

First 10 Gbps packet transmission in outdoor experiment, paving way for super-high-bit-rate mobile communications

February 27 2013



Mobile station.

NTT DOCOMO, Japan's leading mobile operator and provider of integrated services centered on mobility, announced today that in a joint outdoor experiment conducted recently with the Tokyo Institute of Technology, it succeeded in the world's first packet transmission uplink rate of approximately 10 Gbps. The test, which is expected to help pave the way for future super-high-bit-rate mobile communications, took place in Ishigaki City of Okinawa Prefecture, Japan on December 11, 2012.

In the experiment, a 400 MHz bandwidth in the 11 GHz spectrum was transmitted from a mobile station moving at approximately 9 km/h. Multiple-input multiple-output (MIMO) technology was used to spatially multiplex different [data streams](#) using 8 transmitting antennas and 16 receiving antennas on the same frequency.



Inside mobile station.

In light of the squeeze on remaining frequencies as mobile [data traffic](#) continues to increase, DOCOMO aims to achieve a transmission speed of more than 10 Gbps using super-high-[frequency bands](#) exceeding 5 GHz. Such [high frequencies](#) have been difficult to use for mobile networks due to the limited distances their waves are able to travel, especially along indirect paths such as around buildings. This is why more robust lower-frequency waves have been the preferred choice for [mobile communications](#) systems so far.

Detailed findings of the experiment will be presented to the Technical Committee on Radio Communication Systems of the Institute of Electronics, Information and Communication Engineers at Waseda

University in Tokyo from February 27.

The technologies behind the experiment also are applicable to downlink packet transmissions, suggesting that it should be possible to achieve a 10Gbps downlink, which is one hundred times the 100Mbps maximum rate of DOCOMO's current Xi LTE service.

DOCOMO's research and development initiatives have made news numerous times over the years, including for field tests that achieved downlink maximum speeds of 2.5 Gbps on December 14, 2005 and 5 Gbps on December 14, 2006.

More information: Key Technologies of 10 Gbps Packet Transmission Experiment: [www.nttdocomo.com/pr/2013/pdf/ ...227_attachment01.pdf](http://www.nttdocomo.com/pr/2013/pdf/...227_attachment01.pdf)

Provided by NTT Docomo

Citation: First 10 Gbps packet transmission in outdoor experiment, paving way for super-high-bit-rate mobile communications (2013, February 27) retrieved 23 June 2024 from <https://phys.org/news/2013-02-gbps-packet-transmission-outdoor-paving.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--