

Nanowave Technologies delivers state-of-the-art cryogenic low noise amplifiers the National Research Council Canada for Square Kilometer Array Observatory (SKAO)

The National Research Council of Canada represents Canada in the governance of the SKAO and is responsible for supplying the full complement of Band 2 low noise amplifiers for SKA-Mid.

Astronomical signals received by the Square Kilometer Array (SKA) antennas are extremely faint, meaning the signals must be highly amplified but without introducing unwanted noise from the system itself. And to perform this critical function, the [SKA Observatory \(SKAO\)](#) requires state-of-the-art low noise amplifiers (LNAs).

The National Research Council of Canada (NRC) represents Canada in the governance of the SKAO, the world's next-generation radio-astronomy observatory.

One of the NRC's contributions to the project is to supply hundreds of cryogenic low noise amplifiers—LNAs that operate at extremely low temperatures and thereby minimize thermal noise.

"The biggest challenge was to achieve ultra-low noise," explains Frank Jiang, the senior research officer at the NRC who led development of the LNA. "The LNAs add less than 2 kelvin of noise across the entire operating band, which is a record low while also maintaining high gain stability. This is critical for correct calibration of astronomical observations at cryogenic temperatures."

Working together since 1997, the NRC and NANOWAVE Technologies also produced the cryogenic LNAs for the Atacama Large Millimeter/submillimeter Array (ALMA), in Chile, as well as for the SKA precursor MeerKAT radio telescope in South Africa.

About NANOWAVE Technologies Inc.

NANOWAVE Technologies Inc. is an ISO 9001:2015 and AS 9100D certified design and manufacturing company headquartered in Toronto, Canada, with facilities in the United States and France. The company specializes in delivering reliability multi-function assemblies to the space, aerospace, defense markets. Functionalities include RF, EPC, Embedded Software, Monitoring and Control functions.

The company meets performance, quality and schedule commitments using the combination of deep design expertise supported by a high level of vertically integrated manufacturing.

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