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Development of a compact, 240-kV, 10-J impulse generator for mobile platforms

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This paper presents the design and characterization of a compact, battery-powered, high-voltage impulse generator intended to produce nanosecond pulses for UWB applications. This system was developed in-house at the Army Research Laboratory and it consists of a +14.8-V to -30-kV charger and a -30-kV to +240-kV Marx generator circuit. The output of the 240-kV, 10-J Marx generator is used to drive various types of antennas. With the continuing push to minimize size, weight, power and cost (SWaP-C) boundaries for mobile platforms, it becomes a challenging task to contain >200 kV in a small form factor. This paper explores some of the challenges we faced in the laboratory in designing for a compact form, and it provides preliminary results for the impulse generator's system performance.

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