

Launch of MIMO-OFDM Transmission Technology Field Tests

NTT has successfully developed multi-input multi-output orthogonal frequency division multiplexing (MIMO-OFDM) transmission technology to provide the 100-Mbit/s transmission speeds required of next-generation broadband wireless access. This technology will transform office LAN environments to a wireless format and simplify the construction of inexpensive, large-capacity wireless LAN environments for “hot spots” located at train stations, airports, fast-food establishments, and elsewhere. It is also seen as a promising technology for fixed wireless access (FWA) systems and mobile communications, which is expected to provide large-capacity, high-speed communications at 100 Mbit/s or more.

Researched by NTT Network Innovation Laboratories, MIMO-OFDM transmission technology combines MIMO and OFDM technologies. In MIMO, the wireless base station and mobile terminal both have multiple antennas for transmission and reception, and the transmission capacity can theoretically increase in proportion to the number of transmitting/receiving antenna sets, so a transmission bit rate several times that of a single antenna system can be achieved. OFDM, which is a modulation system used in digital terrestrial broadcasting and wireless LANs, is especially robust against frequency selective fading that can occur between transmitting and receiving antennas. Therefore, the combination of MIMO and OFDM should mitigate transmission degradation and

improve transmission capacity, frequency utilization rate, and communication quality.

Field tests to evaluate this technology were launched in December 2004 in the Yokosuka City area of Kanagawa prefecture, Japan (focusing on Yokosuka Research Park (YRP) and Yokosuka City Hall). These tests are scheduled to run until March 2005 to evaluate transmission characteristics in (1) relatively short-range environments such as conference rooms, offices, and hallways having many reflected waves as commonly found in wireless-LAN and home-network systems and (2) relatively long-range environments where many people or automobiles come and go such as hot spots at train stations, airports, and eating establishments.

Building on the results of these field tests, NTT plans to investigate the development of public-wireless LAN services with high-speed, broadband capabilities. And to expand the application field of MIMO-OFDM transmission technology, NTT will examine the possibility of applying it to FWA systems and mobile communications.

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