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In-situ calibration of the high-k scattering system on NSTX WOOCHANG LEE, Pohang University of Science and Technology, DAVID SMITH, HYEON PARK, Princeton Plasma Physics Laboratory, MOO-HYEON CHO, Pohang University of Science and Technology, CALVIN DOMIER, NEVILLE LUHMANN, University of California at Davis — The tangential collective Thomson scattering system which is capable of simultaneously measuring five wave-numbers has been extensively engaged in physics studies during the last campaign on NSTX. In-situ calibration of the scattering parameters as well as the receiver system is essential to quantify the detected scattered power. Calibration of the receiver system will be performed by a power modulation technique and standard hot-cold load method. One of the key scattering parameters of the tangential scattering system is the reduced scattering length due to the improved k-matching condition arising from the tight toroidal curvature and strong magnetic shear on NSTX. Theoretical assessment of the effect of the toroidal curvature and magnetic shear on the scattering length will be experimentally quantified using an acoustic cell which can excite waves with a known frequency, wavenumber and well defined direction of the propagation. In addition, measurement of other scattering parameters such as the wave number resolution and wave propagation direction of the heterodyne detection system will be addressed. This work was supported by the U.S. DOE Contract # DE-AC02-76CH03073, POSTECH BK-21, and NFRC.

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