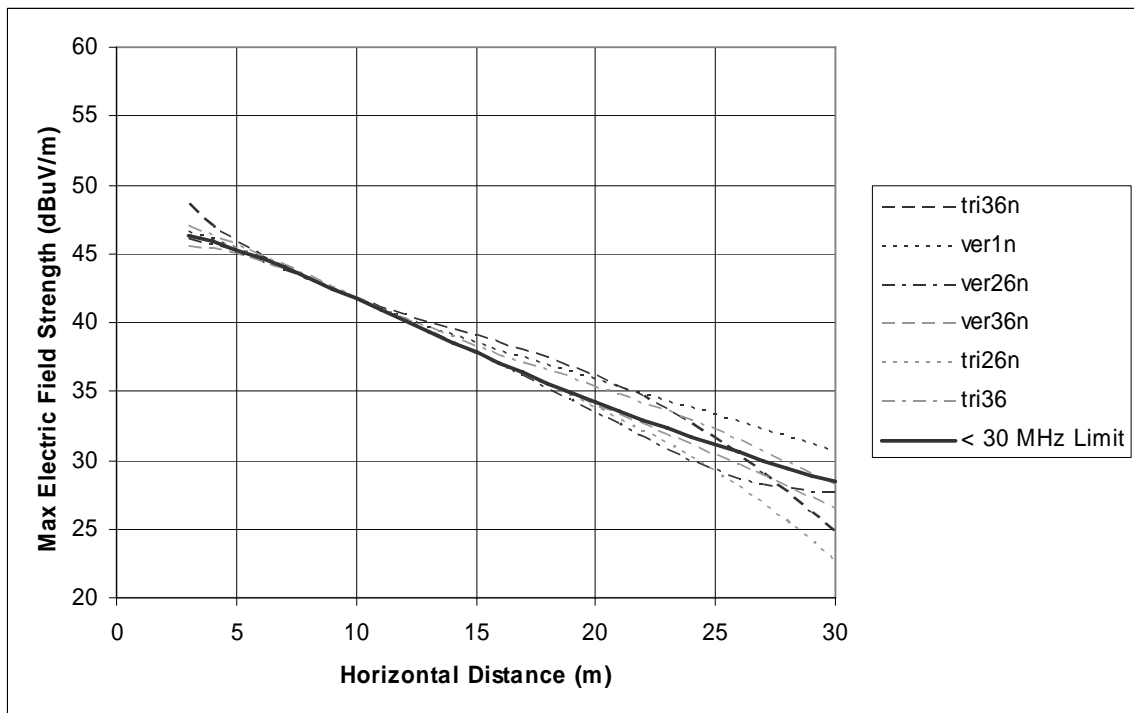


Figure C-8: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 14 MHz

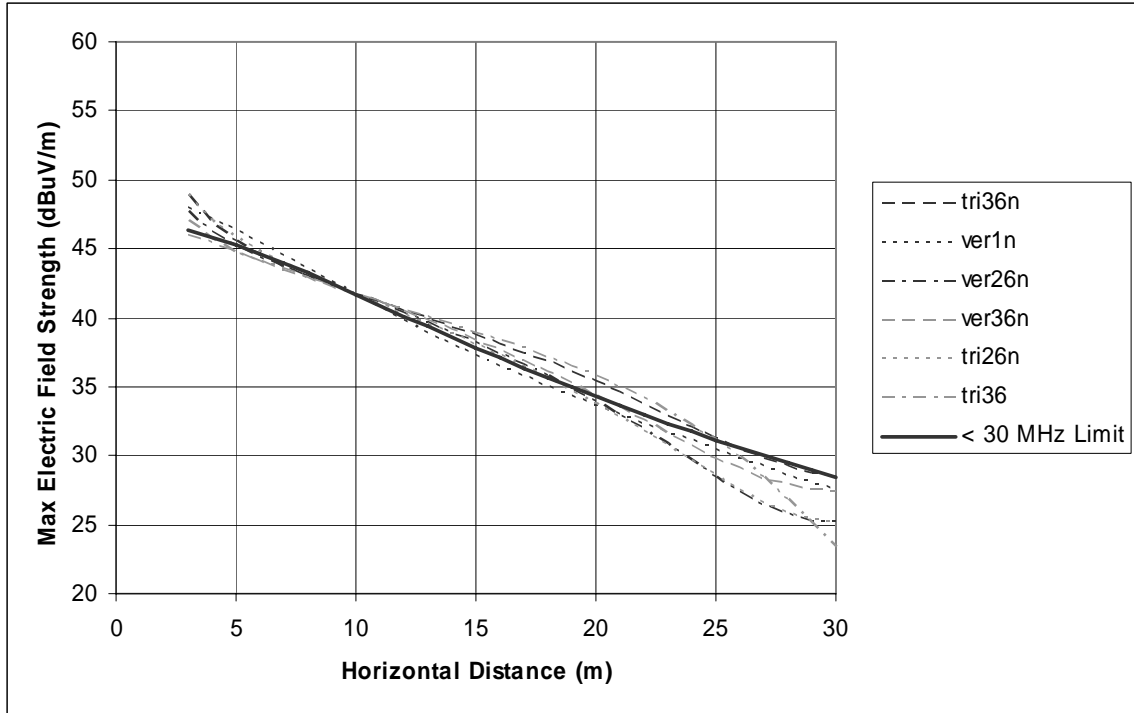


Figure C-9: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 16 MHz

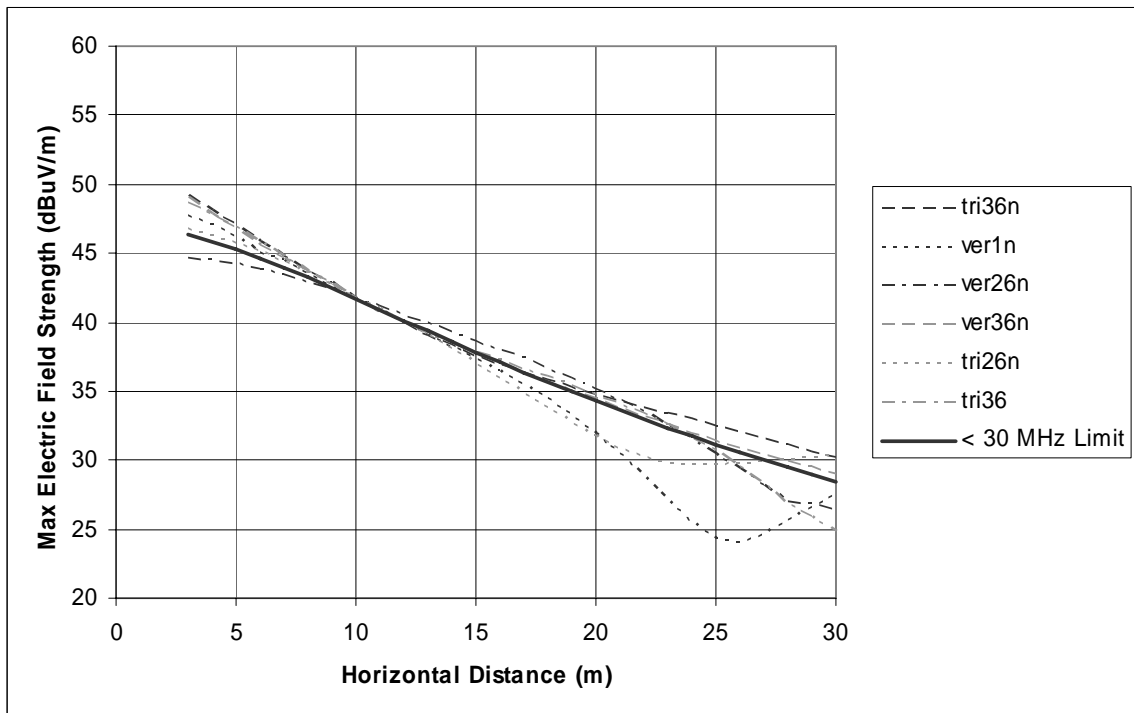


Figure C-10: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 18 MHz

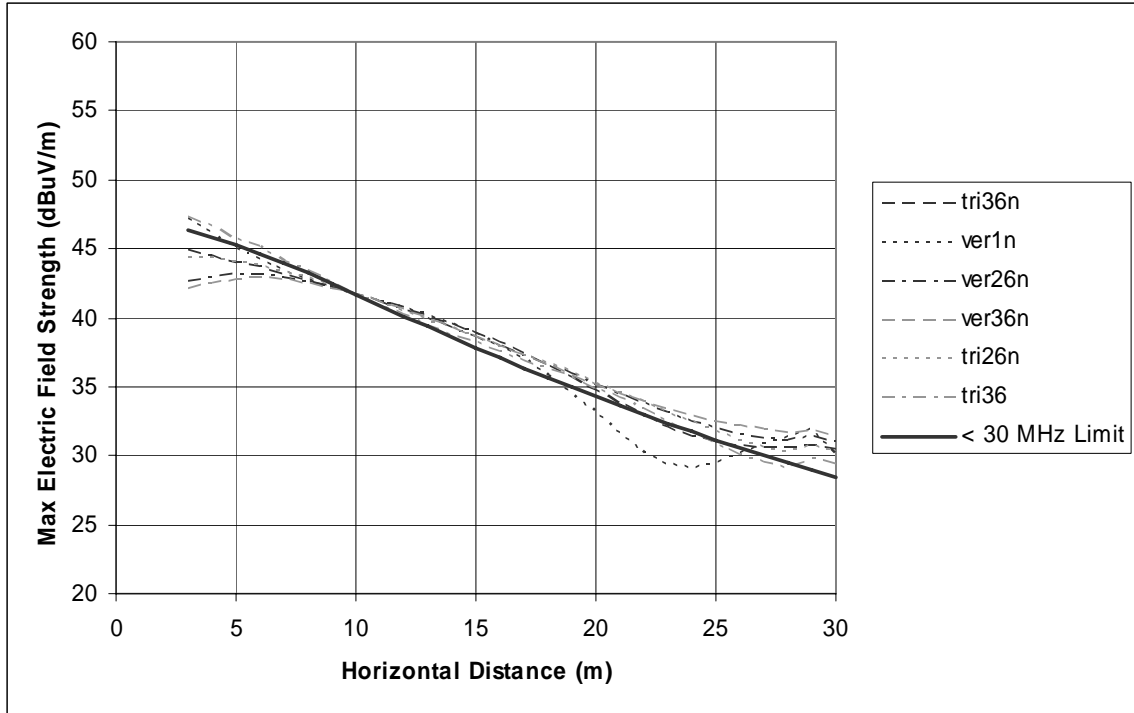


Figure C-11: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 20 MHz

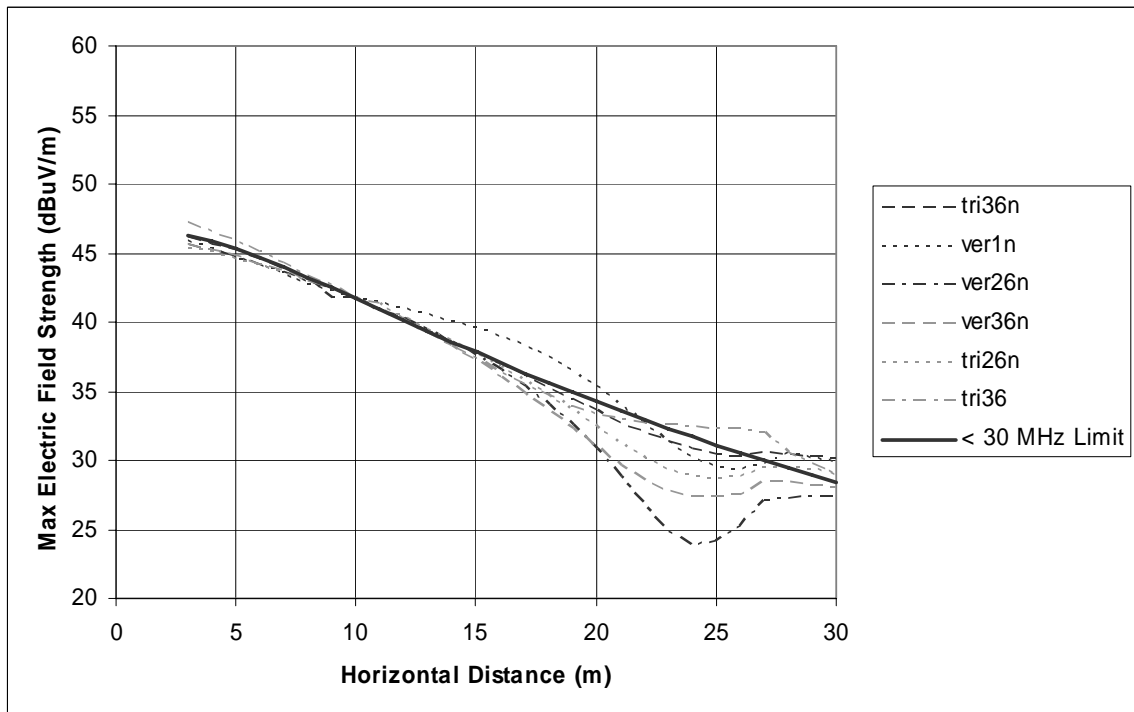


Figure C-12: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 22 MHz

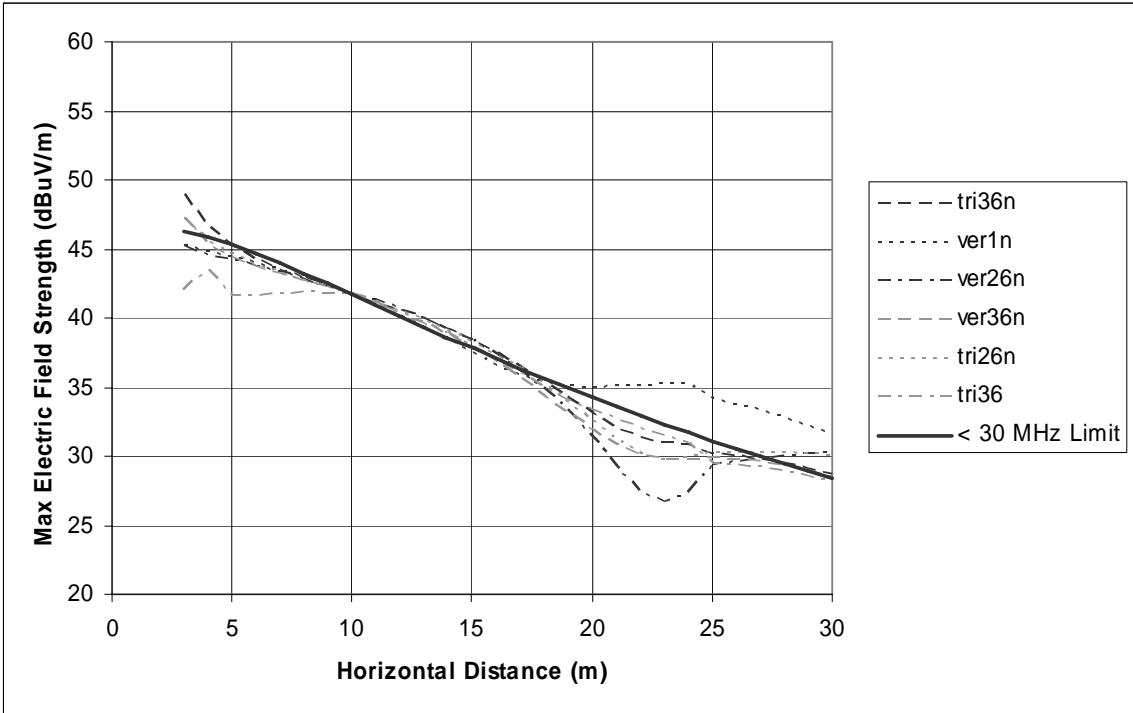


Figure C-13: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 24 MHz

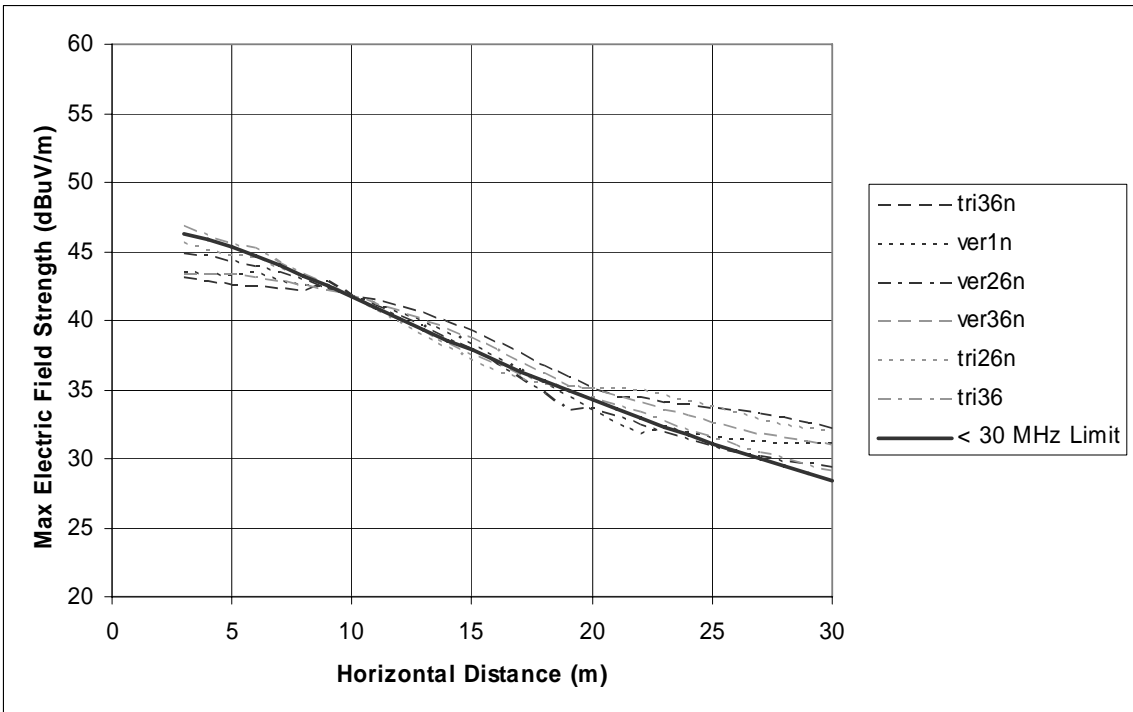


Figure C-14: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 26 MHz

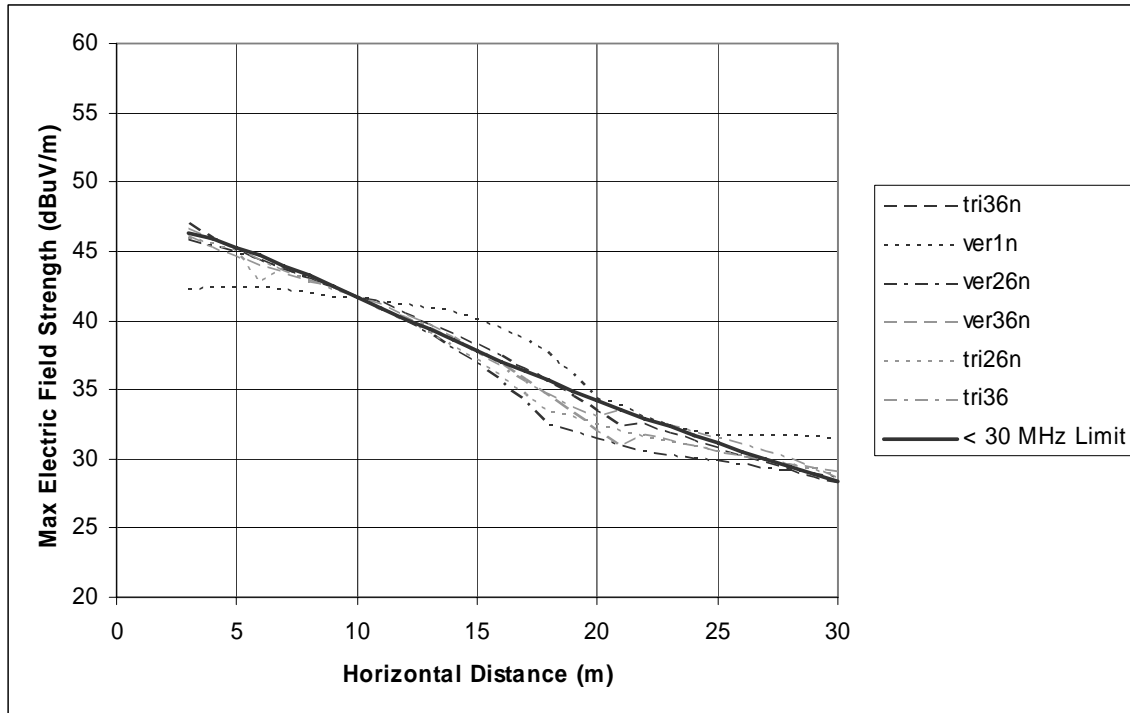


Figure C-15: Electric field strength compared to emissions limit based on slant-range extrapolation for various power line models – 28 MHz