Submillimetre Wave Instrument for Jupiter Icy Moons Explorer (JUICE) Mission

The Jupiter Icy Moons Explorer JUICE mission is the first large-class mission in European Space Agency ESA Cosmic Vision 2015-2025 programme. Planned for launch in 2022 and arrival at Jupiter in 2029, JUICE will spend at least three years making detailed observations of the giant gaseous planet Jupiter and three of its largest moons, Ganymede, Callisto and Europa.

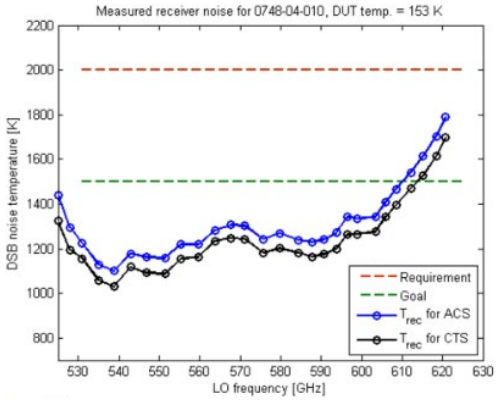
Omnisys Instruments has been responsible for the development of the Band 1 (530-625 GHz) receiver for the Submillimetre Wave Instrument SWI which is one of several instruments on the JUICE satellite. The THz Schottky diode development and associated measurements have been done in collaboration with Chalmers, partly in GHz Centre projects. The receiver is equipped with state-of-the-art Schottky membrane mixer MMICs and InP HEMT MMIC LNAs, the latter from a collaboration with Low Noise Factory AB. Schottky diode and HEMT MMICs have been developed and fabricated in the MC2 clean room facility at Chalmers.

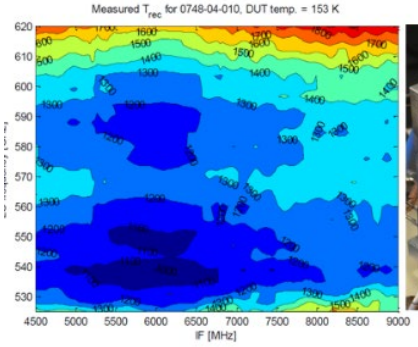
In the beginning of 2020 the flight module band1 receiver was delivered to the prime investigator Max Planck Institute MPS in Germany for integration onto SWI which is in its final construction phase. The final receiver hardware is the result from over 15 years of industry collaboration between Omnisys Instruments and Chalmers.

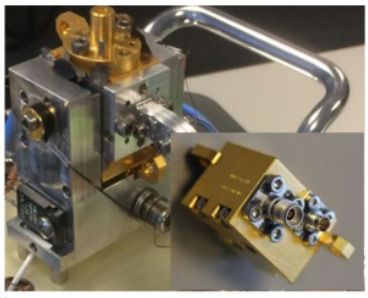
Radiometric performance of the 530 to 625 GHz receiver unit of the submillimetre wave instrument on JUICE.
K. Jacob et *al*., 30th Int. Symposium on Space Terahertz Technology, ISSTT 2019, Gothenburg, Sweden, p. 28-31.

Press releases from ESA and MPI:
https://www.mps.mpg.de/planetary-science/juice-swi
https://sci.esa.int/web/juice/-/50073-science-payload

The Submillimetre wave instrument SWI is part of the JUICE mission which is the first large class mission in ESA's Cosmic Vision 2015-2025 programme, dedicated for the exploration of Jupiter and the three icy moons Ganymede, Europa and Callisto.







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