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5P48 - High Average Power Nanofarad-Scale Capacitor Charging on Sub-Microsecond Timescales

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Eagle Harbor Technologies, Inc. (EHT) has developed a high voltage nanosecond pulse generator that operates at high average power levels for industrial applications including water treatment, semiconductor processing, materials processing, and sterilization. EHT's previous generation of high voltage nanosecond pulsers operated at 5 kW of average power and pulse repetition frequencies up to 100 kHz. This work has been extended to an average power of 30 kW. This new nanosecond pulser can drive capacitive loads to 10 kV: up to 850 pF at 400 kHz and up to 3.5 nF at 100 kHz. Typical rise times are 55 ns and pulse widths are up to 200 ns. The system can produce pulses continuously or in bursts with higher peak power. The output voltage can be modulated between 500 V and 10 kV on the load's RC timescale. This system can be air or water cooled. EHT will present output waveforms as well as the trade studies conducted showing the safe operating area.

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