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NTT and Tokyo Institute of Technology Develop IC Capable of Wireless transmission of 100 gigabits per second in a 300 GHz band

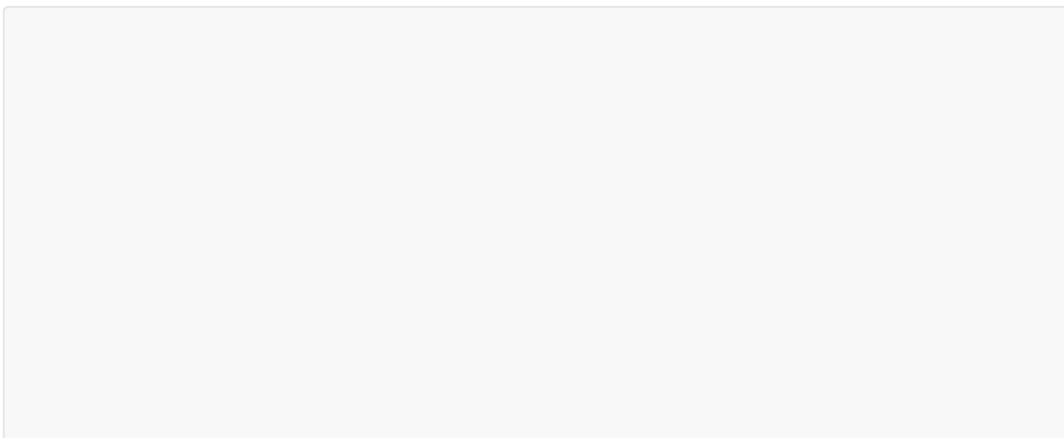
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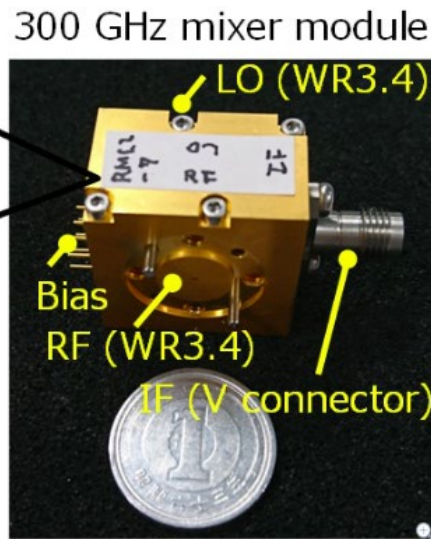
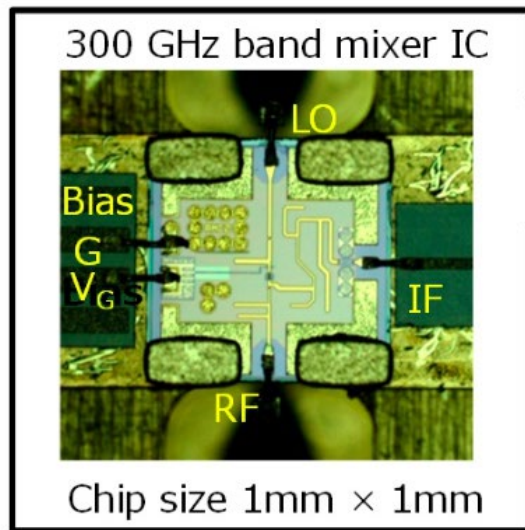
on [June 20, 2018](#) in [RF Communications](#)

Article Type: [news](#), [Latest News](#), [Feature](#)

Nippon Telegraph and Telephone Corporation (NTT), and Tokyo Institute of Technology, have succeeded in creating the world's fastest 100 gigabit per second wireless transmission data rate in the 300 GHz band. They jointly developed the ultra high-speed wireless front-end IC that operates on a terahertz frequency band used to achieve this data rate. The company pointed out that because a wide frequency band can be secured, unused terahertz waves can be applied to high-speed wireless transmission.

NTT and Tokyo Institute of Technology Created Mixture Circuit Using InP-HEMT





NTT — 300 Ghz mixer IC and module

The researchers devised a mixer circuit with a unique proprietary high isolation design technology using an Indium phosphide high electron mobility transistor (InP-HEMT). This mixer circuit enlarged the transmission bandwidth, which is an issue in the standard 300 GHz band wireless front end. The mixer circuit also improved the signal-to-noise ratio (SNR). In addition, using this the researchers realized a 300 GHz band wireless front-end module and achieved wireless transmission of 100 Gbps (gigabits per second).

The researchers realized 100 Gbps wireless transmission with one wave (one carrier). So, they expect that in the future, they can making use of the wide frequency band of 300 GHz band, and use spatial multiplexing technologies such as MIMO and OAM to extend to multiple carriers.

Technology Expected to Lead to 400 gigabytes/sec Wireless Transmission

The researchers expect that the technology could lead to an ultra high-speed IC technology that enables high-capacity wireless transmission of 400 gigabits per second. This would be approximately 400 times the current data rates of LTE and Wi-Fi, and 40 times 5G, the next-generation mobile communication technology. This technology would open up utilization of the previously unused terahertz wave frequency band in the communications field and non-communication fields.

NTT presented [details](#) about this technology at the 2018 IEEE MTT-S International Microwave Symposium held in Philadelphia, Pennsylvania USA from June 10 to 15.

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