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Technical Note: REFIR-PAD level 1 data analysis and performance characterization

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Abstract. The outgoing long-wave radiation from the Earth's atmosphere in the far infrared spectral region is mostly unexplored, while is well recognized that the water vapour contribution to greenhouse trapping is dominant in this region. The Radiation Explorer in the Far InfraRed (REFIR) study has proven the feasibility of a space-borne Fourier transform spectrometer able to perform the measurement in the 100–1100 cm^{-1} range with a resolution of 0.5 cm^{-1}. Following this work a prototype of the spectrometer named REFIR-PAD (Prototype for Applications and Development) has been developed to observe the atmospheric radiance from both ground-based sites and from stratospheric balloon platforms. In this work we describe the REFIR-PAD level 1 data analysis procedure, that, starting from raw instrumental data produces the calibrated atmospheric spectral radiance. Performances of the procedure are also described.

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