Understanding the divertor heat load distribution is a key issue for next step fusion devices. This work presents the first divertor heat load study in the COMPASS tokamak via infrared thermography and its comparison to divertor probes. A fast infrared camera Telops FAST-IR 2K was used for this study (InSb detector 3–5 μm, 320x256 px. @ 1.9 kHz, 64x4 px. @ 90 kHz). The camera observed either the outer divertor region from the outer midplane port using a mirror or a limited radial extent of the inner divertor region through the inner upper vertical port with a resolution of 1 px. ~ 0.5–1.5 mm on the target plane. Outer divertor heat load dependence on plasma current is studied in L-mode showing good agreement between the IR thermography and the new divertor probe arrays. With increasing plasma current ($I_p = 180–330$ kA), shortening of the heat flux decay length $\lambda_q$ is observed in fair agreement with $\lambda_q$ L-mode scalings from JET and AUG [1,2]. In H-mode, the heat load on the inner target shows a clear broadening of $\lambda_q$ during ELMs.

References
