Development of a 1.8THz receiver for the TELIS instrument U.Mair(1), N.Suttiwong(1), H.-W.Hübers(2), A.D.Semenov(2), H.Richter(2), G.Wagner(1) and M.Birk(1)

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A new state-of-the-art balloon borne three channel (500GHz, 625GHz, 1.8 THz) cryogenic heterodyne spectrometer will allow enhanced limb sounding of the Earth's atmosphere within the submillimeter and far-infrared spectral range. The instrument, called TELIS (TErahertz and submm LImb Sounder), is being developed by a consortium of major European institutes that includes the Space Research Organisation of the Netherlands (SRON), the Rutherford Appleton Laboratory (RAL) in the United Kingdom and the Deutschen Zentrum für Luft- und Raumfahrt (DLR) in Germany (lead institute). TELIS will utilise state-of-the-art superconducting heterodyne technology and is designed to be compact and lightweight, while providing broad spectral coverage, high spectral resolution and long flight duration (24 hours duration during a single flight campaign). Target species are key atmospheric short-lived radicals such as OH, HO2, ClO, BrO together with stable constituents such as O3, HCl and HOCl.One of the three channels (developed by DLR) will focus on the measurement of the OH-triplett at 1.8 THz. Low noise NbN based Hot Electron Bolometers will be used as heterodyne mixing elements. Recently the laboratory version of the TELIS heterodyne receiver (using a far infrad laser as LO source) has been set up and first gas cell measurements have successfully been carried out. The current status of the THz-channel development in the framework of the TELIS project will be presented.