

# NTT DoCoMo Achieves 1Gbps Packet Transmission in 4G Field Experiment

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NTT DoCoMo, Inc. announced today that it achieved 1Gbps real-time packet transmission in the downlink at the moving speed of about 20km/h in a field experiment on fourth-generation (4G) radio access. The experiment took place in Yokosuka, Kanagawa Prefecture on May 9, 2005.

This is the latest achievement in DoCoMo's ongoing development of key radio access technology for 4G mobile communications.

The 1Gbps real-time packet transmission was realized through Variable Spreading Factor-Spread Orthogonal Frequency Division Multiplexing (VSF-Spread OFDM) radio access and 4-by-4 Multiple-Input-Multiple-Output (MIMO) multiplexing using "adaptive selection of surviving symbol replica candidate" (ASESS) based on Maximum Likelihood Detection with QR decomposition and the M-algorithm (QRM-MLD), which was developed by DoCoMo. By using the new algorithm, DoCoMo was able to reduce the large computational complexity of the original MLD method while maintaining almost the same achievable throughput performance. Frequency spectrum efficiency, which is expressed as information bits per second per Hertz, is 10 bits per second per Hertz, about 20 times that of 3G radio networks' spectrum efficiency.

During an earlier trial in July 2003, DoCoMo achieved 100Mbps and 20Mbps data rate transmission in the downlink and uplink, respectively, in outdoor environments using the same 100MHz bandwidth.

DoCoMo will continue to conduct field trials as part of its program to develop a 4G global standard in cooperation with the International Telecommunication Union Radiocommunication Sector. The telecommunications council of Japan's Ministry of Internal Affairs and Communications aims to see 4G services commercialized in the country by 2010.

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