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Sommario/riassunto	During structural fire fighting operations, fire fighters wear protective gear to insulate them from high temperature environments, including hot combustion gases, burning surfaces, and thermal radiation. Current turnout gear insulates the fire fighter to such an extent, encapsulating his/her entire body, that it is difficult for each individual fire fighter to understand how hazardous or hot the thermal environment is. Therefore, the natural heat-sensing mechanism of the body is incapable of sensing the ambient temperature, possibly putting firefighters at risk. A thermal sensing device that attaches to the visor of the head gear is designed to restore situational awareness of the firefighter by showing varying heat intensity through different colored warning indicators in the firefighter s line of sight. Human factors

evaluation of the performance of the warnings in the thermal sensing device was conducted in laboratory-scale (i.e., climatic chamber experiments) and in full-scale (i.e. fire experiments in ISO room) environments. This report describes the laboratory-scale experiments and a second report describes the fullscale fire experiments. A static oven, representing the conductive type of heat; a fire equipment evaluator, with high speed convective flow loop, and a radiant panel, with intense heat flux were used to conduct laboratory-scale experiments.