

Interactive comment on “The mechanical and thermal setup of the GLORIA spectrometer” by C. Piesch et al.

Anonymous Referee #2

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Review of “The mechanical and thermal setup of the GLORIA spectrometer”, authors C. Piesch et al. The paper gives details of dedicated mechanics and cooling equipment for a novel imaging FT spectrometer, operated outside an aircraft. The paper clearly shows the subtle problems and solutions which definitely benefits from the previous experience gained with other airborne FT instruments. It becomes clear that the experience is world wide unique and it is a good idea to share this knowledge by writing this paper. Some revision could increase the quality of the paper. Generell comment: The thermal and mechanical requirements are linked to the radiometric requirements. This link needs to be more established in the paper. For example, the requirement of 10% of DO 160C curve C should be linked to the required accuracy of the measured data. How must the mechanics be built that vibrations within the limitations do not cause

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errors outside the radiometric specifications? Another example is the 5% velocity error. This also needs a link to radiometric requirements of Gloria. The authors should rewrite the “2.1 Requirements” section establishing the link between radiometric and thermal/mechanical requirements.

10968 Line 23-25: the requirement for opd stability of 5% rms is not clear. Gloria has detectors with very different properties from MIPAS-STR. What impact has a velocity error larger than 5% on the spectra, Shouldn't there be requirements regarding sampling jitter in frequency and intensity? 10969 Line 5-6: is the pointing stability requirement independent of the observation mode? Is there a requirement regarding pointing jitter? Lines 7-21: It is not clear for which mechanical defined point the requirements are made. Is it where the instrument is attached to the aircraft or for any point in the mechanics of the instrument. 10970 Line 25-30: is there a more quantitative requirement for the reproducible temperature stability In chapter “2.1 requirements” are no heat load requirements 10976 Line 1-2: sentence has a problem Line 10-12: unclear: what is oriented orthogonal to which optical beam

10981 Line 15-16: the cooling should be caused by vaporization mainly instead of adiabatic cooling, please rephrase 10982 Line 16-18: Please explain how the data in table 3 were obtained 10986 Line 3-14: the radiometric impact of the observed velocity variations should be shown or summarized (with reference to other paper if published).

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 10965, 2014.

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