

Compact Marx/antenna System for High-Power RF Generation

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Compact Marx generators are finding their way into the generation of high powered RF. These generators are often characterized by handheld volumes and weights and may be powered by typical battery sources for low repetition rate applications. Applied Physical Electronics, L.C. (APELC) has been developing ultra-compact Marx generators for the direct generation of RF for several years. We discuss use of the APELC Marx generator MG15-3C-940PF for direct generation of high-power RF by coupling Marx generators to an antenna load. This generator can deliver a maximum impulse voltage of 650 kV, with repetition rates from several Hz to hundreds of Hz, based on the prime power source. Past APELC efforts have demonstrated various antenna geometries at lower impulse voltages, including TEM horns and helical antennas. Recent efforts have focused on similar geometries, but with higher source voltages and high repetition rates. The characteristics of the Marx and antenna structures are discussed, as well as experimental radiation results.