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Test and qualification of the UDC: a 10 GSa/s, 16 channel digitizer system on a chip for fast plasma imaging applications

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We describe the design and measurement results of the “UDC” - Ultrafast Pixel Array Camera Digitizer Chip. UDC is a 16-channel waveform digitizing microchip with large buffer length (4096 samples per channel) and high timing performance (10Gsps sampling, <10ps resolution), suitable for applications such as High-Energy Density Plasma Diagnostics. It is designed to work with a variety of fast sensors such as fast photo-diodes and fast xray detectors. We have measured relevant performance metrics such as bandwidth, linearity, power consumption, and trigger rate and will present how such specifications can enable new instruments or measurement techniques for fast imaging.

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