Wavestream Corporation

New Power for Satellite Systems

by David Rutledge

The Wavestream Corporation manufactures high-power solid-state transmitters. The company is based on research developments in David Rutledge's group at Caltech with funding from the Lee Center for Advanced Networking and the Army Research Office.

The 30-GHz band is an attractive frequency range for high-speed satellite uplinks, except, historically, the performance has been limited by the low output power of traditional integrated circuits. The key challenge has been high losses in the on-chip transmission-line circuits that combine the outputs from the transistors. At Caltech, we conceived the idea of combining the power from transistors in the air above the chip. This approach, called active quasi-optics, eliminates the transmission-line losses, and allows much higher power levels than was possible before. Wavestream's best-selling product has an output power of 50 Watts between 30 GHz and 31 GHz. For comparison, previous circuits were limited to 5 Watts. The increase in power provides a direct 10:1 improvement in data transmission rates. In addition, the amplifier is light enough to be mounted directly at the focus of the reflector antenna, eliminating further losses in the connecting waveguide.

Wavestream is based in San Dimas. It has 130 employees, and last year the company had 50 million dollars in sales. Former Caltech graduate students and post-doctoral fellows are prominent in the company. Michael DeLisio, a founder, is the Chief Technical Officer. Chad Deckman, also a founder, is Vice President for Research. IST postdoctoral fellow Younkyu Chung recently joined the company. Laurence Cheung is the head of the Wavestream Singapore office. LEE

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Read more at: http://www.wavestream.com

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