

## V133a ALMA Band 1 Status

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The ALMA Band 1 is a new receiver band that covers the frequency range of 35-50 GHz. The development of the Band 1 receiver system is led by the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) in collaboration with the National Astronomical Observatory of Japan (NAOJ). The requirement of the receiver noise temperature is less than 28 K over 80% of bandwidth and less than 32 K over the full bandwidth. The system noise temperature at the ALMA site is around 40 K at the lower end of the band and increases with frequency up to around 70 K at the higher end of the band with only minor dependence of weather condition. This performance makes the Band 1 most sensitive among all ALMA bands.

In the summer of 2021, the project reached a milestone with the successful astronomical “first light” with ALMA antennas in Chile. In 2022, basic interferometric observing modes were successfully commissioned, and we decided to offer those capabilities in ALMA Cycle 10 that is starting in October 2023. As of June 2023, Band 1 receivers are operational in about 25 antennas on the site. We are currently working on the commissioning of advanced observing modes, such as polarimetry. We also plan to release Science Verification data that will be publicly available for users in near future.

In this presentation, we will report anticipated Band 1 capabilities to be offered in Cycle 10 and prospects for future Cycles as well as some highlights from the commissioning.