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Large area divertor temperature measurements using a high-speed, near-infrared camera in NSTX[1] B.C. LYONS, S.J. ZWEBEN, F. SCOTTI, A.L. ROQUEMORE, R. MAQUEDA, H.W. KUGEL, R. KAITA, (PPPL), A.G. MCLEAN, (ORNL), V.A. SOUKHANOVSKII, (LLNL) — IR band-pass filters (> 720 nm or > 900 nm) were used with a Phantom 7.3 high-speed camera to try to measure the surface temperature of plasma facing components and the Liquid Lithium Divertor (LLD) in NSTX. The present camera looks through an upper port with a view of more than half of the lower divertor. With several megawatts of RF heating power, the observed surface temperature increased by $\sim$700 °C in a localized region magnetically connected to the RF antenna. Such a wide-angle, high-speed (up to 10^4 fps) IR system could also evaluate the thermal response to transient events such as ELMs and disruptions, which can cause large, uneven heat loads over a wide area of the divertor. The rise/fall time during power transients and emission spectroscopy diagnostics were used to help distinguish plasma IR line emission from surface blackbody emission. The entire system has been calibrated with a blackbody source from 350 to 700 °C.

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