

ALMA Interferometer and Band 7 Cartridge

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Abstract - The Atacama Large Millimeter/Sub-millimeter Array (ALMA) will be composed of at least 65 high-precision antennas. In this framework, IRAM is responsible for the production (component fabrication and procurement, assembly and test) of 65 production + 8 spare state-of-the-art cryogenically cooled receivers, covering the 275-373 GHz frequency range, called the ALMA Band 7 cartridges.

Some of the challenging issues were solved during the design and prototyping of the cartridge. The first production cartridge was delivered in Spring 2009. The last receiver (65th) has to be provided to the project before the end of September 2012. Currently, forty-six production cartridges have been delivered and accepted by the project.

Every single cartridge has to go through thorough preliminary acceptance tests to make sure that they all meet the specifications imposed by the project. In order to achieve such a level of quality with high delivery rate, some product (PA) and quality (QA) assurance processes had to be put in place and fully automated test setups had to be implemented. We describe the PA/QA processes and present the test setups together with the performances of the production cartridges delivered so far.

Keywords - millimeter wave receivers, automated test sets, superconductor-insulator-superconductor mixer, band 7 cartridge performances

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